

Role-playing as a knowledge management tool

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Abstract – Role-playing, besides its use as a gaming media, can also be used as a powerful simulation tool. Due to its versatile nature and all the possibilities that it can offer us in building imaginary worlds and situations, we can also apply that technique to simulate real life and realistic behaviour. In project and knowledge management it is possible to use Role playing for optimization and building specific knowledge. Applying the simulation in advance, can greatly help us to recognize, prepare and solve most problems that may occur, reducing overall cost and time of any project.

I. INTRODUCTION

Despite its humble beginnings as a gaming system, Role-playing (RP in further text), has also developed over the years as a simulation system worthy of our attention. In its very core, RP is a system that combines setting, a variety of entities that coexists in it and all interactions among those entities and its surroundings. A setting is a specific environment in which we can create our simulation, making a copy of a real world we would like to simulate, with all its legalities and factors that influence it. Entities, on the other hand, can be all the participants active in the simulation process, events that we wish to study, along with all the tasks and problems presenting goals of our RP simulation. In establishing a simulation by defining its setting, entities and goals, we are able to conduct optimisation processes of real life events, building specific knowledge usable in future projects.

This kind of RP simulation can be used as an optimisation tool in project management. Before actually conducting a project, RP simulation can help us anticipate various problems and situations, explore different phases of our project and optimise them to accomplish better overall results. In every project there are key factors defining successfulness, like the project end time, cost and efficiency. Every step of the way, conducting our simulation, we can explore different solutions to every problem and situation we could come across. Keeping in

mind our end goal, exploring different options and solutions and documenting the course of the simulation, we are able to anticipate, and eliminate, a variety of problems that could occur later when a real project starts to develop. With combined knowledge and experience of participants involved in the simulation, and later the real project itself, we can accomplish a high level of optimisation resulting in immense resource benefit. We can even choose the optimisation path making some resources primary and other resources secondary. For example, making time our primary resource, we can reduce overall duration of the project by finishing it prior to the originally planned time. In this example we are making finance one of our secondary resources, not going over the budget but coming to its limits.

II. ROLE-PLAYING SIMULATION IN PROJECT MANAGEMENT

A. *Introduction to RP simulation*

Project management in its surveillance, optimisation and conduct, treats every project as a system. Each and every project is carefully dissected in order to organise, analyse and optimise all of the components making the system. For every new system that we build, first we need to understand its overall purpose and the way it interacts with its surrounding environment, as every system is part of some already existing larger one. With that in mind, dynamic equilibrium of this new system and control of its parts are essential components on which project the management is focused. In essence we first need to establish the system a structural code of elements and the rules by which the elements correspond to one another so that we may later, when simulating operate the structure and determine specific process codes optimised to our needs. [5]

This step is crucial because once we establish the rules – code of the systems structure the objectives we have in the project and knowledge management in general are process operations of that structural code. The

very structure is the one which will enable us to analyse specific parts of the system, ask different questions, select, make different elements, or attributes pertinent in order to restructure and therefore optimise the system. **The use of RP in simulation in this level is therefore an easy to manage transparent way of producing code (rules) for system optimisation.**

Using RP simulation as an additional tool in project management, we are able to further understand, optimise and achieve that dynamic equilibrium needed in order to successfully build a new system. Applying the simulation at the earliest stage of project development, right after setting up the main idea and general system guidelines, is the best way to use all of its potential. Of course, due to its flexibility, we can run the simulation again in every phase of the project and apply different objectives and gain information. If we imagine project management as a surveillance tool when building a new system, we can think of RP simulation as a preparation tool for all our actions during building and implementation phase. Project manager as head figure in project, should choose various relevant field experts which will contribute and be part of simulation process. It is noteworthy that in the case of RP simulation it is desirable to have multiple experts from the same field contribute from various roles. With their combined knowledge and experience put into the simulation, the simulation process creates a knowledge base for solving particular problems. During simulation, participants are looking for different solutions to known problems, and in the end choosing answers that best suit any given occasion. It is necessary to point out that the very RP simulation model preparation should be made in with the problem solving process in mind. The human aspect of the role from which the participants play is crucial and it's where the brilliance of RP simulation lays. Therefore a problem solving approach frequently used in group communications is particularly applicable. [6] There we use a slightly modified classic eight step process for problem solving. The process is modified in the sense that each participant posing the questions is a specific role with a specific perspective. That role is determined in the process of system creation and typically firstly played by a field expert. We say firstly because it is encouraged and welcome that the same role is afterwards played by different experts and non-experts alike as they can provide valuable insight in the whole process of approaching the system from the perspective of playing a specific role. The process is as follows:

1. **Defining the problems** – we ask the problems as questions from the perspective of our role in relation to the system structure.
2. **Identifying the meaning of the problem for the system structure (from our role)** – what does the problem impact, what can we foresee changing as a result of the problem solving process in general etc.
3. **Further problem analysis (from the perspective of our role)** – How long does the problem last? What caused the problem? Does it have any consequences? Is the problem recognised within the system? Does it impact

other parts of the system in a known way that is currently managed?

