

# Using role-play simulation to study entrepreneurship from a process perspective : theoretical groundings and first empirical insights

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# **USING ROLE-PLAY SIMULATION TO STUDY ENTREPRENEURSHIP FROM A PROCESS PERSPECTIVE: THEORETICAL GROUNDING AND FIRST EMPIRICAL INSIGHTS**

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## **ABSTRACT**

Research on entrepreneurship revealed the need to focus on a process perspective. However, it appears difficult to address the entrepreneurship process with only the common set of quantitative and qualitative research methods. This process perspective leads to a quest for an interactive tool that would have sufficient properties to gather and analyze empirical data on a scientific basis.

This paper proposes simulation, more specifically the role-play, as a method to study the process of entrepreneurship and deals with the research question whether it might be an appropriate approach for doing empirical research on entrepreneurship within the boundaries of existing organizations. We use role-play simulation in the scope of case study research as a systematic method to gain deeper insights into how the entrepreneurship process executes. We do not aim at simulating the entire process of entrepreneurship, but specific scenarios that typically occur during the course of the entrepreneurship process within existing organizations as, for example, decision making on opportunity exploitation, R&D or marketing strategy of new products.

A series of workshops has been conducted under repeatable conditions in which two simulations have been applied: the Intrapreneuring Game and the Social Innovation Simulation. The applications show that simulation triggers the participants to get consciousness about the real-life situations and empirical insights can be gained through observation, group discussion and interviewing of participants. Building on these sources of evidence, an iterative improvement of the method is accomplished.

## **INTRODUCTION**

One of the essentials in entrepreneurship research is the interaction of the entrepreneur with the environment. It is this interaction that we focus on in our study of entrepreneurship within established companies. It appears difficult to address the process of entrepreneurship with only the common set of quantitative and qualitative research methods. The interaction inherent in the entrepreneurship requires a different but complementary approach. This paper proposes simulation, more specifically the role-

play, as a method to study the process of entrepreneurship and deals with the question whether it might be an appropriate approach for empirical entrepreneurship research.

A simulation is an abstracting imitation (by acting) of reality, and its intention is the investigation of the situation in order to understand it better (Kaiser, 1973). However, we did not know immediately if simulation belonged to a class of valid scientific methods. ‘Would a critical revisiting of the technique of simulation reveal also scientific properties?’, is what kept our minds busy. If so, it could help to solve our need to investigate the process of entrepreneurship. Then we could propose simulation as an approach that would be complementary to the existing set of methods for entrepreneurship research. This was our motivation to start this quest and led us to the leading research question of this paper: Can role-play simulation serve as a scientific method to gather and analyse empirical data on entrepreneurship processes within existing organizations?

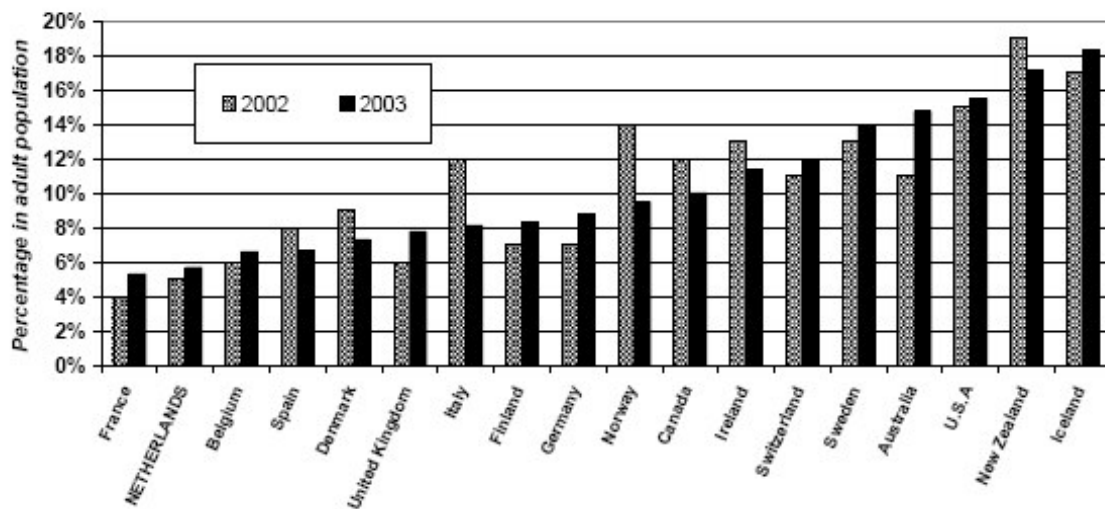
It does not go without saying to associate simulation with scientific research. It is more usual to think of simulation in nowadays teaching and training of (future) managers and engineers where it is quite normal to simulate interactions which are crucial to their optimal functioning in specific situations, such as negotiations, decision making or conflict resolution. In accordance with evidence by Black et al. (1999), this educational tool appeared to be much more effective than reading books or listening to lectures, even given by “gurus” who are often considered more as a form of entertainment.

In order to find a satisfying answer we first discuss in the next section the phenomenon of entrepreneurship and, in particular, the need to study entrepreneurship that occurs within existing organizations from an interaction-based process perspective. This results in a typology of technical and social innovation. In the third section the technique of simulation is explored and a specific form of it, the role-play used as a research method, is investigated on its scientific properties. Various examples of role-plays used as a research method are evaluated and two role-play simulations used for research on entrepreneurship are proposed and analyzed. As a result this paper proposes a framework for role-play simulation as an alternative and complementary method to study entrepreneurship. The discussion in the last section deals with the question whether simulation is suitable to do empirical research in entrepreneurship within existing organizations.

## **THE ENTREPRENEURSHIP PROCESS**

Entrepreneurship can be analyzed from various points of view. A macro-perspective is offered by the *Global Entrepreneurship Monitor 2004* (see Acs et al., 2005), according to which, for instance, in the Netherlands 5.1% percent of the adult population is involved in entrepreneurial activity. This is below the overall GEM 2004 average. In 2004 says GEM 2004 there was an increase in the level of entrepreneurial activity compared to 2003 (from 3.6 to 5.1) which reflects the country’s modest economic recovery. Also the Dutch economy may still be high in performance in an absolute sense, but productivity and innovation is lagging behind compared to other countries. This gives reason to

great concern for the Dutch government that, among others, has initiated a platform to stimulate innovation. The next quest will be: how to stimulate innovation at the company level in a knowledge intensive economy? Here some propose to differentiate between technical and social innovation (Drucker, 1985). This makes us curious on how entrepreneurship is perceived in the various countries of Europe. To illustrate this **Error! Reference source not found.** indicates the percentage of members of the adult population expecting to start a business within the next three years and shows a rather low score for the Netherlands. Also, it appears that the two countries that are traditionally seen as the economic ‘motors’ of Europe, Germany and France, do not perform much better than the Netherlands. France is even below the level of the Netherlands.



