15 ELISABETTA FRICK, STEFANO TARDINI & LORENZO CANTONI

LEGO SERIOUS PLAY APPLICATIONS TO ENHANCE CREATIVITY IN PARTICIPATORY DESIGN

ABSTRACT The aim of this paper is to present two specific applications of the LEGO® SERIOUS PLAY® (LSP) methodology that have been designed at USI Università della Svizzera italiana (Lugano, Switzerland). LSP was developed in the mid-1990s as a process to enhance innovation within companies. The method originally consisted of three applications: *Real Time Identity for You*, *Real Time Strategy for the Team* and *Real Time Strategy for the Enterprise*. USI has further developed the methodology proposing two more applications: *User Requirements with LEGO* (URL), and *LEGO Learning Experience Design* (LLED). Based on this experience, USI is also taking part in S-Play, a project that aims at adapting the LSP method to the requirements of SMEs training.

Keywords: LEGO SERIOUS PLAY, creative thinking, serious games, co-design

Introduction

According to one of its founders, LEGO® SERIOUS PLAY® (LSP) is a methodology used to "accomplish such tasks as constructing a metaphorical 3D model of your business in a playful manner. Doing so will unleash creative imagination to develop an innovative and dynamic business strategy based on a clearer sense of a company's identity" (Rasmussen Consulting, 2012). In this paper, the methodology is first presented with regard to its history, official applications, basic principles, and theoretical foundations. Then, two specific applications of LSP, *User Requirements with LEGO* (URL), and *LEGO Learning Experience Design* (LLED) are introduced and described. These applications have been thought and designed by some researchers at the Faculty of Communication Sciences of Università della Svizzera italiana (USI, Lugano, Switzerland). Further on, the EU-funded project *S-Play - Lego Serious Play for SMEs* is presented. The main goals and achievements of S-Play are exposed. In the literature review section, a selection of publications about LSP is analyzed. Some use cases in different contexts are also mentioned. Finally, the findings of a survey for LSP facilitators in Europe are presented. The goal of the survey was to get a detailed overview on LSP usage in Europe.

About Lego Serious Play

This section mainly refers to the *White Paper on Lego® Serious Play® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013), which was published as a first deliv-

erable of the S-Play project. LSP is a facilitated workshop where participants respond to tasks by building symbolic and metaphorical models with LEGO bricks and present them to the other participants (Kristiansen, Hansen & Nielsen, 2009, p. 78). The LSP methodology was officially launched in 2002, but its history dates back to the mid-1990s. At that time, the LEGO Company was facing the big challenge of new toys entering the market, such as videogames. The owner and CEO of LEGO was dissatisfied with the results of the strategy-development sessions with his staff: their business was about imagination, but the results of these sessions were all but imaginative (Rasmussen, 2006; Kristiansen, Hansen & Nielsen, 2009). LEGO decided to fund research on this problem and created a separate subsidiary, the Executive Discovery. Thanks to the contribution of Johann Roos and Bart Victor, two professors at the International Institute for Management Development (IMD) in Lausanne (Switzerland), and – later – of Robert Rasmussen, who was director of research and development for the educational division of LEGO Company, the Executive Discovery brought the methodology to market in the early 2000s. Some years later, the Executive Discovery was merged to LEGO itself. In 2010, LEGO launched a community-based business model for LSP.

The standard applications of the Lego Serious Play method are three:

1. *Real Time Identity for You*, whose goal is to allow participants to understand themselves and their colleagues better;
2. *Real Time Strategy for the Team*, which aims at unlocking the full potential of a team quickly, effectively, and deeply;
3. *Real Time Strategy for the Enterprise*, a process to continuously develop strategies in an unpredictable world.

Until 2009, these were the only possible applications of LSP. However, after the shift to the community-based business model, the basic principles and philosophy of LSP became open source, so that the methodology can be now used in a more flexible way. This means that each facilitator is free either to use one of the three standard applications or to design workshops following his/her own needs.

In general, Lego Serious Play offers means for a group to: share ideas, assumptions and understandings; engage in a rich dialogue and discussion; work out meaningful solutions to problems. In addition, LSP naturally pushes participants to be creative and to find out-of-the-box solutions.

