

metaPlay

Heroes. Monsters. Project Managers.

J. J. M. Ekaterin, *PMP, MIMS Candidate*

UC Berkeley School of Information, Berkeley CA 94720

There has been a wealth of research on applying the concepts of game to everyday work. In particular, numerous studies on the application of Massive-Multi-Player-Online-Games (MMOGs) yielded substantial insights on how to manage and improve the success of virtual teams. Some even advocate changing the work environment to include game-like elements. Typically, these studies focus on the application of gaming structures, environments, social conventions or technological capabilities to the challenges of managing and leading virtual teams.

Index Terms— **Project management, Information management, Games, Organizational aspects**

Table of Contents

I. Introduction.....	3
A. The Proverbial, Trivial Characterization of Games.....	3
II. Existing Literature on Game Studies	4
A. The Essence, Not The Mechanics of Play.....	4
B. Beyond Entertainment - Games Reveal Enduring Characteristics.....	5
III. The Specific Example of IT Project Management	6
A. Striking Similarities.....	6
B. The Imperative to Improve IT Projects.....	7
1) <i>Why Do They Fail?</i>	7
C. Big, Complex, Moving Pictures	8
1) <i>Project and Program Status Reporting</i>	8
2) <i>Status and Statistics in Games</i>	9
3) <i>Dashboard Opportunity</i>	9
D. Motivation, Reputation, Narrative.....	9
1) <i>Team Member Motivation in Project Environment</i>	9
2) <i>Reputation Management and Motivations in Games</i>	10
3) <i>Team Member Motivation Opportunity</i>	11
IV. How This Study Was Conducted	11
A. The Approach of Work-Game-Work.....	11
V. Findings and Analysis	12
A. First-Round Interviews and Opportunities.....	12
1) <i>Capturing, Aggregating, Publishing Information on Dashboards</i>	12
2) <i>Opportunity For Dashboards</i>	14
3) <i>Motivation and Reputation for the Team</i>	14
4) <i>Opportunity to Improve Collaboration and Learning</i>	15
B. Second-Round Interviews and Meta-Opportunity.....	15
1) <i>Responsiveness to Dashboard</i>	16
2) <i>Responsiveness to Moderated Recruitment</i>	17
3) <i>Meta-Opportunity for Enabling Professional Narratives</i>	17
VI. Conclusions.....	18
A. Recommendations for Improving IT Project Management.....	18
B. Reflections on the Work-Game-Work Approach	19
C. MetaPlay – One Story Within Another	19
VII. Appendices	20
A. Appendix A First-Round Interview Questions.....	20
B. Appendix B Second-Round Interview Questions.....	21
VIII. References	23

I. Introduction

Picture this: In a perilous environment fraught with uncertainties and ever-changing risks that demand decisive, timely action, a diverse group of people, each with unique skills and abilities, with backgrounds spanning different cultural, temporal, and geographical boundaries, come together for a limited time, pooling their various expertises into an intense, coherent effort to achieve a common set of goals. They may not have ever met each other in person. Some of them might never cross each other's paths again. However, all of them will continue on to reenact this experience, time and again, in different settings and to attain different goals.

We have all been there at one time or another. In some contexts, it may have been called a task, a quest, a raid. In other contexts, it may have been called a product, a project, a program. Regardless of their name, the world of play and that of work are not as dramatically different from one another as one might first suppose. Ultimately, success in either context depends on the people and the combination of their skills, motivations, and abilities to overcome obstacles, collaborate, and lead.

A. The Proverbial, Trivial Characterization of Games

When one mentions gaming in general, the casual observer may conjure up stereotypes of young enthusiasts toiling for hours in front of their consoles or computers trying to achieve higher levels, extend their skills, collect virtual objects or influence others within their fictional worlds [33]. Beyond this characterization, news media are often also fascinated by the superficial intersection between gaming and the physical world through mechanisms such as the monetization of virtual goods [31]. Academic studies, on the other hand, tend to devote more attention to examining gaming itself than the underlying principles from this seemingly trivial activity.

However, the undeniable allure of games with their ability to deeply engage and retain the focused attention of many and their proven record of innovations in a wide range of domains from micro-payment economies to virtual team collaboration suggest that they may be successfully tapping into deeply human traits that enable teams to prevail against seemingly impossible odds.

There exists a large body of established work analyzing games as a proxy for other activities: some focus on teams and collaboration [19], some examine trust and virtual communities [7], some concentrate on intrinsic motivation [5], while others study design and implementation considerations [24]. However, our survey of gaming literature revealed a predominant pattern where researchers first study how games resolve issues such as team recruitment, retention, training and leadership development, collaboration, group problem-solving or team member motivation, and then propose to implant the way games handle these issues into business and organizational processes [24]. This study argues that such gamification of work may not be the only approach to gleaning benefits from games but that one can reverse the direction of the research and still arrive at similar benefits. In effect, research can originate from observations of work without involving any gaming concepts, then looks at gaming as a parallel context to discover principles or tools that may inform the redesign of work without specifically invoking gaming mechanisms or technologies.