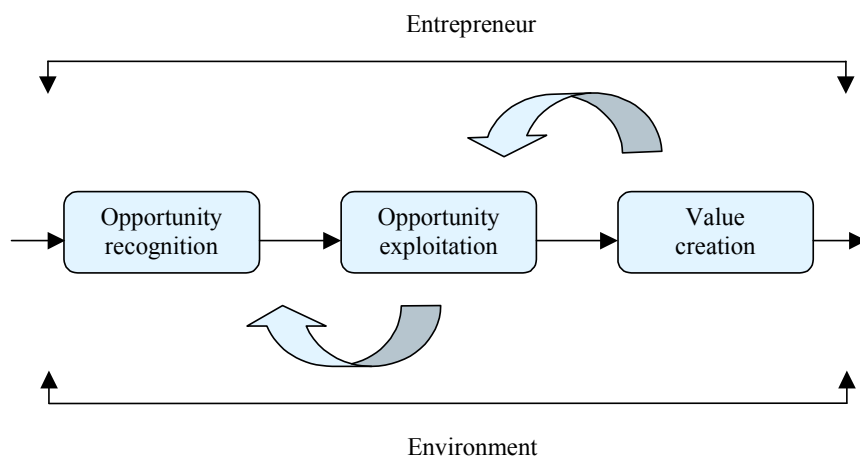
**Figure 1: Percentage of members of the adult population expecting to start a business within the next three years (Acs et al., 2005)**

With this macro-view in mind, entrepreneurship can be looked at from another perspective: the level of the individual enterprise. What is not visible in the figure depicted above is the way entrepreneurship is organized within existing companies: entrepreneurship occurs as a process.

### **Why focus on the process?**

The internal entrepreneur has to achieve that manager(s) and personnel are acting in the interest of the company. Also in many (large) established companies the original entrepreneur is not even present anymore which means that the compass of innovation can be accompanied by large variance. As argued by Saly (2001), entrepreneurship and management should no longer be two separate worlds. Quite the contrary, in order to accomplish entrepreneurial innovation continuous interaction is required. In their analysis of existing literature reviews of approximately 150 entrepreneurship publications van der Veen and Wakkee (2004) summarize that most contributions on entrepreneurship have focused on specific topics (such as opportunity identification; (Gaglio, 1997), or on a specific perspective on entrepreneurship (for example, research on psychological and sociological traits; (J. B. Cunningham & Lischeron, 1991; Shapero & Sokol, 1982; Thornton, 1999). These publications

contribute to the understanding of these specific topics or perspectives. Van der Veen and Wakkee examined definitions of entrepreneurship to develop an understanding of the phenomenon. They conclude that these pieces of the puzzle of entrepreneurship also have a common pattern; namely that entrepreneurship can be considered to be a process (amongst others, Delmar, 2005). As depicted in Figure 2, the entrepreneurship process includes the stages of opportunity discovery and the decision to exploit the opportunity, the phase of opportunity exploitation which, finally, leads to the creation of value. The process may run both inside and outside of existing organizations or cross organizational borders.



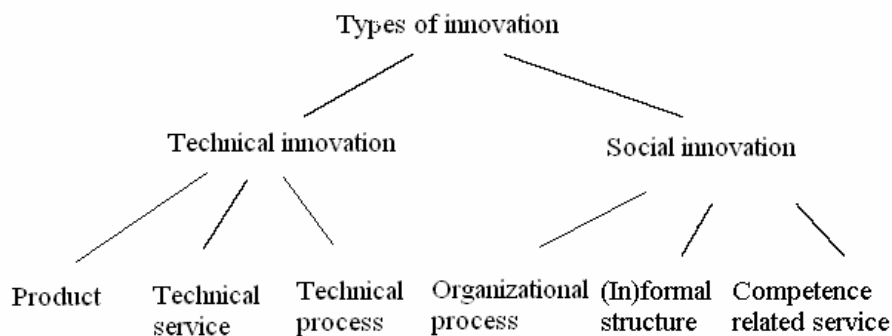
**Figure 2: The entrepreneurial process (van der Veen & Wakkee, 2004)**

Our focus here lies on entrepreneurship within the boundaries of existing organizations. In this specific form of entrepreneurship the process involves interaction between the entrepreneurial individual(s) (entrepreneur, manager or employee) and the organizational environment. More specifically, we are interested in how do organization and individual interact in the entrepreneurship processes within existing organizations.

This is the starting point for the application of simulation. The process of entrepreneurship within a company can be defined as a naturally occurring or designed sequence of operations or events. This sequence taking up time, space and resources is focussed to produce an innovative outcome in an attempt to create value (free after Ulijn & Brown, 2004). The process may be identified by orientations of involved subjects or the changes it develops in the properties of one or more objects under its influence. This definition indicates that an innovative output is produced. Innovation is creating something new and implementing it successfully at a market (Ulijn & Brown, 2004). To be more specific on how innovation can be understood, Daft & Becker (1978) distinguish between various types of innovation and their attributes. They (re)define innovation types such as technical, organizational structure and goal. Also they distinguish attributes of each type of innovation that give a specific context to the innovation or create – stimulating or discouraging – conditions. Attributes in their view are aspects such as cost, communicability, divisibility, radicalness and the like.

## A typology of innovation

The typology offers a start to differentiate between technical and social innovation as intended by policy makers. Technical innovation can be defined as a new product, (service)-system or process that is offered and implemented in a market (for instance, a personal computer or a computer network). Social innovation comprises the orientation - of entrepreneur, manager or employee - on the organizational process and market context in order to create value by using various modes of coordination. Social innovation uses implicit knowledge which is generated by experience, creativity and exchange and is usually connected to individual employees (Sommerlatte, 2001). Thus, social innovation is not defined as just the social effects of technical innovation (Steger, 1986) but it is related to the market place and constitutes an independent class of innovation. For our purpose we somewhat rearranged Daft and Becker's typology of innovation to offer a more logical order in technical and social innovation. The types of innovation can be seen as stated in Figure 3.



