



STOCK hOME-Enterprise Problem Solving through Gamification

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ABSTRACT: Designing a gamified solution to a difficult business problem requires informed application of game design patterns, with an understanding of the unique corporate environment. We present a gamification framework that can be applied to any organisation that considers its participants & players as assets. Our approach includes a system and time oriented process describing the conditions and the various factors that affect the working life of the employees along with the aspect of motivating them. Objectives considered to provide a platform for the employees to put up their views, suggestion, problems and solutions for the same.

KEYWORDS: Virtual Coins (VC), Badges, Watchlist, Stock Stats, Expert and Expert Panel, Upvotes and Downvotes, Trading Session.

I. INTRODUCTION

In today's working scenario it is been observed that a lot of people keep on switching up from one job to another or are just working to reach the target and the most apt reason for it is the dull work culture that involves nothing but work, it implies no other activities that induces employees to get more inquisitive about work. By 2020, 50% of companies that consider innovation and research as a key aspect will use gamification to drive innovation, according to a press release by Gartner [1]. As gamification is just beginning and few public examples exist today, this finding means that the next four years are going to face swift changes in management of the enterprise.

Our research introduces a gamification design model that aims at improving the employee work culture in the organization. Goal is not focused to deliver fun, rather it offers a enthusiastic and engaging experience that supports interest of employees, eventually leading to finding of a gamification process and motivation framework. Once the business problem and implementation methods were established numerous buzz sessions were held where we documented everything we could think of as game design principles, which were alone insufficient for further deductions. In games, players are generally compelled to play for intrinsic reasons. In the corporate reference, additional perks were necessary to give an upholding, motivating experience beyond just building a game and hoping participation. Object-oriented systems, development processes were customized to include gamified elements and working needs of players as employees. A gamified use-case and class diagram provided structure to achieve game design principles with operational conditions and employee motivation factors.

STOCKhOME provides employees with a way to contribute new ideas to various targeted categories created for the community. Ideas can be evolved, teams can be built around them, and organization's investment board can review and assess them. Each user is given a dashboard to post their ideas, solutions and views, which can be viewed and assessed accordingly. Each idea goes through a series of stages, where it is required to meet minimum requirements to graduate to the next stage. Game mechanics and the likeliness to win keeps the user interested. This helps the user to earn rewards and climb higher on the leaderboard. STOCKhOME helps the user to be more inquisitive and active at the workplace and simultaneously helps the organisation to understand the employees better.



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II. DOMAIN

Gamification

The application of typical elements of game playing (e.g. point scoring, competition with others, rules of play, rewards, losses) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service. To be very brief Gamification is basically an idea put up in a gamified way to make things interesting, thus achieving keen interest of the people

Gamification is the concept of applying game-design elements and principles to a non-game application to make them more fun and engaging. Stock Home is a gamified application that uses the concept of stocks in a way that aims to attain participation of employees, keeping in mind their interests as well as originations favorability. It helps the employees of the company to post their problems, give suggestions for the same and invest in existing solutions with their virtual money. The CEO is given the approval rights to select the most feasible solution by buying the stocks of the suggestions and thus benefiting the employees. Also each employee would be given rewards and badges based on their performances thus encouraging organizational productivity.

III. THEORETICAL FOUNDATIONS

Our developing gamification design emerged from a study of corporate wiki collaboration [2]. It stated the various challenges for the implementation of gamification methods and tools. Two core upholding ideas guided an understanding of psychological side allied with participation behavior. The theory of basic desires was employed to understand inherent human needs, and the self-dedication theory to grasp inner regulated action along a range of outer motivation.

The study of corporate work experiences of our seniors and all the possible people we could reach that had been working with different organizations and had experience over 10 to 12 yrs. helped us develop a the design principles and the need and desires of the employees. Such people helped us understand the inner motivation ideas directed an understanding of psychological aspects and key points that are associated with participation behavior, those are the basic needs and conditions that we must be aware of while developing the project.

Through a series of published papers read about such similar topics we were able to analyze the requirements, possible problems that could occur in the development phase and could get a clarity about how to get it solved and what all initial adjustments have to be made. The flow of the game, the requirement of the system both hardware and software, the possible results and outcomes, use of technology, the implementation ways and methods and other important decisions although some were initially estimated while others were to be deduced as and when the project is been developed .