An LSP workshop is a structured process where participants are asked to use LEGO bricks to build models representing their thoughts, reflections and ideas. The workshop is always led by a facilitator, who has the task to guide participants through the activities. An LSP workshop usually involves 6 to 10 participants and can last a half-day as well as a couple of days, depending on its goals and structure. The Core Process of LSP consists of four essential steps:

1. *Posing the question:* The facilitator gives a specific challenge to all participants.
2. *Build metaphorical models:* Participants build their answer to the challenge using LEGO bricks. While building their models, participants assign a meaning to them and develop a story covering the meaning.
3. *Sharing:* Participants share their stories with the other participants and listen to the others' stories.
4. *Reflection:* The facilitator encourages participants to reflect on what they have heard and seen in the models.

Lego Serious Play is based on a set of basic assumptions, which are:

- *Everyone has a voice.* Everyone within an organization or a group can contribute to the discussion, and help generate solutions.
- *Think with your hands.* Doing together with reflecting instead of just thinking, can enhance understanding and creativity.
- *The answer is in the system.* No one in the group has the answer to the challenge (neither the facilitator nor the group's leader).
- *There is no ONE right answer.* Different views and different perceptions are a good thing, and must be pointed out during the workshop.

The LSP method is underpinned by some key theories and concepts, which are shortly mentioned hereafter:

- The concept of play, and in particular, of *adult play in organizations*. In the work context, play is "an intentional gathering of participants who want to use their imagination, agree that they are not directly producing a product or service, and agree to follow a special set of rules" (Rasmussen Consulting, 2012).
- *Storytelling* and the use of *metaphors*, which are both key components of play. Storytelling is "a fully active and concrete endeavor. As active participants, we step in and out of the process to elaborate, refine, or evaluate the characters, the setting, or the plot, as we go along" (Rasmussen Consulting, 2012).
- *Constructivism* (Piaget, 1936) and its extended version developed by Papert (1986), *constructionism*. These theories state that learning is more effective when people construct something tangible in the real world.
- The *flow model* of Mihaly Csíkszentmihályi (1975) shows how the mental state of a person engaged in a specific activity can change depending on the challenge level and skill level. During a LSP workshop participants often reach the optimal level of engagement when they are in a 'hands on' process. This is what Csikszentmihalyi calls 'flow'.
- The *interconnection between the brain and the hands*. Using the hands to build 3D-models of pieces of knowledge, ideas and feelings is "a primordial way that the brain uses to construct its own knowledge of the world" (Rasmussen Consulting, 2012).

Further developments at USI

Since 2006, some researchers at USI Università della Svizzera italiana (Lugano, Switzerland) have started to develop new applications of the Lego Serious Play methodology.

URL—User Requirements with LEGO

URL—User Requirements with *LEGO* is an application of LSP, which supports the definition of strategies in online communication. The design of this specific application came from a real need encountered by the researchers of NewMinE Lab (www.newmine.org) and webatelier.net (www.webatelier.net), two laboratories of the Faculty of Communication Sciences at USI.

When it comes to create an application for online communication (i.e., build a new company website, re-design an existing one, develop a mobile app, etc.) stakeholders have to work collaboratively in the early stage to define the application's requirements (requirements elicitation). In this stage, stakeholders should start thinking on aspects such

as the basic design of the application, its users, contents and goals. Ideally, at the end of this stage, stakeholders should share a common understanding of a web application's requirements. However, often this is not the case: usually, involved stakeholders are professionals coming from several company units (executives, management, communication, corporate identity, marketing, sales, IT, etc.), thus making this common understanding an arduous task. Sometimes, these interactions end up generating confusion, due to misunderstandings, rather than a clear and shared understanding.

URL has been designed to overcome this kind of difficulties. The method is based on the Online Communication Model (OCM), which describes the communicative elements of an online communication application (Cantoni & Tardini, 2006, pp. 98-100). URL helps in finding requirements that usually do not emerge using other methodologies. For this reason, URL has to be intended as an additional methodology, used besides formal and structured strategies (such as interviews, focus groups, etc.). In an URL workshop, participants have to build LEGO models of:

- their role (how they think they can contribute to the project);
- a typical user of the web application; a content of the web application;
- a functionality of the web application.

Then, they create connections among the models, create a common landscape with all the models, and reflect on it. The generated common landscape can then be used as a basis to start the design of the online communication application. In May 2011, a guide was published, which presents the methodology and how to use it (Cantoni et al., 2011).