**Figure 3: Types of innovation (elaborated upon Daft & Becker, 1978)**

In Figure 3 can be seen that a technical and an organizational process is distinguished. The fundamental difference between these processes can be seen by using for instance a criterion of how the process is designed. When the technical lay-out is leading in the way personnel has to act, it is a technical process (the classical 'industrial belt system'). When responsibilities and roles are leading in the assignment of tasks or competences then social innovation is at stake. This might look confusing at first sight. In Table 1 the interrelation between the two processes is explained. In the columns of the table the reference in organisational development is defined as self-referential and referential to others. The rows represent the modes to generate technical processes.

**Table 1: The interrelation between the technical and organisational process (Verhoeff, 2005)**

		Reference in organisational development	
		Self -referential	Referential to others
Modes to generate technical processes	Exploiting	<b>1.1 Reproducing</b>	<b>1.2 Recursing</b>
	Exploring	<b>2.1 Renovating</b>	<b>2.2 Recreating</b>

The typology shows four different contexts for technical and social processes to develop. In a context of reproducing the way stakeholders interact with each other can be quite different from the other three contexts. We can conclude that the initial state of an organisation is a sufficient condition for a specific setting of negotiation between stakeholders. This can be relevant for simulation.

### **The research question(s)**

With the given definitions of the process of entrepreneurship and of innovation it is a logical implication that entrepreneurship is not just a solitary act of an individual. This is congruent with the way Schumpeter sees the entrepreneur (see, for instance, Te Velde, 2004). In the view of Schumpeter the entrepreneur has two important functions. Firstly, he has to commit not only himself but also the other actors to a broad program of collective learning. In other words building and sharing a dream that something great is going on. Secondly, the entrepreneur acts as a ‘guarantor’ for certainty and as a focal point of trust, or as Te Velde concludes, “[...] convinces others that it really can be done”. Research has underlined that entrepreneurship is not just a matter of personal attributes or traits (Aldrich, 2000; Busenitz & Barney, 1997; Gartner, 1988; Thornton, 1999). One could conclude that social attributes, the elements of the social panorama, are at least as important. But it does not go as far as a statement that entrepreneurship would be just a matter of ‘social genes’ (Florida, 2002). This understanding implies that entrepreneurship occurs as a process that is embedded in a social system including the entrepreneur and other actors. To achieve innovation – both technical and social – the process agents have to interact with each other in order to shape an effective social system (Groen, 2005).

Certainly, past research on entrepreneurship offers several insights into how this interaction can be approached. What is missing, however, is the explicit focus on a social system and interaction perspective of entrepreneurship (Groen, 2005). Especially, the following two *basic research questions* are not answered in a satisfactory way yet.

- i. *What type of environment, or more specifically, what type of culture is supportive of entrepreneurship within established organizations?*
- ii. *How is the entrepreneurial spirit of entrepreneur, manager or employee of influence on both technical and social innovation?*

One reason for that might be the lack of appropriate research methods that can be used to grasp the process character of entrepreneurship (Demmert & Klein, 2003). Indeed, the existing set of methods used so far for entrepreneurship research – both quantitative and qualitative of nature – seem to have difficulty to address the process character of entrepreneurship. Since both of the above research questions build on the logic of social interaction, an appropriate research method must be able to incorporate and reflect this interaction. Therefore, the intention of this paper is to propose role-play

simulation as an alternative research method to study entrepreneurship from an interaction-based point of view that centres on the entrepreneurship process as a process of interaction between all agents involved. Hence, *the leading research question* of this paper can be put follows:

- iii. *Can role-play simulation serve as a scientific method to gather and analyse empirical data on entrepreneurship processes within existing organizations?*

In order to develop a scientific tool it will have to meet the various criteria that are applied to any qualitative method. Apart from 'face validity' the following criteria are at stake (see, for instance, Miles & Huberman, 1994): reliability (also dependability, auditability), internal validity (also credibility, authenticity, role-play fidelity), external validity (also transferability, fittingness), and utilization (also application, action orientation). These criteria presuppose that the choices in the design and application are clear. In the next section these elements will be described in more detail. The authors are aware of other criteria and they see the criteria mentioned as a solid starting point to develop a framework of simulation.

### **ROLE-PLAY SIMULATION**

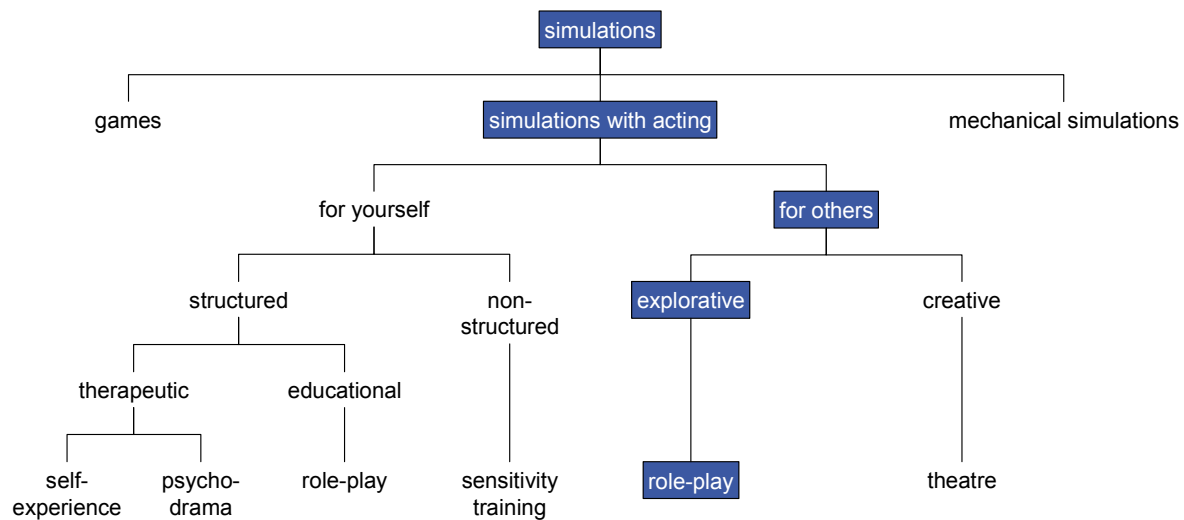
Simulation is an abstracting imitation (by acting) of reality, and its intention is the investigation of the situation in order to understand it better (Kaiser, 1973). Simulation attempts to represent certain features of the behaviour of a physical or abstract system by the behaviour of another system. Simulation is used in many contexts, including the modelling of natural and human systems to gain insight into the operation of those systems, or in technology and safety engineering where the goal is to test some real-world practical scenarios. Simulation, using a simulator or otherwise experimenting with a fictitious situation can show the eventual real effects of some possible conditions.