Self-Determination Theory

The self-determination theory (SDT) framed a motivation model for understanding what and how human behavior is initiated and regulated when it comes to playing games [3]. The SDT recognizes social, environmental and professional conditions that affect personal defiance and engagement in activities. The SDT adds both content (psychological needs) and cognition process motivation describing needs for self-rule, capability, and relatedness. An individual's determination for action is defined along a spectrum of motivation, outer motivation, and inner motivation measured by developed center of causal behavior. Needs for self -rule and competence allow to meet the expectations of the social conditions and task characteristics that intensify versus diminish inner motivation.

Collaborative Engagement Foundations

In a study of wiki collaboration in the workplace, Gears [2] employed both the theory of basic desires, and the SDT, to understand factors motivating employee participation behaviors. Strong basic desires for power, self-sufficiency, principles and curiosity were found to prompt engagement behaviors such as editing and commenting on content. Contextual influences were associated with participation and nonparticipation behavior along the SDT continuum ranging from external choice to internal self-rule.

IV. APPROACH

Our development team began with analysis of candidate business problems. Several challenging areas were identified and evaluated for factors such as game dynamics, game playing methods, controls and other features of



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interest such as leaderboards, ranking and wins. Following varied interviews, group discussions and analysis a business situation was targeted for gamification.

Our understanding of gamification followed Deterding, Dixon, Khaled, and Nacke [4], defined as a process that incorporates game design elements in non-game contexts to improve the user experience through innovation, and in this research, improve a challenging situation or to achieve a long term goal. The conclusion of gamification was not a complete game, rather purposefully deployed game design pattern aiming motivation.

An analysis of existing example helped us out to understand the working of gamification project and design process. Use cases, class diagrams, and process models were developed to gain understanding of the domain, define requirements, and design gameful interactions.

A “gamified” essential use case specified goals, objectives, beneficiaries, game rules, behavioral norms, preconditions, players, and system interactions. The use case provides a canvas to articulate business rules that could not be broken; personal, social, and corporate norms that could be challenged; and conditions necessary for a successful outcome.

GAMIFICATION BASED STOCKhOME

GOALS:

- Involvement of employees into the affairs of the company.
- Improve employee performance using motivational goal strategy.
- Improve the work culture.
- Help employees put up their views and ideas

GAME RULES:

- Constraints or policy that cannot be broken.
- CEO (Admin) makes the final disposition.
- Investments cannot be reversed.
- The profit redeem facility would as per the company policy.

BEHAVIORAL NORMS:

Personal, social, and corporate norms that can be challenged. Content ownership norm – ownership of corporate documentation belongs to the author.

PRECONDITION:

- Participation is required to achieve additional perks.
- Participation should NOT be directly related to winning rather it should focus on all round development.
- Non-participants are NOT negatively impacted but they might miss some advantages.
- Participants recognize the value of the experience also learn how the higher part of the organization works.
- CEO support participation.

PLAYERS:

- Employees (includes everyone managers, tech team, support team, etc.)
- CEO

Framework for Gamified Design

A variety of gamification frameworks are already in use that target different objectives some of them include social loyalty, community expert, Role-Motivation-Interaction (RMI), Mechanics-Dynamics-Architecture (MDA) frameworks. RMI was introduced to facilitate the architecting of gameful interactions (refer to Figure 1) in organization through intra-level and inter-level competitions. This recognition, along with acknowledgement of employee/player’s psychological need for self-play and self-dependence, competence, and relatedness aided in the finalizing of game design patterns. Consideration of inner desires and outer motivators created opportunity to design for meaningful choice. “Meaningful choice” in this context intends to stimulate a sense of employee inclusion and perceived benefit to the situation, without negatively affecting pay, performance, and relationships. It also indicates the view of the player,

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about what he actually thinks and believes in and hence it might help to assess individuals on their working experience and work culture they follow.