4. **Identifying the criteria for solution evaluation from the perspective of our specific role:** What would make a solution practical? What are the specific effects a proposed solution could/should have (cost efficiency, time etc.)? If there are multiple solutions what would my criteria be for ranking them?

5. **Identifying possible solutions** – this is the phase where the participants should brainstorm. Thus when encountering problems, participants should try to find as many solutions to each specific problem they can, observing them from different angles and exploring additional options. Besides obvious solutions that come from knowledge and experience, simulation itself forces participants to think and look for other unorthodox answers. When brainstorming is concerned the wilder the ideas the better. Each participant should answer these questions from their specific standpoint: what is a solution to our particular problem? How does it impact the system (or my specific part of the system)? How do I view it from my role? Does it create new problems or difficulties for me?

6. **Solution evaluation** – each participant should evaluate all solutions according to step 4.

7. **Selecting the best solutions** – ones where most participants agree, most relevant criteria are met and the system as a whole reaches the particular goal in the most efficient manner.

8. **Simulation** – testing the solutions. From this point on we can return to any of the prior steps.

During simulation, the main point is to explore any relevant solutions recommended by any specific participant/role or defined by an **actant** [7] and research different approaches to encountered problems. Given results are created with all the roles and actants in mind producing different directions in problem solving, ones that are normally difficult to brainstorm. In that way, we can say that **RP simulation itself is in fact an “idea generator”**. By documenting problems and given solutions, the RP simulation model provides a base of knowledge, and experience on problem solving, regarding any given situation (project, system), before they occur. Apart from common brainstorming, RP simulation in the end gives us a transparent, precise and well documented workflow on specific problem solving, knowledge base applicable in real situations, time and environment, produced by a group of chosen field experts.

A well-documented simulation workflow gives us a high level of preparedness to almost any situation that could occur during project implementation. Of course, there could always emerge some unpredictable situations, but as soon as those situations appear, we can input them into simulation and develop new steps for solving them. It also helps us that we already have a multitude of other solutions and experience which may relate to this unpredictable one, so the simulation had

already given us general guidelines on how to resolve it, or at least we know the direction to solve this new problem.

B. Simple example of RP simulation

Every project consists of three main components: events or milestones, activities and time. Events are different phases of project that we are trying to achieve through our activities in some estimated time. In order for a project to be successful, each of these components should be done on a predetermined schedule with optimal path (activity) between events. Time needed to finish the project is also divided in four categories. Most likely time, expected time, optimistic and pessimistic time. Most likely time is the best estimate of the time required to accomplish a task, assuming everything proceeds as normal. In reality, we will almost always have some kind of problems and delays to cope with, in the end achieving expected or pessimistic time. Therefore, RP simulation offers us a tool to achieve this most likely time, which is the minimum possible time to finish a project, or maybe even go for optimistic time. By optimising every event and activity in project through simulation, we are able to balance all of our recourses, specially finance, in order to achieve time that we would like. With simulation, we are absolutely trying to avoid pessimistic time and immensely reduce resource consumption.

For example, when building a fifty story skyscraper, one of our events could be building first ten storeys in one month (expected time), with all the activities (physical work, material delivery etc.), in optimal condition to do so. With all of that in mind, a selected group of experts with roles defined and derived from their specific area of expertise should when conducting RP simulation, with their knowledge and experience put into the simulation, be able to optimise the process in order to achieve optimistic time with maximum savings in resource consumption.

On Figure 1 we can see an example of PERT network chart for a seven-month project with five milestones (10 through 50) and six activities (A through F).¹

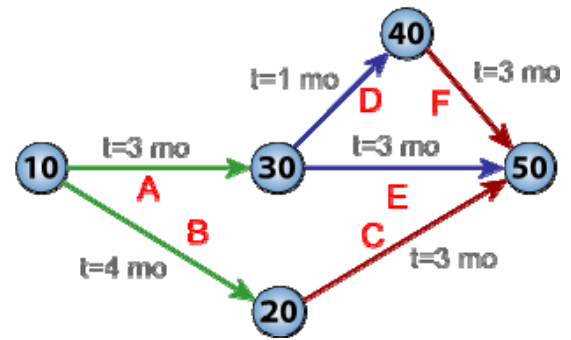


Figure 1: PERT network chart for a seven-month project with five milestones (10 through 50) and six activities (A through F).