We use simulation in the scope of case study research (Mahoney, 2004; Yin, 2003) as a systematic, explorative research method to gain deeper insights into how the entrepreneurship process executes and especially to answer the research questions pointed out further above. Thereby, simulation does not only reveal the rational dimension of entrepreneurship but also the intuitive and emotional dimension. A simulation, however, cannot mirror the entire complexity of the entrepreneurial world. The face validity of simulation is that it will offer a portrait of what we are looking at in real life. So, we do not aim at simulating the entire process of entrepreneurship but the focus is on specific situations – or scenarios – that typically occur during the course of the entrepreneurship process within existing organizations as, for example, negotiations, decision making on opportunity exploitation, R&D or marketing strategy of new products.



## A typology of simulation

The determinants of simulation are the design, preparation, conducting and assessing an execution. The design process includes the specific arrangement of the rules, the scheme of the game space, the game positions, the actors, their roles, and their correspondence with a symbolic world (Klabbers, 2005). With these determinants Figure 4 provides an overview of different types of simulations.



**Figure 4: Overview and categorization of simulation techniques**

Simulation can roughly be divided into three sub-categories: games, simulation with acting and mechanical simulations. Simulations with acting can be classified according to the effect that is to be accomplished. One can distinguish between simulations to the benefit of the acting participant and simulations to the benefit of the observer(s) (Van Ments, 1991).

Simulations that are conducted to the benefit of the participant can be both structured and non-structured. Structured forms include self-experience simulations, psychodrama and role-plays. In self-experience groups the participants talk about their problems by acting. They simulate problematic situations they went through and get a feedback from the group. The psychodrama is a form of therapeutic theatre involving a player (who has a personal problem), a stage manager (the therapist) and an audience. After the player and the stage manager have discussed the problem, the audience is asked to help and actors are chosen to simulate the player's problem scenario. The player gets feedback from both the audience and from the therapist and can simulate the situation in another way again. Both the psychodrama and the self-experience technique are therapeutic methods applied in the fields of psychology in order to therapy people with personal problems. The role-play, in contrast, is an educational or training method. It developed on the basis of the psychodrama. Today, role-plays are widely used and accepted at school, at university and in business contexts for education and training (Black et al., 1999). A non-structured form of simulation is the sensitivity training.

Simulations conducted to the benefit of non-participants, such as spectators, observers or researchers, include role-plays and theatre. Role-plays can be used as an explorative research method, where the participants act and the observers get the benefit of it. The second form is theatre which has neither a therapeutic nor an educational nor an explorative function. Theatre it is just a creative form of simulation.

According to the given typology, for the study of entrepreneurship only simulation with acting seems to be relevant. As elaborated earlier in the paper, entrepreneurship basically builds on the principle of social interaction. More specifically, entrepreneurship within existing organizations requires interaction between several process agents, such as entrepreneurs, employees, and managers. Since the role-play implicitly builds on the principle of social interaction, it is the specific method to simulate real-life interaction processes in general and entrepreneurship processes in particular. One could conclude that with this typology the syntax of simulation can be specified as a role-play.

### **The role-play**

The role-play is considered to be a type of simulation, although it differs from mechanical simulators or training simulations used for developing skills (Druckman, 1995). The term role-play is more specific. In role-playing, participants adopt characters, or parts, that have personalities, motivations, and backgrounds different from their own. Role-playing is a kind of improvisational drama or free-form theatre, in which the participants are the actors who are playing parts. Each player holds a role and adopts the presumed behaviour to simulate a given scenario. The basis of the role-play is a set of roles and roles (Klabbers, 1999) allowing the participants to simulate a given (realistic) scenario.

A role is the combination of instructions given to participants and the concrete implementation of these instructions by the players. It represents the sum of behaviour expectations and appearances which are characteristic for a certain persons in specific situations (Bodenstein & Geise, 1987; Van Ments, 1991). From an organization-psychological perspective, the role-play is closely related to the importance of roles in organizations. Roles can be defined as the interface between individual and organization (Nagler, 2005) which appears daily as the organizational agents assume roles by adopting positions and executing functions with certain expected role behaviour. The organization meets individuals in the adoption and execution of roles, whereas the individuals are able to manage themselves in their roles. The adoption of roles is a natural process which occurs every day (Van Ments, 1991). In the context of negotiation, roles are associated with the interests that are represented.

The set of rules creates the game space and defines the positions that the roles should take at a certain moment in time. Rules describe the initial subset of positions and may also define the intermediate and final subset of positions, including the rules for finishing the game (Klabbers, 1999).

A scenario is a description of a possible real-life situation. Hypothetical situations are interspersed with expected extrapolations of trends to list a combination of events that describes how a situation might occur. They are more useful for understanding the options and dealing with uncertainty than in predicting specific events. The role-play, in the form of a scenario or model, contains aspects of the

environment within the players have to act and make decisions (Armstrong, 1995). In this sense, the scenario, built around the basic issues underlying the role-play, refers to the background story in which the role-players act.

Not only the syntax, determined by the scenario through roles and rules, but also the semantics, giving meaning to the syntax, is a crucial element. In order to design a role-play the semantically level must be explored further. Given that the presence of roles and rules in organizational real-life leads to role conflicts, role dilemmas and role-ambiguity (Regnet, 1992), the following sub-section elaborates on conflictive scenarios or dilemmas that can be used to properly design a role-play to simulate and research entrepreneurship processes within existing organizations.

### **The function of meaning in a role-play**

It can be helpful to formulate conflicts or dilemmas to focus on the issues at hand in a specific organisation. Examples of dilemmas that reflect the challenge of entrepreneurship within organizations are given Table 2. They are used to shape the role-play and to give meaning to it through conflictive scenarios.