II. Existing Literature on Game Studies

A. The Essence, Not The Mechanics of Play

Within the subset of studies advocating the translation of gaming concepts to work, some propose directly translating either the structure or the mechanics of games to work; or, in other words, disguising work to become more like play [34]. For example, Owens and Khazanchi [20] focus on extracting the key technological capabilities from MMOGs and applying them to enhance the experiences of virtual project teams. Beyond MMOGs, there are also numerous applications of gaming mechanisms towards achieving non-gaming goals. For example, Von Ahn and Dabbish [32] suggest using the mechanics of games as a means to tackle large-scale computational problems while Kuo and Hsu [15] propose examining how goal-oriented knowledge collection can be achieved through the virtual pet paradigm.

Another subset of studies proposes extracting the underlying factors of successful MMOGs and applying the concepts rather than specific implementations to work. For example, deMarco, Lesser, and O'Driscoll [4] distill successful leadership techniques from MMOGs to formulate recommendations for team leadership in corporations. More comprehensively, Reeves [24] suggests first building a "conceptual map linking games and work" to thoroughly examine the extent of parallel experiences between gaming and

working in a particular context; then consider whether some of the salient features may be applicable in that given context prior to any implementation. These features range from environmental approaches like avatars, three-dimensional spaces, market economies, or communication systems to structural considerations like rules and their enforcement, time management, feedback, and reputation management.

By examining games beyond the trivial experience, Reeves dispels the myth that games are necessarily the opposite of work as their ability to engage participants, encourage involvement, organize work, and increase productivity can be used to improve both job satisfaction and performance results. Apart from differences in lexicon, work already possesses many game-like features such as competition, meaningful activities, compelling narratives, inherent tension, uncertainty, and the need for incremental, timely feedback. He argues that other essential features such as opportunities for experimentation, learning from failures and opportunities to repair behavior, repetition through simulation, as well as the creation of group identities and sense of communities can promote effective collaboration and innovation in businesses. Ultimately, Reeves advocates enriching existing work environments by adopting some of the principles that are embedded in wildly successful games.

B. Beyond Entertainment - Games Reveal Enduring Characteristics

Since 2002, there has been extensive research on “entertainment computing” as a discipline [25]. And for nearly a decade, the International Conference on Entertainment Computing has convened to discuss topics such as interfaces, game theory, user studies, serious games, and collaborative interaction [30]. The perception of play versus serious seem to linger persistently in both the structure as well as language used to describe this kind of research. However, to frame the discussion within the confines of gaming may limit their ultimate potential. One can argue what actually underlies the act of gaming and its widespread success may be more fundamental and enduring. The tremendous amount of effort [34], dedication, and attention to maintaining alternate lives or satisfying complex, pre-defined goals suggests that the gaming paradigm goes beyond merely enjoyment but draws upon deeper human psychological behaviors and patterns. In fact, the seminal study about online game motivations by Yee [36] outlines three main motivational subcomponents: achievement, social, and immersion. Even a cursory

examination of these subcomponents immediately reveals that motivations such as advancement, competition, socialization, collaboration, exploration, and role-playing are not limited to the gaming context. Furthermore, many general human conditions like addiction [13] or the spread of infectious disease [16] can be modeled quite realistically, whether by choice or happenstance, in the world of gaming.

Unlike the type of aforementioned studies that draws explicit parallels between gaming mechanics or implementation approaches and virtual teams or the workplace, this study is concerned about demonstrating the applicability of essential principles from gaming to the work without explicitly invoking gaming constructs or specific technologies. By selecting a specific domain to conduct an experiment in the order of work-game-work, it aspires to prove that meta concepts can indeed be extracted from gaming to benefit work without the necessity of work gamification.

iii. The Specific Example of IT Project Management

A. Striking Similarities

If one suspends the superficial contexts and specific implementations, there are marked similarities between gaming environments and IT projects. Participants in both environments rely heavily on monitoring, analyzing, and assessing rapidly changing information for decision-making. Furthermore, decisions are made in successive stages and may need to incorporate large amounts of recorded or unprocessed information. For example, similar to a gamer assessing the health and statistics of his/her characters, a program manager may periodically perform project “health checks [21]” to ensure timeliness, quality, and compliance. Participants are also required to schedule, prioritize, and evaluate work both individually and work collaboratively in team settings. As a team, participants must balance long-term objectives with immediate goals. This often involves identifying, evaluating, and mitigating current and potential risks. Furthermore, participants are also required to inspect, test, and trace both the causes and impacts of errors to learn from their mistakes. For example, a guild may convene after a raid to evaluate each other’s performance as well as adjust their in-game strategy as a team. Periodic project status meetings are in fact one of the cornerstones of how a project team maintain strategic alignment while

managing project risks [21]. In both types of collaborative team environment, successful participants are required to master communications skills such as influencing and negotiating with others both within and outside the group. Similarly, resource constraints encourage participants to hone their skills in mentoring, coaching, and developing each to achieve greater fungibility across different roles. These remarkable similarities suggest that IT project management may be a parallel context that can be the basis for our experiment.