In the example above, we know our milestones which are something that generally does not change and activities that up until now were something that we knew had to be done. Using RP simulation, we can take one fragment of the chart, expound one activity and question its parts in order to optimise it. During simulation we are able to in example discover reasons to introduce a new milestone in-between, reorganize the order of some milestones, adjust specific times etc.. By doing so, we guide ourselves through simulation, in order to achieve a better finish time, reduce costs or other resources. In the end, we are trying to find a new or different way of accomplishing our work goals, creating and expanding our own knowledge on the substance. That way, by documenting our newly found knowledge, we are in fact creating a learning system which can be not only applied during project implementation, but also as a teaching method for others.

¹ Source: Wikipedia web page: http://en.wikipedia.org/wiki/Project_management, accessed 30. January 2015.

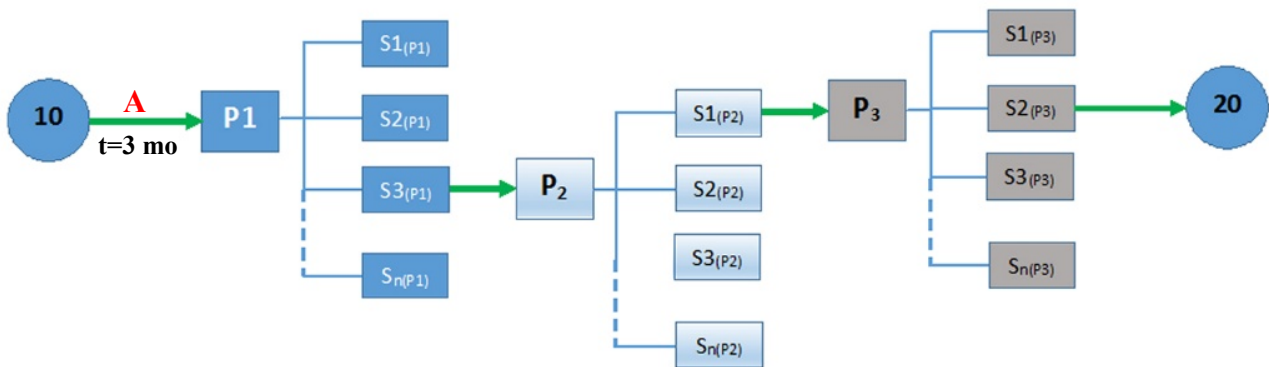


Figure 2: An example of one activity divided by three separate problems with a number of solutions for each

In our second figure, we can see one activity divided by three problems. Problems can also be questions that experts in specific roles ask in order to optimise and improve a course of chosen activity. If the chosen activity is a simpler one, maybe only one question will appear, but with complex activity there could be many. A project manager with his team of experts involved in simulation, using their knowledge and experience, should try to come up with as many questions needed in order to improve given activity (we believe the best approach is using our proposed 8 steps method). Likewise, more answers to each question or problem, gives them more options and paths to direct optimisation process the way they imagined, in the given process, saving resources of their choosing (money, time, material etc.). Picture shows us that on first problem (P1), solution (S3_(P1)) was chosen. It means that in that particular time in our simulation, one answer seemed most logical and valid in order to be chosen, based on judgement of experts running the simulation. That is of course a specific process code “recommended” by the system and chosen in this particular case but whether or not it is the best solution can only be discovered once the course of the simulation is complete. Let’s say that time is the resource we wish to optimise, so in that case answer S3_(P1), gives us a course of action with which we will reduce activity time. There are probably other answers that also save time, but may produce other disadvantages, greatly higher costs or similar. The chosen answer leads us to a new problem or question and we repeat the optimisation process.

If we would like to reduce time of our activity, from four months to three months, we should ask relevant questions as part of the 8 step process, and imagine problems that we need to solve from each role in order to achieve our time reduction. In our earlier mentioned example, in order to build the first ten storeys in three rather than in four months, maybe we should apply some new building technique. By introducing that new technique, perhaps we will spend more money on

material or mechanisation but reduce manpower needed for construction and achieve our time saving plan. Right there, in our simulation, in that moment we can research all of our options and influence on all later milestones and activities, optimising our overall project plan. Some solutions will open new problems, some will bypass existing ones, but our goal in simulation is to try to imagine all the possibilities we can in order to optimise the project the way we want. That way we also accumulate knowledge and acquire a well developed execution plan for project deployment. In the end, balancing resources but emphasising the one crucial for our overall success, is the right way to approach the process of simulation.