**Table 2: Dilemmas through entrepreneurship within the boundaries existing organizations**

<b>The mode of entrepreneurial individuals</b>	<b>The mode of administrative organizations</b>
<ul style="list-style-type: none"> <li>• Higher degree of newness</li> <li>• Radical innovation</li> <li>• Exploration of unknown resources and paths</li> <li>• Higher level uncertainty acceptance</li> <li>• Long-term orientation, persistence</li> <li>• Need for flexibility and room to manoeuvre</li> </ul>	<ul style="list-style-type: none"> <li>• Lower degree of newness</li> <li>• Incremental innovation</li> <li>• Exploitation of existing resources and paths</li> <li>• Lower level of uncertainty acceptance</li> <li>• Short-term orientation, quick returns</li> <li>• Planning and formalisation of activities</li> </ul>

For instance, in their multiple-case simulation study on the effects of strategy type on strategy implementation, Waldersee and Sheather (1996) emphasise the incompatibility of an entrepreneurial strategy, which is associated with newness, change, higher risk, need for flexibility and responsiveness, with a conservative strategy typified by rules, procedures and top-down management. A company needs routines to ensure the earning capability. Here controlling the business processes is major objective to sustain economic success and competitiveness. Therefore enterprises deploy instruments like administrative facilities or formal rules of communication to manage (Chandy & Tellis, 2000). At the same time however the organization needs to be responsive to its ever changing external economic context. Then bureaucracy implies restraints against major changes and results in complacency and structural inertia (Hill & Rothaermel, 2003; Süßmuth Dyckerhoff, 1995; Tushman & Nadler, 1986). They insist on an orderly world in which results turn out exactly as planned (Pinchot & Pellman, 1999; Süßmuth Dyckerhoff, 1995). To be able to deal with this dilemma and radically force the introduction of innovation companies more and more encourage entrepreneurship within their boundaries.

A second dilemma stems from the time-orientation of management. To boost profits and satisfy shareholders it is tempting for managers to focus on the short term. In the knowledge economy however the technology dominance does no longer make the fundamental difference to stay ahead of the competition. Today most of the technology is accessible for all competitors and can be bought in a standard way. Knowledge however has to be developed and managing this takes a time-span that is beyond the short term. In knowledge-oriented companies management is committed to create the conditions that allow individual employees to develop adequate competences and the appropriate entrepreneurial attitude. The company will rely for innovation on a process run by managers and employees as a community of innovators (Bartlett & Goshal, 1996; de Geus, 1997). Here, social innovation might be a necessary condition to ensure the progress of technical innovation in the long run.

The two dilemmas also bring along another factor existing organisations have to deal with social innovation: power and politics (Hill & Rothaermel, 2003). The individual manager or employee is part of a network of interpersonal relationships, in which she or he has a social rank, the status, and a particular role. The stakeholders try to gain and defend their power and influence. For instance, conflicts about scarce resources may occur, which are crucial and essential for risky R&D projects. Also, if employees are not committed to innovate great management ambitions may turn into a disaster.

### **Using the role-play as a research method**

The use of role-play as a research method aims at the simulation and reflection of a specific scenario in order to understand it better (Nagler, 2005). Since conflictive scenarios in the form of as-if-situations provide the basis for role-play design in general, the role-play can be used to investigate those organizational role conflicts, dilemmas and ambiguity which are reflected by the involved participants from a somehow distant viewpoint. This act of reflection is the source of evidence that the researcher can tap into. Insight is gained through both the observation of individual role behaviour during the play and the set of complementary research methods applied after the play including, for instance, group discussions, interviews and/or questionnaires (triangulation of sources of evidence).

Although not common use (yet), the role-play finds its proper place as an approach that is complementary to the existing repertoire of qualitative research methods in the social sciences. It especially allows for doing research on dilemmas and conflicts and the underlying values, norms and attitude of individuals or groups leading to insights into culture of the specific work environment based on (interpretation of) the subject's perspective (Nagler, 2005). Table 3 provides a selection of role-plays that have effectively been applied as a research method. In the table the appreciation is stated whether the example would be suitable to apply in the context of the entrepreneurship process.

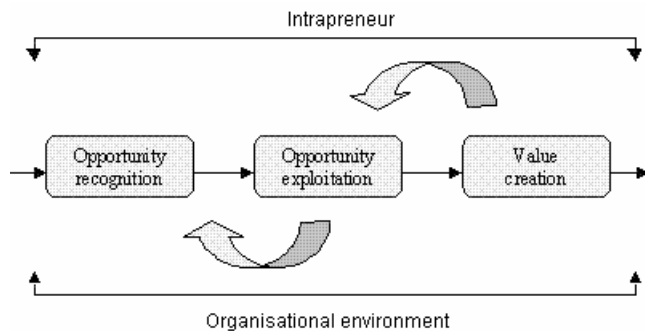
**Table 3: Overview of role-plays used a research method**

<b>Role-play</b>	<b>Brief description</b>	<b>Appreciation</b>
<i>Stanford-prison-experiment</i> (Van Ments, 1991)	<ul style="list-style-type: none"> <li>• Simulates a scenario where students had to play two types of roles: guards and prisoners.</li> <li>• Showed how fast individuals can adapt roles: the planned time frame two weeks but the simulation had to be stopped already after six days.</li> </ul>	<ul style="list-style-type: none"> <li>• The interaction between agents with different interest is a relevant issue also for the design of role-plays for entrepreneurship research.</li> <li>• The simulated scenario effectively produced results that are close to reality (validity)</li> </ul>
<i>Exploring and forecasting future negotiation and communication processes in the middle-east</i> (Bradford, 1995)	<ul style="list-style-type: none"> <li>• Produced results that quite exactly forecasted reality.</li> <li>• Showed that diversity of cultural values has a significant influence on the role-play performance.</li> </ul>	<ul style="list-style-type: none"> <li>• Showed appropriateness to study intercultural issues.</li> <li>• Shows that role-plays can be used both as a research method for testing theories and as a training method for policy makers.</li> </ul>
<i>Bushfire game</i> (C. J. Cunningham, 1995)	<ul style="list-style-type: none"> <li>• Simple whole-day pencil-and-paper role- played in Australia to simulate bushfire emergencies.</li> <li>• Showed the differences and cooperation problems of different public institutions: instead of cooperation rivalry was emerging among the players.</li> </ul>	<ul style="list-style-type: none"> <li>• Realized both a significant research and a training effect.</li> <li>• Proved to be suitable for explorative research on (organizational) cultures and intercultural cooperation.</li> <li>• Produced very similar results with many different groups of participants (reliability).</li> <li>• The game performance turned out to be very much congruent with reality (internal validity).</li> </ul>
<i>Entrepreneurship Game</i> (Low et al., 1994)	<ul style="list-style-type: none"> <li>• Designed as both a teaching and research tool and played as part of a MBA course on new venturing.</li> <li>• The game simulates a competitive market in which several entrepreneurs have discovered the same business opportunity. The players have to negotiate to form new venture teams.</li> <li>• A successful new venture requires an entrepreneur who must a) assemble a complete venture team consisting of at least one engineer, marketer, investor, and supplier; and b) attract enough customers to enable the venture to break even.</li> </ul>	<ul style="list-style-type: none"> <li>• One of the few examples that deals with entrepreneurship and centres on the issue of interaction inherent in entrepreneurship.</li> <li>• While the research results were encouraging, the teaching effect turned out to be not satisfactory.</li> <li>• This role-play was designed to simulate independent entrepreneurship whereas the focus here is on the internal entrepreneurship process.</li> </ul>