B. The Imperative to Improve IT Projects

Despite countless studies and improvement recommendations, IT project failure rates remained persistently high. In a survey conducted by Emam et.al. in 2007, the combined rate of project cancellations and those that failed to achieve their intended performance target was approximately 26% [6]. Similarly, a series of study published by the Standish group over the last decade revealed that, in 2009, 44% of IT projects sampled did not meet one or more goals while 24% were either cancelled or unimplemented [27].

1) Why Do They Fail?

Similarly numerous studies conducted by both practitioners and academics provide some major themes surrounding project failures from diverse perspectives. For example, Matta and Ashkenas [18] highlight the failure of traditional project management frameworks to accommodate unknowns or to ensure the project's eventual integration within the organization. Similarly, Emam et. al. suggest that high project cancellation rate can be traced to requirements or scope changes as well as lack of management support or the delegation of all project responsibilities to the team [6]. Glaser [9] also echoes the lack of business sponsor involvement and adds resource overloading, lack of organizational incentives such as unclear or contradictory rewards, overwhelming complexity, and lack of timely feedback to the list of possible causes. From the assessment perspective, Cicmil et. al. [2] suggest that project success metrics exhibit a notable bias towards emphasizing economic performance indicators while overlooking other measurements such as skill set acquisitions or improvements, relationship building, team member satisfaction and

engagement, fitness of delivered system against intended use, system sustainability and extensibility, as well as intangible benefits like reputation building and branding [11].

Although IT projects can benefit from improvements upon any of these issues, the following portion of this report specifically examines the mechanisms for timely feedback and team member motivation through reputation management.

C. Big, Complex, Moving Pictures

1) Project and Program Status Reporting

A prerequisite for any feedback is the ability to gather, track, and report upon project metrics [3]. Recent industry reports [8] reveal a dizzying array of enterprise project portfolio management (EPPM) software tools with similar core functionalities that generally include:

- project tracking
- resource, time, and schedule management
- cost and financial management
- portfolio or program-level reports and analysis

In adjacent markets, although software tools such as Enterprise Resource Planning solutions, Web 2.0 collaboration solutions, enterprise mobile and Software-as-a-Service platforms also provide an uneven selection of functionalities related to project portfolio management [10], they are generally regarded as inadequate for fully addressing project and portfolio tracking or reporting needs. Of the EPPM software currently available, a majority not only provides core functionalities but also include optional add-ons that may be process oriented such as new product development modules or targeted towards certain industries such as pharmaceutical product development or professional services management [8]. Strikingly, all of these products focus on bottom-up dashboard reporting for managers and business sponsors while none of them provide any meaningful mechanism for team members to manage collaboration or individual performance tracking across their own past and present projects. Since project work is ultimately undertaken at the individual team member level, there may be an opportunity for improvement for EPPM solutions.

2) Status and Statistics in Games

In sharp contrast, a key characteristic of MMOGs is the large amount of information presented in the form of dashboards to leaders, teams, and individual players [24]. According to Reeves, game dashboard information has two perspectives: For guild leaders, the dashboard is focused primarily on current or potential team member statistics, such as availability, capabilities, performance history, location, health. This information facilitates task assignments, recruitment, as well as coaching. For individual players, the focus is on one's statistics with helpful mechanisms that enable players to locate or evaluate each other or select exercises that either remedies one's deficiencies or increases certain capabilities. As statistical information is captured through interactions and game play, players are not required to provide explicit inputs. This results in a transparent, account-as-you-go system that can collect vast amount of real-time, up-to-date data that users can trust [17].

3) Dashboard Opportunity

The difference between typical gaming and EPPM dashboards is first and foremost their intended audience. Whereas EPPM dashboards aim to consolidate and serve summary data for managers and executives to review program progress and maintain strategic alignment, gaming dashboards are designed for both individual team members and leaders. Furthermore, EPPM dashboards rely upon team member inputs as a primary source of their information while gaming dashboards' source data is collected interactively with much less user intervention. The principle differences then, are whether dashboards are uni- or bi-directional in nature and whether source information is collected through explicit data requests or in the background through user interactions.

D. Motivation, Reputation, Narrative

1) Team Member Motivation in Project Environment

In general, project goal-setting process tends to evaluate either the project as a whole or in parts as determined by work package outcomes without regard to individual team member performance [21][26].

Oftentimes, incentives are solely monetary rewards explicitly tied to milestones achieved [22] without an intrinsic motivational component [1]. Although team member motivation is essential to the success of IT projects, challenges often surface from the disconnection between organizational and project-specific motivational systems. Symptomatically, this may include a misalignment of individual and team goals, the lack of tools that foster essential trust in virtual teams, the lack of reputation tracking mechanisms and resulting disconnect between project achievements and or results that may be highly socially influenced. For example, individual performance assessments that are driven by organizational evaluation cycles may not coincide with project-specific evaluations. If there is a lag between group performance and individual assessments and a lack of cumulative, persistent, centralized, and up-to-date system capturing project results that closely associate with individual performance, there may be a bias towards using the most recent results as a proxy for the entire evaluation period. Furthermore, for complex organizations, individual performance results may not be fully transparent across all departments. Without transparency, it is difficult for individuals to assess the objectivity of their input. Lastly, established best practices for the work breakdown process that solely focuses on the logical structure of the work [21] with regards to individuals only as far as skills, abilities, and availability will be deficient in driving team member motivation since it largely ignores the social or organizational contexts within which the project operates. There is strong evidence that past experience with incentives directly affect the future behavior of project participants [14]. Although this correlation is unsurprising, being able to mindfully align both project and individual goals may be another level for improving project performances.

