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Abstract

Today, technology is preferred instead of traditional methods in many areas of work life. In this paper, we will mention about literature review of our senior project that is called Mega Reji, and related computer science fields with Mega Reji, related subfields with Mega Reji, libraries and evaluation method which we will use. Mega Reji is a gamified application that will be used by a film production company. Mega Reji gives users chance of communication with each other, planning their schedules, arranging preproduction process, production process and post production process. Our aim with this project is, making production team's work easier and be able them managing their time effectively. Additionally, we will mention in this literature review some research about gamified systems and its examples, Monte Carlo Simulation Techniques for evaluation and existing work which are related with our project.

Introduction

In these days lots of companies are using technological tools in order to do their work easily and finish it in short time. Gamification which means the use of game elements in non-gaming practices becomes a latest subject in software development processes [1]. In addition to using technological tools, some companies use gamification in their applications in order to encourage the employees to work with willingness as Zichermann and Cunningham said gamification is helpful and powerful in terms of applicability to many problems solved by individuals through effecting their motivation [2], because human factors are the most significant parameters for the success of a team[3]. Nowadays, in film production area, teams are starting to work with production applications. There are several applications for stage-management by companies including but not limited to Virtual Callboard [4], Yamdu [5], Edictive [6], Setkick [7], Studio Binder [8]. These applications have similar features, but not enough for all work in stage-management. We aim with our senior project Mega Reji, combine

all features of these applications at one application in order to make all team members' work easier and lead to work them cooperatively. On the other hand, Mega Reji has a gamified system which incentives for team members to use Mega Reji application while doing their work. Besides, in this paper, we will convey our research about Monte Carlo Simulation Techniques for evaluation and related work such as Virtual Callboard, Yamdu, Edictive, Setkick and Studio Binder as we mentioned before.

1. Gamification

1.1. Reward Systems

Developing technology and workplace competition circumstances require more effort in terms of managers and employees. However, this situation leads intense work pressure on employees because of difficulty of competing with their rivals. For this reason, managers sometimes need to follow supportive paths such as reward systems in order to encourage the employees to work effectively. According to Wilson, one of the unique features of reward system is its capability of continue employees to focus on work, and encourage them to find new paths in order to reach their goals. In this way, employees are able to cope with negative situations while they are working on a project [9].

1.2. Gamified Systems

Gamification is becoming a popular and significant technological progress in work life. Gamification is the using game design items in non-game environment [10]. Gamification helps to solve problem with game component entertainingly. The presence of entertainment in the gamification makes it possible for boring events to reach more mass. This technology does not mean that users will be constantly being play games. There are more than 7 billion mobile phones in the world [11]. People interact with their

smartphones frequently throughout the day and play games. Research shows that people enjoying themselves while spending time in the game. These behaviors of people who play games are very important for the formation of the concept of gamification. Gamification can have multiple uses in different projects. It is difficult to put gamification in a certain mold and formulate it. For each project has a special gamification can be provided for that project, and in this way the project users gain some advantageous behavior for their work life. It is ensured that the users are better adhered to the project due to the presence of entertainment elements and that these users are more loyal to the projects. If there is entertainment in any job or duty, the time and the success that people will want to spend will increase. Even the most tedious projects can be brought to an entertaining state with gamification. The interest of people in games, and the ease with which various media can be presented to the user gamification. Games are used not only for leisure but also by industries like defence, education, scientific exploration, health care, emergency management, cityplanning, engineering, religion, and politics. They are also called serious games and their main purpose is to train, investigate, or advertise [12]. For instance, educator can use it to make students learn more easily and quickly. Companies can use gamification to raise morale of their employees and establish more sustainable relationships or to increase their sales. Gamification has certain well-known properties. all or none of which may be used or a different method. The major properties are virtual money, award, score, rank and progress rank. These are can use to increase competition and loyalty of the project.

1.3. Gamified Systems Examples

The research shows that there are various gamified mobile and web applications are used by companies or individuals. Some examples of these gamified applications

are Foursquare [13], Nike + [14], BanaBak [15], ScrumKnowsy [16] and Visual Studio Achievements [17].

1.3.1 Foursquare

Foursquare is a well-known and well-executed application. With this application, we get some points and rewards by checking in from our smart devices. Depending on how often you visit a place, it is possible to have different status names. You can make gifts or discounts depending on how much you check in restaurants and cafés. Thanks to this application, it is possible to see places your friends are looking and liking. The playing elements increase the number of users to check in and visit more places.

1.3.2 Nike +

Nike has developed a special system for some of its products. This system has been expanded with the elements of play. With this system, people liked and liked to play sports. Users can be included in this ecosystem by purchasing Nike + products and installing the Nike + app on smartphones or smartphonses. Sensors on Nike + products communicate with intelligent devices to increase the number of steps, distance, speed, By integrating data with Nike + application, users are encouraging spores. The fact that the Nike + application, which features gaming, helps users to target by giving them prizes, increasing the brand's commitment to users. The used play items create a fun mutualist situation between Nike and the users. Nike sells more products, and users have fun while buying and using the product.