For every project that is being built in a real word environment, we can consider it to be a part of highly dynamic and ever-changing bigger system. After conducting our RP simulation and having it all optimised the way we wanted, taking into consideration all the possibilities that could happen during real life project implementation, since being the part of this bigger dynamic environment, some absolutely unpredictable things could always happen. In that case, we can always go back to our simulation and make necessary changes. This unpredictable problem, in most cases should not represent too big an obstacle, since we already have the optimised project and our resources rather reduced. By introducing that new problem into simulation, the course of affected activity might change and influence all other actions after, but also that might not be the case. It really depends on the scale of that new moment introduced in our project and simulation likewise. Unpredictable problems could cost us a great deal of time and money when encountering them. Best way to reduce their appearance and minimise the damage they could cause, is to have experienced experts running the simulation, but as we stated earlier also include people of different knowledge and background, to have more perspectives on the matter and gain more insight. An architect will know how to solve construction problems, but an economist will promptly adjust the course of an activity in case of a

market fluctuation, while a work safety expert will contribute and likely end up changing the activities attributes (time, finance etc.) as a result.

III. ROLE-PLAYING SIMULATION AS A KNOWLEDGE MANAGEMENT TOOL

Similarly as shown in the example of the project management, RP simulation can be also used as a knowledge management tool. If we imagine a situation or a project that has never been done before, including a field expert research, with RP simulation we are able to explore and develop a knowledge base on the subject. It is very problematic to create a knowledge base and thus develop training or educational means for something that has never been done before. RP simulation is a tool that gives us the needed environment in order to explore our ideas and expand our imagination. Working closely with other experts, it provides us an opportunity to share our ideas and develop them further than we would be able alone. RP simulation gives us the opportunity to expand our ideas even to borderline fiction with various experts as interdisciplinary as possible. In order to create a new knowledge base or learning tool, we usually reach for an already existing situation, review it, optimise and document it. That way others could be trained for that situation and the gathered knowledge can be expanded. The problem occurs when we are faced with a project for which, in order to conduct, necessary knowledge simply does not exist. In that case, RP simulation can provide us means to explore and test our ideas in simulated close to real environment. By using existing knowledge provided by experts, the ones that are related in the field of our research, we are able to build our simulation and put it to test. By doing so, we are creating absolutely new knowledge that could be used later in real-life situations. It is an ideal tool for techno-centric knowledge management perspective, since in its core Role-playing in general is focused at interpersonal interaction in order to share information and ideas and together create new knowledge. Knowledge management is already using storytelling as an instrument for accumulation and sharing information. Since RP simulation is actually an evolved and advanced form of storytelling, it would be wise to further explore it and its use as a valuable tool in knowledge management.

RP simulation is truly unique as it not only educates with the results of its simulation it educates all the participants in the process of role playing. Different experts and non-experts face varying situations from different role perspectives expanding the ways they view and deal with problems. RP is not only interactive it is immediate in the way it affects the participants expanding the way they approach and analyse systems, situations, and problems. When using RP simulation the whole process is a rewarding educating experience which helps participants to develop in various ways within their

formal education frame as well as out of it. Not only that but it participants learn to understand different role types tied with different systems and the intricate ways of structural - process relations which stem from interpersonal actor - actor - actant - environment relations. **The usage of RP therefore thrives in longevity and creates a constantly evolving and growing knowledge base which ties knowledge and experience in dealing with knowledge in special roles and situations in ways no other method can.**

IV. CONCLUSION

RP as optimisation tool presents a specific environment in which we can create our simulation, making a copy of a real world we would like to simulate, with all its legalities and factors that influence it. Every step of the way, conducting our simulation, we can explore different solutions to every problem and situations we could come across. The use of RP in simulation is therefore an easy to manage transparent way of producing code (rules) for system optimisation. The human aspect of the role from which the participants play is crucial and it's where the brilliance of RP simulation lays. Therefore a problem solving approach frequently used in group communications is particularly applicable, and we use a slightly modified classic eight step process for problem solving. The process is modified in the sense that each participant posing the questions is a specific role with a specific perspective. RP simulation gives us a transparent, precise and well documented workflow on specific problem solving furthermore it produces a knowledge base applicable in real situations, time and environment, produced by a group of chosen field experts. As we show in the example of the project management, RP simulation can also be used as a knowledge management tool. If we imagine a situation or a project that has never been done before, including a field expert research, with RP simulation we are able to explore and develop a knowledge base on the subject, because a true RP session enables the equivalence of discourse and determines a community of knowledge. RP is a unique tool that establishes the ontology of knowledge for individual projects, defining the context in which we need to think about the problems we face. [8] Therefore RP ties knowledge and experience and can be used as a mighty tool for project management and knowledge production and application of RP to the problems of the project and knowledge management. Therefore RP remains a challenge to maximize the use of human creativity in creating new values, goods and practices.

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