2) Reputation Management and Motivations in Games

The cornerstone of robust, transparent data management systems in MMOGs enables players to build persistent reputations through metrics such as ranking, levels, capabilities [23][24]. These metrics are reliable and highly trustworthy to players because they are perceived to be objectively collected data with less socially influenced bias than environments that may have fewer “environmental confirmation of performance [24]”. Furthermore, the open accessibility model and standardization of these a priori, widely publicized metrics/statistics serve to confirm their credibility when used to evaluate individual performance. This allows team leaders to assemble the best-fit teams while fostering trust in virtual

project environments [24]. For the players, different “roles” or multiple avatars allow individuals to tailor their growth and pursue opportunities as they see fit [24]. Increasingly, reputation management systems in games are becoming more scalable [12] and personally customizable experience of gaming interfaces further engender a sense of involvement in participants [28]. By encapsulating their characteristics, accomplishments, and personal histories, MMOGs are able to become interactive, collaborative storytelling systems [28].

3) Team Member Motivation Opportunity

As projects/programs are constructs within larger organizations rather than a single, integrated system like MMOGs, there are obvious contextual differences. Besides the challenge of aligning project incentives and tools with other processes and practices within an organization, there may be other opportunities to examine how individual team member motivation and reputation can be managed more effectively and holistically than at present.

IV. How This Study Was Conducted

A. The Approach of Work-Game-Work

Upon determining that IT project management would serve as the example to conduct the work-game-work experiment, individual interview was selected as a format to engage interviewees in exploring the issues of project dashboards and reputation management in a semi-structured manner. Interviewees were not initially advised that the study involves gaming or MMOGs but were aware that IT project and program management practices would be discussed. Upon the conclusion of the first round of interviews, the results were analyzed to examine whether gaming concepts were applicable in that particular setting. Interviewees were invited to participate in a second round of discussions where the mechanics or tools from gaming were included to investigate the interviewee’s perspectives on whether these concepts can be useful in their respective organizations. In both sets of interviews, overcoming the specific challenges in IT project management remained the primary focus for discussion.

Through prior professional experiences and current academic contacts, IT project managers and team members were identified as candidates for interviews. Because the study is an experiment on approach as opposed to industry analysis or application design, the sampling was conducted as a matter of convenience and is not meant to be representative of the IT industry. Eight individuals responded to our interview request while five were available for the follow-up interview within three weeks of the initial one. By coincidence, all interviewees operated in small, narrowly focused IT teams ranging from five to thirty immediate team members within mid-sized enterprises of a few thousand employees.

For the first round of interviews, a series of structured short-questions regarding the interviewee's organization were posed with a rating-scale to set the tone of discussion. Then, open-ended guiding questions were selected depending on the conversation flow to elicit interviewees' extended responses. For the second round of interviews, only guiding questions were used to gain deeper insights into specific issues and to allow for some unplanned exploration. All interviews were conducted outside of the respondents' regular work setting to encourage frank discussions while the durations ranged from forty minutes to one and a half hour depending on respondent availability. Interviews were recorded and written notes were taken both during and immediately following the interviews. Recordings were then transcribed and analyzed alongside the written notes to prepare for the second set of interview and findings in this report.

V. Findings and Analysis

A. First-Round Interviews and Opportunities

1) Capturing, Aggregating, Publishing Information on Dashboards

Throughout the first round of interviews with project managers and team members, the recurring theme of resource over-utilization surfaced amongst the myriad of challenges. In particular, the intense focus of organizational leadership upon project delivery has biased all interviewees towards efforts undertaken directly to achieve project goals at the expense of project documentation or information management. Although at least one of the respondents express that project document audits are becoming more important within his organization, all respondents regard project documentation as burdensome since the

lack of adequate resources dedicated to collecting, analyzing, and reporting project information often resulted in missing, inaccurate, or outdated information. Historically, a lack of easily accessible tools for project information reporting or for record keeping remained the theme across all organizations represented. Where there existed “home grown” tools, respondents are still feeling overwhelmed as they perceive the efforts required for input and curate information into these systems to be burdensome and peripheral to their roles. Respondents also expressed that project information are often dispersed over a large variety of disjointed systems or across many project team members and stakeholders. Generally, there existed a lack of systems and tools to integrate all project-related information in an effective, easily-accessible format. At least two respondents are manually copying, pasting, and reformatting textual information from one source to another on a weekly basis. Where there is non-project personnel available to assist the information collection process, respondents have found them to be generally portfolio or program level analysts who analyzed selected source information as provided by the project manager for executive level reporting. Two respondents presently report project information as an aggregation through their CFO organizations but the nature of the reporting remains financially-focused.