LLED—LEGO Learning Experience Design

Another specific application of LSP is currently under development at eLab, the eLearning service of USI (www.elearninglab.org): *LLED – LEGO Learning Experience Design.* Goal of a LLED workshop is to support instructional designers in the planning of a learning experience (a course, a program, a whole curriculum, etc.). The basic assumption of LLED is that a learning experience (a lecture, a course, a program, etc.) can be designed in a creatively and collaboratively way, and involving all the stakeholders of the project (co-design/participatory design): teachers, managers, former or future students/participants, tutors, eLearning specialists, and so on. In a LLED workshop, participants are asked to build models of:

- a relevant characteristic of the prospective student;
- a learning objective or a content of the learning experience (piece of knowledge, ability, skills, attitude);
- a teaching strategy or any other organizational aspect.

Figure 1: "Knowledge transfer", a model built during a LLED session

The design of this application is currently underway, also thanks to the S-Play project. A LLED pilot workshop has been run in April 2014. Aim of the workshop is to redesign an existing professional training program for hoteliers and tourist operators.

The S-Play project

S-Play - Lego Serious Play for SMEs (www.s-play.e), is a 2-years project funded by the European Union under the Lifelong Learning Program (LLP) – Leonardo da Vinci – Transfer of Innovation.

S-Play involves six organizations from five EU countries representing Research & Development, Small and Medium Enterprises (SMEs), Education and the IT sector: University of Information Technology & Management of Rzeszow (Poland), Università della Svizzera italiana (USI, Lugano, Switzerland), Foundation for Research & Technology-Hellas (FORTH) in Greece, IHK-Projektgesellschaft mbH in Ostbrandenburg (Germany), University of Durham (United Kingdom), and Wirtualis Sp. z o. o. (Poland).

The main goal of S-Play is to adapt the LSP applications developed at USI (URL and LLED) to the requirements of small and medium enterprises (SMEs), and to design new LSP applications for SMEs. The project has the following objectives:

- To adapt the LSP methods and LLED guidelines to the needs of SMEs.
- To raise awareness and popularize LSP methods among Vocational Education and Training (VET) organizations and trainers, business support organizations, associations of enterprises, etc.
- To raise the awareness of SMEs about the need to increase the competencies of owners and staff, which could be done through innovative and attractive approaches such as LSP.

The first achievement of the S-Play project is the *state-of-the-art analysis* about LSP in Europe, which includes a review of the scientific literature about LSP, a survey among LSP European facilitators and the publication of the White Paper (see below). The second main achievement is the design of four LSP workshops specific for SMEs. Each workshop has been thought for specific goals, which are:

1. *Identifying training needs.* Goal of this workshop is to help in identifying training needs of the employees of a SME.
2. *Designing a training program.* Goal of this workshop is to help understand how to develop a training program, which meets the training needs.
3. *Reaching New Markets.* Goal of this workshop is to help an SME to focus its strategy on reaching new markets.
4. *Creating scope for innovation.* Goal of this workshop is to help an SME to focus its strategy on creating environment to support innovation and increase innovation capability.

These four workshops are now being tested in all project partner' countries (Germany, Greece, Poland, Switzerland and United Kingdom). Workshops are running in national languages with a small group of participants of the same SME or with a cluster of different SMEs in the same business.

The final product of S-Play will be an online tool for VET instructional designers or any other interested parties throughout Europe who would like to facilitate LSP workshops for

small and medium enterprises. The online tool is intended to be a full package for facilitators containing:

- An introduction to the LSP methodology and its theoretical basis.
- A full description of the S-Play project and its goals.
- A presentation of the four LSP workshops for SMEs, their goals and a detailed roadmap for each of them. Some guidelines for the "skills building" phase.
- A practical checklist for the workshop preparation and for the preparation of the final report. A downloadable facilitators' handbook.

Literature review

In the *White Paper on LEGO® SERIOUS PLAY® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013), a review of the scientific literature about LSP has been presented. Hereafter, a summarized version of this literature review is presented. People who are interested in the complete review and list of publications are invited to consult the *White Paper* and its references section.

The official document about the LSP method is the "Open Source Introduction to LEGO SERIOUS PLAY", which is available on the Lego Serious Play websit under a Creative Commons license. This document, published in 2010, focuses on the basic principles and philosophy of LSP: the core process, the etiquette, the skills buildings, the metaphors, the role of the facilitator, etc. The document aims at presenting the methodology giving a general overview, but it does not provide a detailed roadmap for specific LSP applications. However, an example of how a workshop can be designed and structured is offered (pp. 36 -37).