These examples show that role-plays can be applied successfully in research. Addressing the two basic research questions of the paper (that is, research questions i. and ii.), we developed two different simulation role-plays to study entrepreneurship within existing companies from an interaction-based process perspective: the Intrapreneuring Game and the Social Innovation Simulation.

### *The Intrapreneuring Game*

The underlying research question of the Intrapreneuring game is: *What type of environment, or more specifically, what type of culture is supportive of entrepreneurship within established organizations?* Here the interaction is investigated between the internal entrepreneur (intrapreneur) and the organisational, administrative process level. In the figure of the entrepreneurship process this looks like:



**Figure 5: The interaction between the Intrapreneur and the organisational process level**

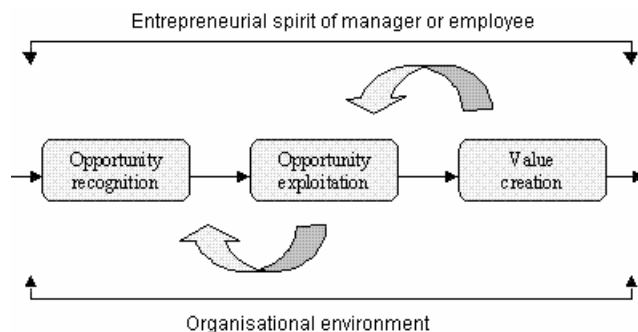
The Intrapreneuring Game is a negotiation role-play that simulates entrepreneurship within R&D of large multinational corporations. The scenario simulated deals with a true engineer-entrepreneur who has a revolutionary new product idea that obviously does not fit into the mainstream business of the company. The entrepreneur has to present the idea and convince the board of managers to exploit this entrepreneurial opportunity within the boundaries of the existing organization. Now, a conflict of interests is arising between the entrepreneur on the one hand (exploration oriented, radical innovation, etc.) and the established managers on the other hand (exploitation-oriented, incremental innovation, etc.).

The purpose of the Intrapreneuring Game is twofold. First, it aims at providing intrapreneurship training to R&D workers and managers. In an interactive workshop setting the participants learn about entrepreneurship (within existing organizations) and the challenge to make it happen within settings that normally do not support the entrepreneurial mode. Second, the role-play is used as a research method to explore the constituents of an entrepreneurship-supporting (R&D) culture. The set-up allows for simulating a realistic scenario of entrepreneurship within corporate R&D which enables the participants to play the game according to their daily patterns of acting and decision-making. This provides rich insights into the real-life culture of corporate R&D.

### *The Social Innovation Simulation*

The underlying research question in the social innovation simulation is: *How is the entrepreneurial spirit of entrepreneur, manager or employee of influence on both technical and social innovation?* The Social Innovation Simulation is used to study the effect of entrepreneurial spirit on (social) innovation.

Entrepreneurial spirit is defined as the propensity of manager or employee to identify opportunities for innovation and organise resources of various natures, in order to create added value that meets a solvable demand. In the figure of the entrepreneurship process this looks like:



**Figure 6: The effect of the entrepreneurial spirit of manager and employee on innovation**

Entrepreneurship is traditionally associated with the person of the entrepreneur. We have seen already that entrepreneurship is not just a matter of personal traits. In fact, the personal traits of an entrepreneur and a manager appear not to be fundamentally different (Aldrich, 2000; Busenitz & Barney, 1997; Gartner, 1988; Thornton, 1999). To understand why entrepreneurial spirit can be relevant for manager and employee we can go back to what has been stated by Te Velde (2004) about Schumpeter: a manager and the employee have a role in developing a dream and create the conditions that it really can be done. This might not be immediately obvious in the context of the old paradigm of the industrial era. When this is viewed from the perspective of a knowledge economy with – among others - decentralised responsibilities and individualised competences this is appears a logical approach (Bartlett & Goshal, 1996). As a manager or an employee cannot be identified with the entrepreneur completely, the term entrepreneurial spirit is used.

#### *Profile of role-play simulation and related sources of evidence*

The two role-plays described before follow a specific format to ensure repeatable conditions for data gathering and analysis. Since the role-play can not be used as a stand-alone research method, it should be embedded in a set of complementary research methods (Stahlke, 2001; Yin, 2003). Such a triangulation of sources of evidence would, hence, include the following anchor points: description of the initial state (briefing), the intervention by simulation (role-play) and the debriefing of the impact of the simulation on innovation.

*Briefing and preparation:* A role-play starts with a briefing session (of approximately 60 minutes). It includes a description of the background situation of the role-play, a stepwise instruction on the procedure and a careful assignment of the playing and observing roles to volunteers. To facilitate this process, the role descriptions are printed on papers with different colours for each role. After the briefing, players and observers have another 60 minutes of preparation to elaborate in teams of player

and observers a negotiation strategy for each of the roles. The moderator frequents every group to resolve open issues.

*Role-play:* The players are placed around a (round) table; the observers of the roles sit more in the background but vis-à-vis the corresponding player to be observed. The simulation is started by the instructor, and within a given timeframe (of 45 minutes) the players have to negotiate about the scenario in order to find a solution to the conflict/dilemmas. The role-play ends as soon as the players make a decision or when the discussion expands the defined time frame. As an important source of evidence, the role-play is audio-/video-recorded and transcribed afterwards.