With regards to the use of EPPM or project dashboard software, although all respondents expressed their understanding and appreciation of the benefits such system may bring to their organization, none of the represented organizations are currently using them operationally. Two respondents suggested that the small size of their organization may not warrant the return on investment for EPPM dashboard systems. One of the organizations is currently implementing EPPM dashboard from a vendor to meet their long-awaited need to provide upward access of project information to executives. Two other organizations use implicit tools with dedicated resources to collect, curate, analyze, and publish their project information. Interestingly enough, one organization implemented EPPM-style capabilities within its intranet website but the information are considered to be ‘more reliable’ and ‘better controlled’ through analysts’ intervention. Instead of EPPM software, two other organizations are co-opting existing software and internal processes to manage project information and portfolio reporting. All of the official or unofficial systems and tools currently in use in the represented organizations were implemented with the intent to facilitate communication within projects or aggregating information upward for decision makers while none

addresses the need for individuals to capture selected information for their own use. As a result, all respondents used personal, non-circulating information capturing systems to track their own projects both in terms of project-specific documentation as well as personal accomplishments or specific contributions.

2) Opportunity For Dashboards

Through the interview process, it became apparent that while many organizations that do not presently use EPPM dashboards can benefit from their adoption, team members are generally unenthusiastic due to their perceived burdensome input requirements and lack of usefulness. In particular, there remains a persistent lack of multi-project “roll-up” or decision-oriented information for the individual team member. There may be an opportunity to address both concerns through the design and implementation of multi-directional information-flow dashboards such as those existing in MMOGs. To incentivize adoption, any proposed dashboard should, in addition to requiring high-level synthesis of portfolio/program information, also collect information relevant to team members for managing their individual goals, project accomplishments, and contain a portable export component for individuals to capture their project histories. To maintain an appropriate level of information exposure, such a system cannot be a universal dashboard like those within MMOG environments but should provide selected levels of transparency and control across the organization. Furthermore, it would be advantageous to integrate dashboard-like information management tools, as feasible, with existing systems currently in used within the organizations. A higher level of integration can also eventually enable the ‘record as you go’ background processes that capture information such as completion of project milestones, changes in project schedules/team availabilities, overall resource utilizations for managing foreseeable upcoming resource peaks/loads, team accomplishments and new skills developed for individual team members much like the implicit tracking of in-game statistics currently in place for many MMOGs.

3) Motivation and Reputation for the Team

Turning towards the responses regarding team member motivation and reputation concerns, the respondents varied widely in response to their perception of the importance of reputation management within their organizations. However, all believed that they are building their reputation implicitly through

day-to-day working relationships and word of mouth. As a result, they did not express a need for an explicit reputation management system. When asked about the primary drivers for individuals to achieve stretch goals or 'go the extra mile,' all respondents acknowledged that monetary incentives play an undisputed role in their motivation. However, in the absence of explicit, tangible rewards such as project completion or milestone bonuses, most respondents also expressed that they are interested in 'getting the job done well' and enjoyed the sense of accomplishment upon project delivery. Beyond the focus on attaining individual and project goals, respondents also placed high importance on being able to acquire new skills, extend and polish existing skills, learning interesting technologies, and building lasting relationships with team members and stakeholders.

4) Opportunity to Improve Collaboration and Learning

Because the respondents did not place high importance on reputation management, the immediate opportunity of applying game-like individual metrics for team member profiles or avatars is not the best fit for improving collaboration, learning, or motivation in projects. However, all respondents are highly dependent on word-or-mouth or internal referrals to find collaborators. Some even suggested this existing process can become more effective with organizational-wide tools especially when new resources are introduced into the organization. The MMOG context suggests another opportunity for potential improvement. Beyond project resource dashboards that reveal the current workload utilization, an extended functionality for moderated team member recruitment may be added for both team members and project managers to find the best collaborators at the optimal time. Moderated team recruitment requests such as those implemented in some MMOGs make this process explicitly visible rather than buried within emails or other correspondences between individuals. This openly accessible functionality within the organization may encourage individual members to "advertise" their availability and skills or seek current opportunities in skills or technologies that they are interested in learning or growing.

B. Second-Round Interviews and Meta-Opportunity

To gauge responsiveness to the proposed ideas, a second round of interview was conducted to discuss both dashboard and team recruitment suggestions. General rather than implementation-specific

questions were posed to investigate respondents' reactions to the proposed suggestions. To avoid responses being heavily biased or influenced by prior experiences or preconceptions of project tracking, performance management, or social networking systems, specific applications or software products were not mentioned.