All the theories that are at the basis of LSP are presented in details in different publications of the Imagination Lab (www.imagilab.or). The Imagination Lab was an independent and non-profit research foundation based in Lausanne. It was founded by Johan Roos (one of the creators of LSP) in 2000 and was active until 2006. This Lab published a series of working paper and of short publications for practitioner reporting the finding of the Lasb's research about serious play in organizations.

Other publications presenting the LSP methodology, its basic principles, its core process, the benefits, etc. have been published by Rasmussen (2006), Kristiansen et al. (2009), Schulz & Geithner (2011). Some publications present one or more use cases and concrete applications of LSP. LSP has been mainly used with several telecommunications companies (Bürgi et al., 2001; Jacobs & Statler, 2004; Oliver & Jacobs, 2004; Bürgi & Roos, 2003) and, specifically its application for the organizational identity, in different multinational companies (packaging, chemistry and software fields) (Oliver & Roos 2003, 2004). LSP has also been used in a Swiss bank (Jacobs & Heracleous, 2004), at the LEGO company (Roos et al., 2004) and within the NHS – National Health Service in United Kingdom (Swann, 2011).

Finally, some use cases in the academic or research field are also available (Frick, Tardini & Cantoni, 2013, p.14). In these fields, LSP has been used to:

- articulate the learning autobiographies, current situations, orientations to learning, and aspirations of students;
- better understand the needs, interests and aptitudes of students as a starting point for designing personalized learning;

- awaken students' creative energies and spur innovation;
- increase confidence of students in the ability to be creative;
- improve communication/collaboration and providing a new approach focused on idea generation and innovation;
- open a specific lecture (as an "ice-breaker" exercise in the classroom);
- build the students' view on their working place;
- better introduce new students or overseas students;
- explore research topics and methods.

LSP in Europe

In May 2013, in the context of the S-Play project, a survey among LSP facilitators in Europe was run, in order to investigate how this methodology is used by them. Its results have been presented in details in the *White Paper on Lego® Serious Play® – A state of the art of its applications in Europe* (Frick, Tardini & Cantoni, 2013). The aim of the survey was to understand who are the European LSP practitioners, how and what they are using LSP for, and which LSP applications are most used. The survey was run through an online questionnaire, which received 84 full responses. Most of the respondents were from UK, Denmark, Germany and the Netherlands. The large majority (92.9%) of them own an official LSP trainer certificate, delivered by an LSP Master Trainer.

The respondents were both independent workers (61.9%) and employed by a company (47.6%). Facilitators who declared to be employed in a company were asked to provide the company name: through this answer a list of 52 different European companies providing LSP services has been drawn up. When it comes to the use of LSP, 88.1% of respondents indicated that they use or have used the application Real Time Strategy, 77.4% Real Time Identity, 48.8% other applications (see Figure 2). "The high percentage of respondents who have indicated the alternative applications prove that the method in these last years has become more flexible and that many facilitators create their own customized LSP workshops" (Frick, Tardini & Cantoni, 2013, p.17).

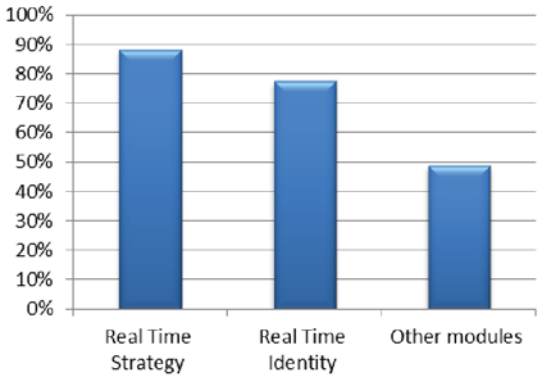

Figure 2: LSP applications used

Among the "other modules" facilitators mentioned several personalized applications, such as workshops for team building and team development, for teaching /education, for research and projects, for coaching and for business models.

Respondents were also asked to indicate which business sectors their clients come from. 60.7% of them have applied LSP in the educational field, 40.5% in the manufacturing field and 36.9% in the Public Administration. Among the other fields respondents mentioned: pharmaceuticals, universities, media, information & technology, design, entertainment, IT aviation, arts, non-profit organizations, life sciences, food industry, finance, banks. As for the size of client companies of European LSP facilitators, 65.5% of respondents work or have worked with large companies (more than 250 employees), 54.8% with medium ones (up to 250 employees), 51.2% with small companies (up to 50 employees), and 40.5% with micro-entities with 10 employees or less.