*Debriefing:* The debriefing session is the most important part of the simulation/gaming experience, no matter whether the main purpose of the role-play is training or research (Crookall, 1995). The debriefing, which is a form of group discussion, starts right after the simulation. It is the platform where the rather implicit thoughts and experience of the players and observers can be made explicit. First, the outcomes of the role-play are evaluated, then the process is analysed, including the underlying scenario, the roles as well as the strengths and weaknesses of the role-play. The debriefing is audio/video recorded and transcribed afterwards. Additionally, minutes of the group discussion are composed (for example, in form of flip-chart notes).

*Interviews and questionnaires:* As two additional sources of evidence questionnaires and interviews are used. A questionnaire is to be filled out by each participant right after the debriefing discussion. It evaluates the role-play from a process as well as a content/outcome perspective. Another questionnaire is administered two months later to evaluate the impact of the intervention that is invoked by the simulation. Additionally, (semi-structured) interviews are conducted with at least one player and/or observer of each role. Here, issues of the debriefing or additional research questions can be addressed. The interviews are audio-/video-recorded and transcribed afterwards.

#### *First applications of the two role-plays*

A series of workshops has been conducted under repeatable conditions in which the two simulations were applied separately. The objective of these applications is to improve the method, check for plausibility, consistency and comprehensibility of the scenario and the roles and to test of the data gathering and evaluation procedure. First, the simulations were tested with Industrial Engineering and Management students at the TU Darmstadt (Germany) and TU Eindhoven (The Netherlands) as well as with Ph.D. students in Management at the TU Darmstadt (Germany) and Maastricht School of Management (The Netherlands). In total 8 workshops with students have been conducted each including 10-20 participants.

Then the simulations were executed within three large companies in France, Germany and The Netherlands. Again, in each workshop 10-20 persons participated. For example, the Social Innovation Simulation was used in a large innovative catering company in the Netherlands to identify the conditions of how employees can contribute to the conditions for the innovative ambitions during all stages of their life course. The Intrapreneuring Game was applied in R&D units of two high-tech



companies that operate as part suppliers in the power distribution and the glass fibre industry respectively. The interventions were focussed on making the participants, managers and employees, aware of the dilemmas of conflicts and choices they had. Also during the interaction sessions the effects of the ambitions and the necessary conditions for implementation were defined. Thus, various outcomes resulted from the interaction.

## DISCUSSION

This all leads to the main research question of this paper (that is, research question iii.): Can role-play simulation serve as a scientific method to gather and analyse empirical data on entrepreneurship processes within existing organizations? In our view, understanding technological and social innovation in established organizations begins with understanding the process of entrepreneurship in an interactive way. It is here that simulation offers to study such an interaction in technical and social innovation where classical research methods might be not complete enough in this respect. By the simulation of a scenario (conducting a role-play) the researcher creates a source of evidence that allows to experience and study organizational processes, social interaction, interdisciplinary collaboration, conflicts in and culture of, for example, organizational settings. Both theory on simulation and role-playing and the empirical applications show that role-play simulation triggers the participants to get consciousness about the real-life situations. Capitalizing on this, empirical insights can be gained through triangulation of sources of evidence such as observation, group discussion, questionnaires and interviews. This final section, hence, summarizes and discusses the appropriateness of the role-play for doing empirical research on entrepreneurship as well as its limitations and closes with some concluding remarks and recommendations for future research.

### **What makes a role-play an effective research tool?**

A discussion about the common quality criteria allows showing that role-plays indeed can be an appropriate method to do qualitative research of an explorative character. In the following, the questions of how to ensure reliability, internal and external validity, and utilization are discussed (see Miles & Huberman, 1994).

#### *Reliability*

Reliability (also dependability, auditability) refers to the question whether the process of study is consistent, reasonably stable over time and across researchers? The reliability of the method can be influenced by both design and process parameters of the role-play. Scenario and role descriptions should be short and very explicit to make sure that different groups of participants understand it the same way. To support this, sufficient briefing and preparation time is required.

The reliability strongly depends on the way how the researcher(s) are familiar with the role-play technique. Since the role-play is a complex instrument which produces an even more complex output, the researcher needs to be experienced in the use of role-plays. To support this, standards for the execution and the analysis of the role-play are to be set and documented in a manual. The role-play has a high frequency of interactions so that the whole session from briefing to de-briefing should be audio or – even better – video recorded and transcribed afterwards. Transcripts are the basis for in-depth analysis of the role-play and related sources of evidence.

### *Internal validity*

The question of internal validity (also credibility, authenticity, game fidelity) can be understood as: Do the results make sense? Do we have an authentic portrait of what we are looking at? A realistic or real-life scenario is required which means that the descriptions of scenario and role must be both theoretically grounded and close to reality. The scenario ought to be designed around issues to ensure that the played scenario remains an as-if-situation; otherwise there is the risk that the players could lose their psychological integrity (what could be seen in the Stanford Prison Experiment, see Table 3). Psychological self-experience should not be the goal when researching socio-organizational processes and situations (Nagler, 2005). The participants must always remain process owners, that is, they must always be able to autonomously determine their behaviour and decision-making. The instructions must be so tight that the problem/conflict of question appears, but at the same time loose enough so that the participants have freedom to play (Nagler, 2005).

Also, the participants should belong to a population that is representative of the situation to be simulated. This is important because the participants need to feel comfortable and identify themselves with designed scenario and roles in order to authentically experience the played scenario as an as-if-situation (Nagler, 2005). The participants need to fully understand the given scenario. If participants do not understand or accept the setting, this can lead to non-participation, which is a risk that other qualitative research methods encounter, too (Nagler, 2005). It is highly important that the players partake in the role-play voluntarily. Players can not be forced to play because then results are manipulated (unless this is explicitly aimed). Furthermore, the whole role-play has to be embedded in a trustful atmosphere (Nagler, 2005). After the game, the participants have to give up their roles and come back to the real life. They have to know that the role-play is over and the next step begins (Nagler, 2005).

When it comes to methodological issues, the role-play can not be used as a stand-alone research method. It must be part of a set of complementary research methods in form of triangulation of sources of evidence (Stahlke, 2001; Yin, 2003). Such methods include, for instance, participant observation, group discussions, interviews or questionnaires. In this respect, the debriefing (a sort of group discussion) plays an important role as the most important source of evidence in role-plays (Crookall, 1995). It aims at establishing facts and reflecting the course and the outcome of the role-play conducted before.