1) Responsiveness to Dashboard

Although respondents were generally positive about the multi-directional information-flow dashboards for managing and tracking project work, data transparency and curation concerns remain important. Respondents were supportive of aggregated reporting dashboards that synthesize high-level portfolio information for executive decision makers but were more skeptical of widely accessible dashboards for tracking individual goals and accomplishments. In general, they expressed the belief that individuals should have the some control over what information are collected and made accessible about their performance within projects while continue to place a higher degree of trust on information 'within their heads' or in private archives versus organization-wide systems. With regards to integrating project dashboards with other organizational systems such as that for goal-setting or performance management, respondents are unsure whether the benefits would outweigh the costs of complex integration. In particular, some expressed that enterprise-level data management tools had historically been too expensive for organizations of their size. Apart from implementing immediately-beneficial efficiency improvement tools such as simple EPPM dashboard modules, respondents view current alternatives for managing project information as 'good enough' given internal budget constraints. Although respondents are very positive about automation of project tracking and resource workload views, there remains the belief that burdensome, human-driven input is required to 'complete the story.' Interestingly, when discussing the lack of workaround for burdensome, intelligent, and curated input, most respondents stressed that frequent and timely updates do result in substantial benefits in hindsight. For example, one respondent recounted the instance when a supervisor imposed weekly project summary requirements on his team. Although the respondent begrudgingly complied with this request at the time, he expressed that, in hindsight, it became the best documented and most reliable documentation for that period of his professional career. As a result, mandatory process for periodic record keeping or frequent system-

generated reminders may be beneficial to all project resources despite the non-trivial amount of effort that respondents would prefer spending on working towards completing project goals.

2) Responsiveness to Moderated Recruitment

With regards to recruitment mechanisms for increasing organization-wide collaboration opportunities, respondents are generally positive but at least one respondent expressed concerns about the ability to keep information up-to-date if such recruitment system is based, at least partially, on systematized skills inventories. There remained the prevailing concern that broadcasting one's specific skills may, in time, constrain the types of work that will be directed to the respondents if they become widely known for being an expert for a particular skill or technology. As a result, the opportunities for growth and learning may correspondingly decrease despite of the individual's desire to be involved in something new.

3) Meta-Opportunity for Enabling Professional Narratives

Throughout the second round of discussions, an emerging theme of 'professional career narrative' developed around the topics of individual archives, formal skills inventory, and personal accounts of project accomplishments. For both information tracking and promoting oneself to new teams, many respondents developed short, revealing vignettes to highlight a particular skill or personality trait such as leadership, creativity, or capacity to anticipate fast-changing circumstances. Respondents believed that story-telling is an integral part of their career narratives and that such story can positively portray an individual to a potential new collaborator or recruiter who may have little direct prior interaction or other direct means to evaluate the individual's abilities. According to the respondents, these stories generally convey a succinct image of their professional self and includes 'personal touches' that distinguish them from others, while, at the same time, convey 'what they're [professionally] about'.

Stories were also found to be an important part of project retrospectives and look-backs. For example, instead of using standardized client surveys to capture lessons learned upon project completion, one respondent had consistently used a series of open, guided discussions to explore 'what worked or didn't work' in a project. In effect, this activity became a narrative building exercise where project teams were

able to discuss accomplishments, obstacles, and improvement ideas for both the project as well as the organization as a whole. The respondent also expressed that, as a capstone activity during project close-out, these discussions served to reinforce the bond between project team members and became subsequently very beneficial for iterative organizational development. Interestingly, individual players' narratives in the overarching plot in MMOGs make this connection between participation and role-play explicit. It is, in fact, one of the motivational facets that drives player towards immersion [35]. There may then be an opportunity to tap into this motivational factor towards greater team member engagement by providing an optional but easy-to-adopt and use individual story-collecting mechanism beyond merely amassing project information.

In the ecosystem of project teams, project records, and performance reviews, there is often a lack of easy-to-use, track-as-you-go tools for the construction of individual professional narratives. Having a tool that can provide this functionality may not only help individuals to record and reflect upon their work, build their resumes, and plan skill set development in a thoughtful, considered way. It may also provide an outlet for capturing important narratives that help team members construct their professional identities.

VI. Conclusions

A. Recommendations for Improving IT Project Management

In summary, selection and implementation of EPPM dashboard tools should pay attention to both the functionalities desired as well as the current information flow and the organizational fit and readiness for such a system. It may be beneficial to evaluate beyond the mere financial return of investment but the total benefits versus total costs including process and cultural changes to enable system to function as intended. To encourage system adoption, implementers may emphasize the value of the captured information against the difficulty in 'reconstructing history' at a latter date. It may also be possible to tap into individuals' desire to build professional identities and encourage individuals to record project histories, lessons learned, and accomplishments. Collecting information that was previously unrecorded or dispersed among assorted personal archives can greatly enrich project and program archives. At the

system level, designers should balance extensive human-input with automatically-collected, integrated data and may use non-invasive, periodic automated reminders to encourage timely input. Targeting the pilot to a few key resources who are receptive to change can also enlist them, like some of our respondents, to be advocates for system adoption despite of the perceived additional burden or shortcomings of any proposed system.

B. Reflections on the Work-Game-Work Approach

By working through the example of IT project management practices, this study illustrates that it is possible to first approach some specific challenge in the workplace to frame the problem, then look for successful, parallel context solutions in seemingly unrelated domains like game studies, and finally circle back to evaluate whether some feature or characteristics may provide insights on how the problem can be tackled. We do not need to gamify work to examine and extract useful principles and garner benefits from the gaming model because the underlying drivers such as multi-directional information flows or immersive storytelling are naturally present in both work and play. This is not an advocacy for favoring work-game-work over other approaches for studying and discovering novel ways to improve work but a suggestion that it may enrich the landscape where a predominant number of studies favor the reverse.