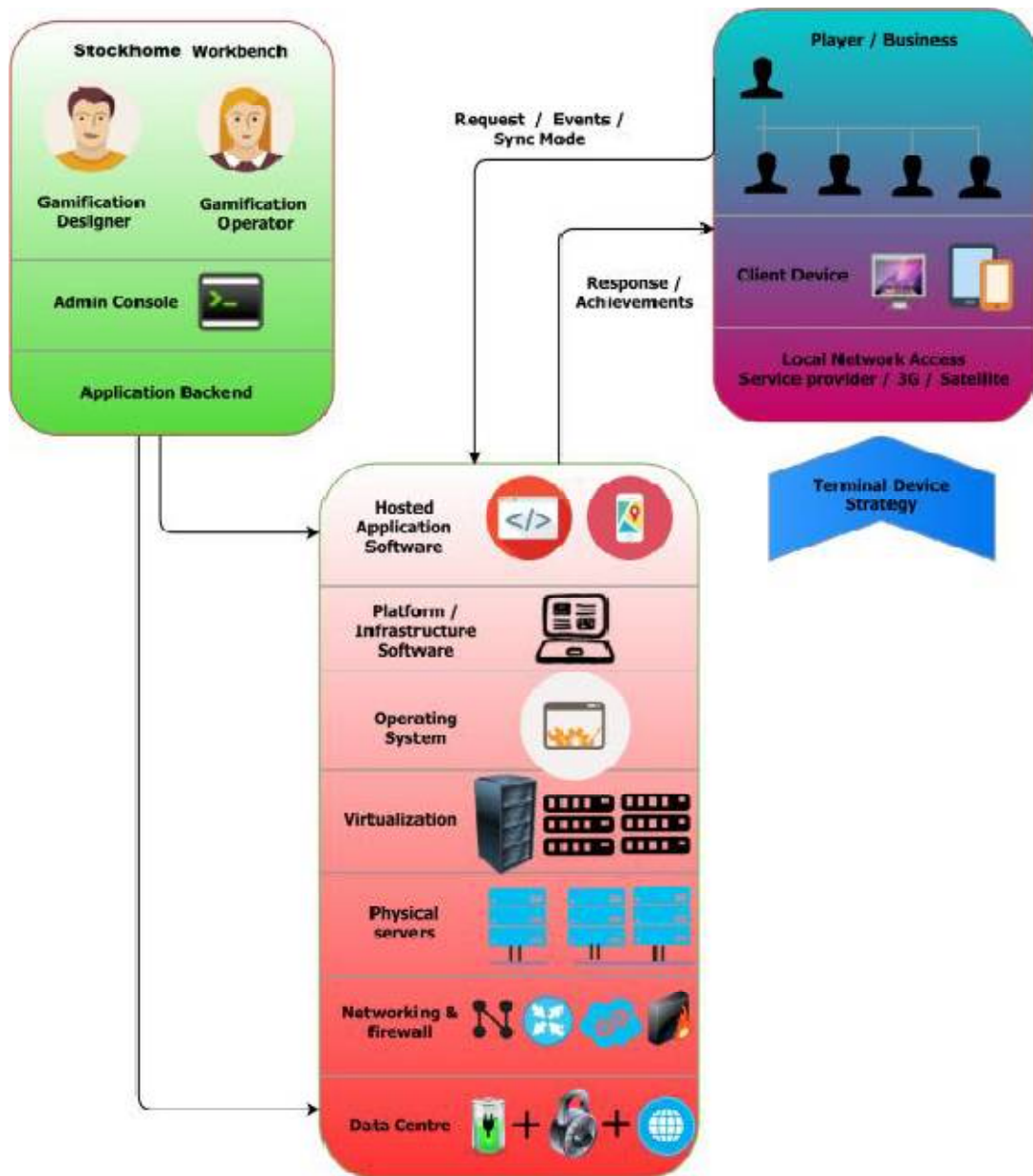


FIG.1 STOCKHOME ARCHITECTURE

V. THE PLAYING

STOCKhOME is an enterprise application that enhances user involvement and also gives users a chance to improve their trading skills and to believe their instincts. The game mechanics or the working makes it a worthy web application for the organization as well as for the employees. It provides two different consoles, for the users that actually play the game and for the admin who evaluates and acts as the final decision maker. STOCKhOME is an open platform that

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gives user an opportunity to put up their problems, queries, solutions on others problems, share their views and earn rewards in terms of virtual coins(VC) and experience points(XP), badges, and ranking in the leaderboard, that may make him an expert. Since we aim to follow the concept of stock market the use of money was necessary and to keep it real in terms of implementation we introduced the concept of virtual coins these are nothing but money in the virtual form, further VC's weren't enough to just calculate the ranking of the individual some other terms such as experience