1.3.3 Bana Bak

The Bana Bak application is an application put on the market by the world famous P&G company. This application is only an example of plaything involving university students. In this application, users answer the questions, check in at the

places where P&G products are found, and earn coins by proving that they buy P&G products. It is possible to spend these coins with certain options. Users can plant a sapling with these coins, photographic machine, bag, P&G products. Because it is the leader table, the users are allowed to enter the race with their surroundings. P&G offers the opportunity to use this product to increase awareness and add juvenile traits to its products.

1.3.4 ScrumKnowsy

The ScrumKnowsy application is an application that uses the gamified system to improve the Scrum information of people or teams. This application contains specific questions and answers. Each question in the question has a different rating. Users and teams can develop scrum capabilities using this application.

1.3.5 Visual Studio Achievements

Visual Studio Achievements is an add-on that is equipped with the gamification elements loaded into visual studio. The purpose of this extension is to remove the tedium of writing code. With this add-on, users can reach a certain level according to the codes they write. They can share this level with their friends. It can be seen how many people have written the code. With this add-on, Microsoft creates a special page where users can share their levels to make them feel more specific. With this add-on, I was encouraged to write code by collecting different badges. In this application, it is desired that the platform is more used and used while the Microsoft is added to the actual playground to be more fun than other programming environments and programming languages.

2. Monte Carlo Simulation Technique

Monte Carlo simulation (i.e. statistical sampling) techniques is used to mimic the operations of complex systems and ultimately produce distributions of possible outcome values

that relies on repeated random sampling to obtain numerical results. Computer simulation is an important part of software development process, because test and evaluation of a project are a guidance for software developer. For this reason, we choose Monte Carlo Simulation Technique in order to evaluate our project.

2.1. What is Monte Carlo Simulation?

The term Monte Carlo Simulation Technique was introduced by Amelin in his paper as a class of methods to figure out a mathematical problems by using random samples [18]. Therefore, the most important part of simulation study is statistical results of data acquired from simulation model [19]. The term Monte Carlo was used by Von Neumann and Ulam in World War II as a secret term for a problem related with atomic bomb. This study included simulation of random neutron diffusion in nuclear materials [20]. Monte Carlo Simulation Method is widely used in some areas such as finance, engineering, project and management etc.

3. Related Work

There are several applications for stage-management by companies including but not limited to Virtual Callboard, Yamdu, Edictive, Setkick, Studio Binder.

Firstly, Setkick is the least detailed stage production application we have encountered. Setkick provides users digital Call Sheets, Script Import, Sheet Breakdown, Crew Management and Location features. Digital calls sheet is a daily plan for all crew, people can be adapt to the schedule. Script import feature provides importing the script in PDF format. Setkick provides to users complete set of breakdown and strip-boarding tools built right inside their browser with sheet breakdown. The another feature of Setkick is Crew Management. This feature provides accessing cast and crew contact information easily. The last service of Setkick is Location, users can access a map in order to choose set location. In addition to Setkick application, Studio Binder provides Calendar, File Sharing, Shooting

Schedule and contact list. Users are able to share the files with their colleagues and access the colleagues' files by using file sharing platform. Shooting schedule is a significant and useful feature for crew in terms of getting information about shooting process. Virtual Callboard is a more developed application compared with Setkick and Studio Binder. In Virtual Callboard, there is an Announcement, Email, Forum, Track Attendance and Multi-Production Management parts. Managers can calculate the number of hours worked by each person in a given week by using Track Attendance part. Yamdu is similar application with Virtual Callboard but it has some different features. For instance; Financing which managers easily create unlimited financing scenarios, keep track on deadlines for fundings, and manage contracts and deliverables for their partners. Breakdowns, each department should know needs and contributes the breakdowns part. Post Production, Yamdu provides accessing another application called ARRI Webgate, and crew uses this application for post-production by using Yamdu. In addition to these features, Yamdu provides Costume, Makeup and Prop Management organizations. The last application that we mention in this report is Edictive. There is a Dashboard which is visually track the project and individual work. There is a messaging platform which allows internal and external messaging different from email system. Also, script writer can write scenario and link to his/her production cast, crew, locations etc. In conclusion all these applications have their own special features, but some features can be developed (please see Table 1).