### *External validity*

External validity (also called transferability, fittingness) reflects that the results of a simulation do have some larger import and that they are transferable to other contexts. External validity can be proved through the application of the method across different contexts and with different groups of participants. In our research we might speak of ‘case to case’ validity as our two simulations with different settings illustrate that the method is applicable in a wider sense. Within the limited boundaries of our research until today a larger sense of generalisation is not yet possible. For instance with the current limited number of cases we cannot generalise over national cultural differences, although this can be an interesting perspective. Further experiments can reveal such qualities however. Also the external validity might be explored in a more quantitative way.

### *Utilization*

Utilization (also application, action orientation) refers to the question: What does the study for its participants – both researchers and participants – and for its consumers? The experience with the two simulations shows that the participants show a high degree of recognition in comparison to their ‘real working context’. The simulation allows to ‘pre-experience’ behaviour in negotiation or decision making and the debriefing reveals the options that participants were not yet aware of during the simulation. The strict setting of roles, rules and procedure allows researchers to focus on very specific ‘critical incidents’, while leaving other variables *ceteris paribus*. This is a promising starting point to incorporate the analysis of (necessary or sufficient) interdependencies between variables.

### **Strength and opportunities**

The role-play is a promising opportunity to link two elementary issues of the phenomenon of entrepreneurship within existing organizations. It puts the relation between entrepreneurial individual and the (administrative) organization and their interaction in the spotlight of entrepreneurship research which is not very well worked out in the literature. The two levels are mostly approached and studied independently from different scientific point of views, such as by sociologist, psychologists, institutionalists, or economists. However, the interface is relevant to understand entrepreneurship better. This interface is addressed by the two simulation presented above that implicitly build on the logic of conflict resolution through (social) interaction.

The role-play does not only provide insights into specific problem situations, it especially enables to look at individuals. It allows to investigate in a holistic way subjectively experienced perspectives of the participants which otherwise would only be possible through real-life observation. This view is similar to a direct observation but it allows a much higher sequence of interactions than reality (Ulijn *et al.*, 2004). Explicitly visible aspects can be observed, such as problem-solving and decision-making behaviour, negotiation style, or linguistic issues. Moreover, through the debriefing the researcher can also get more implicit views on the participants including its thoughts and emotions. This helps to

identify individual or organizational needs, weaknesses and insecurities which, in turn, can be analyzed to derive suggestions for improvement or to training. When it comes to the research on culture (both multi-cultural and cross-cultural research), it is very useful to see how participants react in given situations (Kaiser, 1973).

The applications of the two simulations show that role-play simulation can be a useful method for studying entrepreneurship processes that run within the boundaries of an existing organization. Both applications show that awareness of the initial negotiation context is important in giving meaning to the outcomes of the simulations. Simulation triggers the participants to get consciousness about the real-life situations and empirical insights can be gained through observation, group discussion and interviewing of participants. Having discussed the strong points and opportunities, it is important to also regard the shortcomings, limitations and threads of the role-play simulation.

### **Weaknesses and threads**

Still, there is only little work available that refers to the role-play used as a research method. Accordingly, there is only a limited number of cases, best-practice examples and well tested and empirically grounded methods available. The role-plays presented and discussed in this paper mainly produce protocols and transcripts of qualitative data based on interaction by communication and negotiation of participants. Such data provides deep, case-based insights into behavioural and cultural aspects of entrepreneurship. Consequently, as other qualitative research methods, the role-play is a rather time consuming research instrument and requires well qualified and experienced researchers for both application, data gathering and analysis (Nagler, 2005). The data is rather difficult to gather, analyze, and interpret (C. J. Cunningham, 1995). To obtain a reliable and valid tool, iterative testing and grounding is required (Van Aken, 2005). Improvement and validation is only received through case-to-case refinement. Here a next step can be to analyse role-plays in terms of necessary or sufficient conditions or, even more quantitative oriented, to define dependent and independent variables. So, the framework for simulation might be expanded for quantitative analysis in a later stage.

The terms 'simulation' and 'role-play' often provoke semantic problems and misunderstandings. Especially, role-plays are often associated with pure form of (online) games or less serious approaches that rather aims at entertainment than doing research. When it comes to aspects of (internal) validity of the method, it is often thought that role-playing would just be a question of 'actors' and 'stages' with no relation to real-life situations: to what extent did the participants play the roles according to the given scenario and role instructions and to what extent did they behave according to their day-to-day patterns of behaviour? As 20 years of experience and the above mentioned applications show, participants forget quite quickly (say after five minutes already) about rules and role instructions and show, in turn, their daily patterns of behaviour in communicating, negotiating, or decision-making styles. Role-play simulation is suitable to produce outcomes that are very close to reality. From a

researcher's point of view, this provides an opportunity to get deep insights into behavioural, organizational and cultural aspects of entrepreneurship.

As a matter of fact, most of the testing effectuated has been done with students and Ph.D. students and only three cases could be conducted in real-life company settings so far. This, of course, raises the question of the internal validity of the results. Evidently, there are big differences in knowledge level and social and professional behaviour between students and professionals. Accordingly, the simulations produced slightly different outcome for students and for professionals. So we must be careful with transferring findings from applications with students to assess the overall quality of the method. However, it makes sense to test a method in the scope of pre-tests before going to the field of question. Further iterations are planned in order to come to a reasonable number of cases conducted.

### **Conclusive remarks and recommendations for future directions of research**

This paper discusses the appropriateness of role-play simulation for doing qualitative empirical research on entrepreneurship within existing organizations. It reflects the conceptual status that the method still has. So far, we may conclude that, indeed, role-play simulation is an appropriate method to study and systematically describe interaction processes and conflicts in organizational settings in general; entrepreneurship within existing organizations represents such an interaction process that in most cases provokes conflicting situations, dilemmas and ambiguity. The method as a whole, including the role-play used in the scope of triangulation of evidence, may lead to reliable, valid and transferable results. First empirical findings from applications in the field support this but further improvement of the method must be reached through iterative empirical testing and grounding.

The quest for a research tool in simulation offers a fruitful perspective. We cannot claim the framework is already fully balanced. The criteria that we applied show a solid ground to develop the framework further. In order to come to a refinement of the instrument, especially more empirical testing and grounding is required. The data gathering and evaluation instruments have to be improved to and empirical evidence must be added in order to depart from the conceptual status of the work. We invite colleagues and other researchers involved in simulation to comment on our approach and the framework that was developed.

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