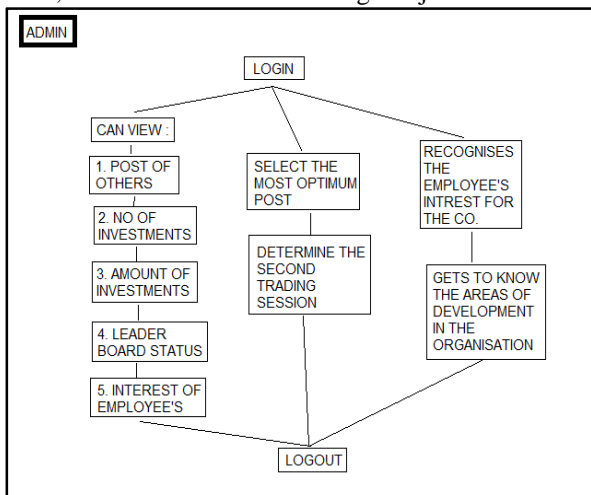


FIG. 3 ADMIN FLOW-CHART

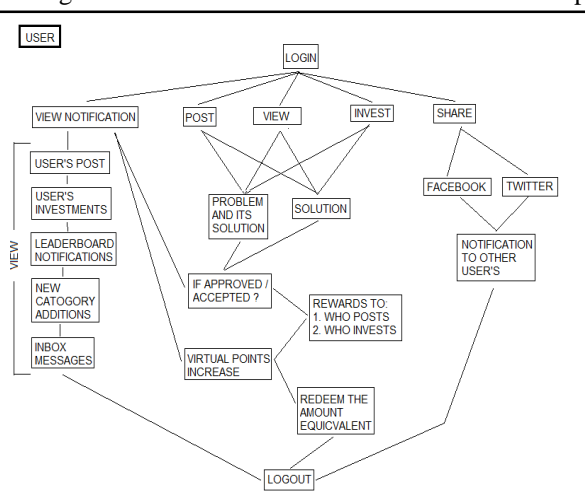


FIG. 3 USER FLOW-CHART

points (XP's) that is determined by the participation and badges determined on the basis of XP's, leaderboard are used to make it more gameful. If any employee in an organization has any problem that makes it difficult for him to work or something that interrupts with its routine, he can post up the problem on STOCKHOME, this makes him loose a couple of thousands of his VC's and a small count of XP's, since it is an open platform the user loses its credits for using the system i.e. similar to an initial investment done in stock market. The software makes everyone view this problem/query posted and also lets them post their solutions/views for the same. Posting a solution/view would cost the other users a minimal amount of credits similar to the one posting the problem or query. Now the actual gaming begins these solutions are the stocks into which users can invest, considering the most appropriate and the most correct, possible, implementable and feasible solution the user must invest their credits(VC's and XP's) into the stocks. What everyone cares is the profit he earns i.e. the return on investment (ROI). ROI is earned if the solution is found as the most appropriate in view of admin or the final decision maker. The CEO is usually the final decision maker, knowing the best for the organization he can make decision in the best interest for it. Thus the solution getting approved rewards everyone connected to it, the person who posted the corresponding problem/ query, the player who posted the solution, and all other player who invested in those solution. The rate of return of investment is determined by amount of investments occurring per day until the end of cycle, which stand to be a week or 2 weeks. The various activities can be seen in the flow-chart 1 and flow-chart 1.

VI. RESULTS

Accelerated feedback results, in the real world, feedback loops are slow (e.g. annual performance appraisals) with long periods between milestones. Gamification increases the velocity of feedback loops to maintain engagement, Clear goals and keeps in track the fun of play and work. In real world, where goals are fuzzy and rules selectively applied, gamification provides clear goals and well-defined rules of play to ensure players feel empowered to achieve goals, and not just that it also helps to create a stress free environment that making it easy and comfortable for everyone being involved.

A compelling narrative, while real-world activities are rarely compelling, gamification builds a narrative that engages players to participate and achieve the goals of the activity. Tasks those are challenging but achievable. While there is no shortage of challenges in the real world, they tend to be large and long-term. Gamification provides many



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short-term, achievable goals to maintain engagement. Engagement leads to interests, awareness and the need to be involved. STOCKhOME is for problem solving and its rewarding nature in terms of monetary gains keeps the employees/users on the edge of their seats. Also, as you complete levels, you earn badges, get a pat on your back and enjoy making progress.

VII. CONCLUSION&FUTURE WORK

Gamification is a powerful tool to boost your business results – either by incorporating it in your marketing and/or product, or by using it to motivate your staff. Quality of execution determines the success. A gamified application must offer a worthwhile experience; otherwise people are not going to use it. At the same time, its success has to be measured.

STOCKhOME can be used as not only a gamified application but also it can be extended to provide an enterprise solution. It can form a basis for all the employees to communicate on a common platform as well as it can provide the employees to socialize and increase their involvement with the help of mailbox, forums and discussions. Also the problems and solution functionality can be enhanced with the help of upvotes and downvotes to determine their popularity irrespective of their respective investments. The LeaderBoard function which enables all the users to perform better can be used to evaluate the employees and appraise them.

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