C. MetaPlay – One Story Within Another

When we learn from games, we are learning from holistically constructed, carefully pre-planned worlds -- microcosms or idealization of the real. Although there have been many very successful examples of how designers have translated the mechanics and technologies of these world whole-hog style to benefit work and businesses, they do not represent the totality of benefits we can reap from studies that takes clues from one context and applies them to another. The trivialization of games unjustly ignores how these imagined worlds can be just as complex, diverse, and compelling to us as the corporeal reality to which we are bound.

VII. Appendices

A. First-Round Interview Questions

Short Answers

1. My evaluation reflects all of my work (both operational and projects) in a timely manner.
(Agree/Disagree/Not Sure)
2. There's an effective way for me to find the experts in my organization when I need to.
(Agree/Disagree/Not Sure)
3. My organization values openness and transparency when it comes to project reporting.
(Agree/Disagree/Not Sure)
4. I enjoy my projects because it provides me with continuous learning opportunities.
(Agree/Disagree/Not Sure)
5. I enjoy my projects because it helps me build my reputation amongst my colleagues.
(Agree/Disagree/Not Sure)
6. There are ways for me to advocate for myself and my work in my organization. (Agree/Disagree/Not Sure)
7. Peer recognition of my work is important to me. (Agree/Disagree/Not Sure)
8. Organizational-wide recognition of my work is important to me. (Agree/Disagree/Not Sure)
9. I use personal tools to keep track of my successes and lessons learned. (Agree/Disagree/Not Sure)
10. My projects are meaningful and engaging to me. (Agree/Disagree/Not Sure)

General Questions

Project and Program Management

1. Please tell me how projects are tracked in your organization.
 - a. Please tell me how projects are assessed or evaluated in your organization.
2. How is project information shared within your organization?
 - a. How is project information shared with others outside of your organization (e.g. vendors, clients, other stakeholders)?

3. How are project teams typically formed?
4. Does your organization have a project management office?
 - a. Does your organization use project management methodologies? If so, please tell me about them.
5. What software packages are used to manage projects in your organization? E.g. MS Project Server, Oracle Primavera, Planeview, (CA, Compuware, HP), BMC Instantis, AtTask, PIV, Project Objects)
 - a. What program/portfolio level functionalities do you like about them? E.g. budget tracking, schedule, resourcing, roll-up, phase-gate
 - b. In addition to those, what other functionalities do you think would be helpful?
6. What non-software tools are used to manage projects in your organization?
 - a. How is the decision for using a particular project management tool made in your organization?

Reputation Management

1. How do you find the experts in your organization when you have a question about something?
2. What kind of tools would be useful for helping you find other experts?

Performance Management

1. How are individual and team performances evaluated in your organization?
 - a. How often are performances evaluated as a team? (yearly, semi-annual, quarterly, rolling, project close-down)
 - b. How often are performances evaluated individually? (yearly, semi-annual, quarterly, rolling)
 - c. How is work done within a project related to individual performance goals?
2. How would you improve the way projects are evaluated in your organization?

B. Second-Round Interview Questions

[After description of dashboard and moderated recruitment recommendations]

1. As a project manager or leader, what do you think about these recommendations?
2. As an individual team member, what do you think about these recommendations?

3. What aspects of these recommendations would you change and why?
4. Do you think these aspects should be included in:
 - a. project management tools and processes? Why?
 - b. project/program management software packages? Why?
 - c. other software or processes currently in use within your organization? Why?
5. What do you think are the challenges for adopting these recommendations in your organization?
6. Are there any other thoughts you would like to share with me?