Virtual Callboard	Yamdu	Edictive	Setkick	Studio Binder
<u>Announcements:</u> Post an announcement for a specific production or entire site.	<u>Announcements:</u> Create announcement for all crew in order to inform them.	<u>Dashboard:</u> Visually track the project and individual work; introduce gamification through project		

		status to the teams work.		
	<u>Call Sheets:</u> Users generate their daily call sheets using data they already created in pre-production and distribute them automatically.	<u>Call Sheet Calendar:</u> Users can deliver their call sheet digitally and receive confirmation of who has and has not seen it.	<u>Call Sheets:</u> Users Generate a digital callsheet for each day of production from your stripboard.	<u>Call Sheets:</u> Mobile and tablet
<u>Send notes and e mail:</u> Send notes individuals or groups of users at the same time.		<u>Internal & External Messaging:</u> Users can collaborate effortlessly with their crew, stakeholders easily.		
<u>Forum discussions:</u> People can post a topic of discussion, attach files or images.	<u>Tasks:</u> Assign trackable tasks to departments, crew members, and/or yourself.	<u>Task and Scheduling:</u> Schedule then allocate tasks and milestones for your crew and colleagues on the project. Visually track progress.		<u>Task& Calendar:</u> Users can use production calendar easily by clicking and dragging events.
<u>File sharing:</u> User can share file with entire production or departments, also user can create folders in order to organize the files.	<u>Document Management:</u> Stores all files in one place and accessible from anywhere, anytime.		<u>Script Import:</u> Users can easily import script in PDF format.	<u>File Sharing:</u> Studio Binder provides a cloud for file sharing and storing. Users can upload their files and other users can access these files.
<u>Scheduling Calls:</u> Organize, publicize, and track individual and production schedules.	<u>Project Calendar:</u> Easily invite specific crew members or departments to events and	<u>Calendar:</u> A schedule calendar of your entire project with tasks, milestones and		

	meetings, like PPMs, etc.	call sheet dates and durations.		
<u>Track attendance:</u> Managers can calculate the number of hours worked by each person in a given week.	<u>Shooting Scheduling:</u> Scheduling with scene numbers, roles, short synopsis, estimated shooting time, etc. Also, users are able to connect their shooting schedule with their production schedule so that they are constantly synchronized.			<u>Shooting Schedules:</u> Users can create their professional shooting schedule with an elegant drag-and-drop stripboard interface.
	<u>Production Scheduling:</u> Create and evaluate different production scenarios.			
<u>Creating customized report template:</u> File a report and report editing	<u>Breakdowns:</u> Each department should know needs and contributes the breakdowns part.	<u>Script:</u> Script writer can write scenerio and link to his/her production cast, crew, locations etc. Right from the script.	<u>Sheet Breakdown:</u> Setkick provides to users complete set of breakdown and stripboarding tools built right inside their browser.	<u>Script Breakdowns:</u> Import scripts and tag elements like props and wardrobe.
	<u>Financing:</u> Easily create unlimited financing scenarios, keep track on deadlines for fundings, and manage contracts and	<u>Budget:</u> User can track production budgeted to the user's actual production spend.		

	deliverables for your partners.			
<u>Contact Sheets:</u> Create and print customized contact sheets.				<u>Contact List:</u> Manage and send messages to talent, crew, vendors, clients and more.
<u>User Management:</u> Each user has username and password.	<u>Crew Management:</u> Generate contact lists and reach crew and its contact information.		<u>Crew Management:</u> Manager can access cast and crew contact information easily.	<u>Cast and Crew Management:</u> Make film crew lists of potential hires, cast auditions, or favorite production crew by department.
<u>Multi- Production Management</u>	<u>Casting Database:</u> Collect, present, discuss and select cast members for all roles of project and distribute important information.	<u>Portfolio and Management:</u> Manager can assign user roles to all his/her account users giving everyone only the level of access they need.		
<u>Archive</u>	<u>Costumes</u>			
	<u>Makeup</u>			
	<u>Location Scouting:</u> Users make location proposals accessible to the crew, to get valuable input.		<u>Location:</u> Setkick provides a map for choosing a location.	
	<u>Props Management</u>			

	<u>Post Production:</u> Yamdu provides accessing another application called ARRI Webgate, and crew uses this application for post production by using Yamdu.	<u>Post Production</u>		
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Table 1: Existing Production Applications

4. Conclusion

In conclusion, Mega Reji is a production management software which will be used by production teams. Gamification is a popular and common system in software era which means using game concept in non game software applications. Software developers aim that encourage the users to use the application effectively and regularly by simple reward systems. One of the our aims is making gamified this application in order to encourage and focus the production team members on their work without any complain. As we mentioned in this paper before, there are several gamified applications in order to both train employees and encourage to use public users. The other issue of this literature review is evaluation of our porject. We are planning to evaluate our project with Monte Carlo Simulation Technique. Monte Carlo Simulation is a technique for computation of possibilites with data from project. Finally, there are several production management applications in software sector, such as Yamdu, Setkick, Edict, ect. However, these applications do not response the all needs of production teams. We are planning to unite all features of these applications in one application. Therefore, our literature review is concentrate on previous work related with our project and how to improve and gamified them clearly.

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