Conclusions and further developments

Lego Serious Play is a powerful methodology, which helps in fostering creativity and innovation within companies. The use of LSP is spreading more and more. The survey run among European facilitators showed that LSP community is wide and active. However, LSP is not popular only in Europe: in recent years, the methodology is spreading very rapidly also in Latin America. A new survey will be run in the next months with Latin American LSP facilitators. Although LSP was originally designed for big companies, it has been found that some facilitators are already using it with SMEs. However, trying to establish some applications specifically for SMEs could increase its diffusion among them. The results of the pilot workshops that are being run in the S-Play project will help to establish such applications for SMEs.

Authors' Brief Bios

Elisabetta Frick is a scientific collaborator at eLab, the eLearning laboratory of Università della Svizzera italiana (USI, Lugano, Switzerland). Elisabetta holds a Bachelor degree in Educational Sciences and Philosophy and a Master in Comparative and intercultural Education. In addition to the support and training activity for teachers and teaching assistants, she has been involved in several projects related to ICT in education. She contributed in instructional design activities for developing eLearning platforms and blended learning courses. Since 2011, she is interested in LEGO SERIOUS PLAY methodology. She collaborated in the writing of the URL (User Requirements with Lego) Manual and she obtained the official LSP certification in 2013.

Stefano Tardini is the executive director of eLab, the eLearning Lab of Università della Svizzera italiana (USI, Lugano, Switzerland). His research interests lie in the overlap between (ICT mediated) communication, eLearning, (online) communities, cultural semiotics and argumentation theory. In 2002, he discussed his Ph.D. thesis about the linguistic and semiotic aspects of virtual communities. From then on he developed his research in three overlapping directions: in the field of CMC (focusing mainly on a socio-historical approach to CMC), of eLearning and of online communities and social networks (elaborating a semiotic approach to online communities). He is a certified LEGO SERIOUS PLAY facilitator since 2013.

Lorenzo Cantoni is full professor at the Università della Svizzera italiana (USI, Lugano, Switzerland), Faculty of Communication Sciences. He is Dean of the Faculty and director of the Institute for Communication Technologies. He is scientific director of the laboratories webatelier.net, NewMinE Lab: New Media in Education Lab, and eLab: eLearning Lab. His research interests are where communication, education and new media overlap, ranging from computer mediated communication to usability, from eLearning to eTourism, and from ICT4D to eGovernment. Lorenzo Cantoni is research professor at the Center for International Health Services Research & Policy, in the Washington State University. Prof. Cantoni is also director of the *UNESCO Chair in ICT to develop and promote sustainable tourism in the World Heritage Sites* at USI, and president of IFITT, International Federation for Information Technologies in Travel and Tourism.

References

BÜRGI, P., ROOS, J., & JACOBS, C. (2001). *From metaphor to practice. In the crafting of strategy*. Working paper 9. Imagination Lab Foundation.

BÜRGI, P., & ROOS, J. (2003). Images of strategy. *European Management Journal*, 21(1), 69-78.

CANTONI, L. & TARDINI, S. (2006). Internet. London (UK) – New York (NY): Routledge.

CANTONI, L., MARCHIORI, E., FARÉ, M., BOTTURI, L., BOLCHINI, D. (2009a). A systematic methodology to use Lego bricks in web communication design. In: MEHLENBACHER, B., PROTOPSALTIS, A., WILLIAMS, A. & SLATTERY S. (eds.). *Proceedings of the 27th ACM international Conference on Design of Communication held in Bloomington, Indiana, USA, October 5-7, 2009.* (pp. 187-192). New York: SIGDOC.

CANTONI, L., BOTTURI, L., FARÉ, M., BOLCHINI, D. (2009b). Playful Holistic Support to HCI Requirements Using LEGO Bricks. In: KUROSU, M. (ed.). *Human Centered Design, HCI (10)* (pp. 844-853). Berlin Heidelberg: Springer-Verlag.

CANTONI, L., FARÉ, M. & FRICK, E. (2011). *URL: User Requirements with Lego*. [online] Available from: http://www.webatelier.net/url-user-requirements-with-leg

FRICK. E, TARDINI, S., & CANTONI, L. (2013). *White Paper on Lego® Serious Play® – A state of the art of its applications in Europe*. [online] Available from: www.s-play.eu/en/news/70-s-play-white-paper-publishe

JACOBS, C., & STATLER, M. (2004). *Towards a Technology of Foolishness. Developing scenarios through serious play*. Working Paper 54. Zug (Switzerland): Imagination Lab Foundation.