VIII. References

- [1] M. Bresnen, "Deconstructing partnering in project-based organization: Seven pillars, seven paradoxes and seven deadly sins," *International Journal of Project Management*, vol. 25, 2007, pp. 365-374.
- [2] S. Cicmil, T. Williams, J. Thomas, D. Hodgson, "Rethinking Project Management: Research the actuality of projects," *International Journal of Project Management*, Elsevier, vol. 24, pp. 675-686, 2006.
- [3] R. Ciliberti, "Using project portfolio management to improve business value," IBM: April 15, 2005.
- [4] M. DeMarco, E. Lesser, T. O'Driscoll, "Leadership in a distributed world: Lessons from online gaming," *IBM Institute for Business Value*, 2007.
- [5] M. D. Dickey, "Game design and learning: a conjectural analysis of how massively multiple online role-playing games (MMORPGs) foster intrinsic motivation," *Education Tech Research Development*, vol. 55, September 15, 2006, pp. 253-273.
- [6] K. El Emam and A. G. Koru, "A Replicated Survey of IT Software Project Failures," *IEEE Software*, pp.84-87. September – October, 2008.
- [7] F. Feldberg, et. al., "VU @ Second Life : A report on Experiences with the Development of a (Virtual) Community of Learners," In: *Virtual Social Networks – Mediated, Massive and Multiplayer Sites*, Amsterdam: Palgrave Macmillan, 2009, pp. 36-51.
- [8] Gartner, Inc. "Gartner Press Release," Gartner, Inc., April 2010.
- [9] J. Glaser, "Management's Role in IT Project Failures," *Healthcare Financial Management*, October 2004.
- [10] T. Harmon, "Road Map: Corporate Portfolio Management – A New Market For Project Portfolio Management," Forrester Research, August 21, 2008.
- [11] G. J. Hidding, and J. Nicholas, "Reducing I.T. Project Management Failures: A Research Proposal," *Proceedings of the 42nd Hawaii International Conference on System Sciences*, 2009.
- [12] G. Huang et. al., "Scalable reputation management with trustworthy users selection for P2P MMOGs," *International Journal of Advanced Media and Communications*, vol. 2, No. 4, 2008, pp. 380-401.
- [13] D. King, P. Delfabbro, M. Griffiths, "Video game Structural Characteristics: A New Psychological Taxonomy," *International Journal of Mental Health Addiction*, vol. 8, 2010, pp.90-106.
- [14] J. Kohlmeyer, and A. Drake, "Risk-Taking in New Project Selection: can Bonus Incentives Overcome Past Performance History?" *AAA 2008 MAS Meeting Paper*, November 6 2008.
- [15] Y. Kuo and J. Hsu, "Goal-Oriented Knowledge Collection," *Commonsense Knowledge: Papers from the AAAI Fall Symposium*, 2010.
- [16] R. Lemos, "Digital plague hits online game World of Warcraft," *Security Focus*, September 27, 2005.
- [17] T. Lubinski, "Business Activity monitoring: Process Control For the Enterprise," *SL Corporation*, Corte Madera, CA, 2008.

- [18] N. F. Matta and R. N. Ashkenas, "Why Good Projects Fail Anyway," *Harvard Business Review*, pp. 1-9. September 2003.
- [19] B. Nardi and J. Harris, "Strangers and Friends : Collaborative Play in World of Warcraft," *ACM. CSCW'06 Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work*. November 4-8, 2006.
- [20] D. Owens and D. Khazanchi, "My Guild, My Team: Applying the Technology Capabilities of Massively Multiplayer Online Games to Virtual Project Teams," *Proceedings of the Fourth Midwest United States Association for Information Systems Conference*. Madison, SD: May 22-23, 2009.
- [21] Project Management Institute, *A Guide to the Project Management Body of Knowledge*, 4th Edition, Newtown Square, PN: Project Management Institute, Inc., 2008, Section 3.6.
- [22] T. Rantamäki, et. al., "How Does the Implementation of Different Project Incentives Plans Succeed?" TAI Research, Laboratory of Work Psychology and Leadership, Helsinki, 2000.
- [23] R. Ratan et. al., "Schmoozing and Smitting: Trust, Social Institutions, and Communication Patterns in an MMOG," *Journal of Computer-Mediated Communication*, vol. 16, 2010, pp. 93-114.
- [24] B. Reeves, J. L. Read, *Total Engagement, Using Games and Virtual Worlds to Change the Way People Work and Businesses Compete*, 1st ed. Boston, MA: Harvard Business Press, 2009, pp. 227-229.
- [25] N. Ryohei and H. Junichi (Eds.), *Entertainment Computing: Technologies and Applications*, vol.112, 2003.
- [26] B. Schmid and J. Adams, "Motivation in Project Management: The Project Manager's Perspective," *Project Management Journal*, June 2008, pp. 60-71.
- [27] Standish Group, "CHAOS Summary 2009," Boston, MA: The Standish Group, 2010.
- [28] Tychsen, S. Tosca, and T. Brolund, "Personalizing the Player Experience in MMORPGs," *Lecture Notes in Computer Science*, vol. 4326, Berlin Heidelberg: Springer-Verlag, 2006, pp. 253-264
- [29] Tychsen, "Tales for the Many Process and Authorial Control in Multi-player Role-Playing Games," *Lecture Notes on Computer Science*, vol. 5334, 2008, Berlin Heidelberg: Springer-Verlag, 2008, pp. 390-320.
- [30] Various, *International Conference on Entertainment Computing*, "September 8-12, 2010.
- [31] J. Valentino-DeVries, "Selling Virtual Game Winnings: a \$3 Billion Industry," *The Wall Street Journal*. New York, April 7, 2011.
- [32] L. von Ahn, "Games with a Purpose," *IEEE Computer Magazine*, June 2006, pp. 96-98.
- [33] D. White, "Too much computer gaming will turn your kids into 'ignorant zombies', study says," *The Daily Record*. London, April 11, 2011.
- [34] N. Yee, "The Blurring of Work and Play," *The Daedalus Project – the psychology of mmorpgs*. July 9, 2004.
- [35] N. Yee, "A Model of Player Motivations," *The Daedalus Project – the psychology of mmorpgs*. March 13, 2005.

[36] N. Yee, "Motivations for Play in Online Games," *CyberPsychology & Behavior*, vol. 9, No. 6, 2006, pp. 772-775.