

PM Next Generation: *How Minecraft and Gamification are Shaping PM* Bill Fournet, The Persimmon Group

Abstract

How will we manage projects in the future? With the world becoming more collaborative and mobile, project management must continue evolving to meet its demands. Project managers must be prepared to “Boldly Go Where No One Has Gone Before.” Current constructs of work and privacy, how we measure productivity and success, and how we understand our careers, are in flux. Utilizing the latest research from thought leaders in the areas of globalization and hyper-connectedness, this paper will look at the forces shaping our children today—Minecraft, gaming, Facebook, speed of change, and community values—that will affect the tools and perspectives of future project managers. Lastly, the paper will provide speculative glimpses into what projects will look like in the future. What new types of projects will emerge? Will project management remain a strict discipline? What will project teams look like? These “visions” will lead into a discussion of best practices that project managers can establish now to prepare themselves for the changes ahead.

The Past: What Shaped Today’s Project Managers

Modern project management methodology originated in the 1980s in response to project planning and control issues faced by the United States amid tough global competition. The military was one of the first organizations to systematically apply project management methodology through techniques like the Program Evaluation Review Technique (PERT.) Project management became further established as a discipline during the 1990s with the launch of Microsoft Project and the growth of the Project Management Institute (PMI), a credentialing body that encouraged proficiency in the Project Management Body of Knowledge (PMBOK). In the 2000s, the PMBOK gradually became less specific in its prescriptions, making room for many project management methodologies, including Agile.

Relative to other disciplines, project management is relatively nascent. Just a few decades ago, project management practices were limited in application to a handful of technical industries (for example, software development and energy.) Since that time, the discipline has influenced nearly every industry in the modern economy. With the explosion of project management has come increasing diversity in approaches and ideas within the discipline, which in turn has fed an explosion of technologies suited to specific “schools of thought.” For example, Microsoft Project is the tool of choice for “waterfall” projects, which emphasize planning at the beginning of projects (or project phases) and clear dependencies between tasks. Agile practitioners tend to use web apps rather than software suites to manage their projects; these apps are better suited to iterative projects and emphasize communication and collaboration.

Over the last two decades, project management has also converged with other disciplines, drawing on separate but related bodies of knowledge to solve project problems. For example, many project managers are also certified in various quality-related disciplines like Six Sigma or Lean. Others hold specialties in business analysis or human resources. The result of this hybridization has been twofold. First, it has served to push project management forward as a “transferrable skill” valuable to nearly all other corporate professions. Second, the blending of disciplines has ushered in an era of immense creativity and diversity of thought, accentuated by the fact that it is common now for projects to span continents and cultures.

The Future of the PM Industry

Future Factors. The evolution of project management continues today as projects become larger, more innovative, and multi-cultural, all the while being accelerated by the integration of technology. Project managers collaborate across continents, network virtually, and communicate instantly. In the future, projects will incorporate a larger focus on environmental sustainability, technology, and social responsibility.

The emerging significance of environmental sustainability in project management stems from innovation in regards to adding value while creatively addressing burgeoning energy demands. Environmental sustainability goes beyond “going green” as companies shift their values to becoming increasingly cognizant of their footprint. This means incorporating recycled and

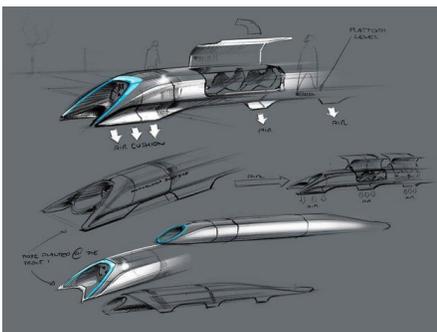
biodegradable materials, exploring alternative energy sources, and addressing energy consumption and waste elimination. Sustainable solutions are not only environmentally beneficial, but often create financial value and contribute to the company's social perception.

The boom of technology creates nearly unlimited potential for the future of project management. Project management teams can communicate via virtual networks, surface technology, and mobile internet connections. (Balestrero, 2013, ¶9) Project managers will no longer need to office from the same location in order to access project dashboards, status updates, or materials. Virtual networks allow project managers to access other networks, servers, and files from anywhere in the world with an internet connection. This opens up opportunities for project managers to get involved in projects across the globe without having to leave – or even necessarily have – an office. Contractors can maintain the integrity and security of their files while granting project managers access to every piece of information required to continue to drive the project forward.

In addition to this blazing connectivity, enhancement within the gaming communities has opened up new potential to recreate realistic situations that affect a typical project within a gaming environment. Minecraft in particular has emerged as a game with potential to teach users technology, computer science, and even computer-aided design (CAD). Minecraft features a “Creative Mode” which allows users to build anything from a home to a skyscraper to a replica of the Starship Enterprise to a machine capable of performing basic functions. Because Minecraft is a web-based program, users can collaborate to form teams that span across the country or around the world to create large, intricate projects. In these team environments, users share skills and gain capabilities as they push the boundaries of the game itself. “The remarkable part... is not *what* they are learning, but *how*,” said Professor Debbie Chachra of Franklin W. Olin college of Engineering. “They are intrinsically motivated to learn – they’re learning because they want to, not because someone or something else is making them. They’re working autonomously but as a part of a community and they are learning as they make more and more challenging structures and devices.” (Smith, 2012, ¶9) Software developers will soon be called upon to apply this type of gaming technology to simulation development for project managers to provide better understanding of the effects of certain decisions upon a project and how to address those situations as they arise. (Balestrero, 2013, ¶9) Such simulation environments will provide project managers a safe place to experiment, explore, and test options for projects prior to implementation.

Technology also creates greater visibility for projects, which will require project managers to factor in the social responsibility of their projects. It will become increasingly more important to select suppliers who meet specific criteria (ex: anti-corruption, fair competition, trade practices, workforce, environmental protection, human rights, political associations, and transnational regulations). Project managers will bear the responsibility of the social impacts of these supply chain selections.

As projects expand across the globe and incorporate multiple countries and continents, it will become increasingly important to develop global cultural competencies within project management. Project managers will interact with a myriad of work and management styles across geographies, increasing project complexities and necessitating multicultural and even multi-



lingual skills. Possessing multicultural savvy will become essential for project managers to stay competitive within the global environment of project management. (Balestrero, 2013, ¶3,10)

Emergence of Mega Projects. Projects themselves have already taken a turn towards the extreme as an increasing number of Mega Projects have emerged. Wikipedia defines Mega Projects as “projects that cost more than \$1.0 Billion United States Dollars and attract a lot of public attention because of substantial impacts on communities, environment, and budgets.” (Megaprojects, 2012, ¶1) Currently, hundreds of Mega Projects are underway worldwide in varying phases of completion. These projects contain lofty goals, utilize newly- or yet-to-be-developed technologies, rely heavily upon innovation, and require constant collaboration from conception to completion. The limits of these projects are simply the boundaries of the human mind.

One such Mega Project that recently received quite a bit of publicity was the Hyperloop, a high-speed train proposed by billionaire entrepreneur Elon Musk. His transport system concept would carry passengers (and potentially cars) in air-suspended capsules the 400 miles between Los Angeles and San Francisco at speeds of over 700 miles per hour. At this point, the technology required for the Hyperloop has not yet been developed or tested. However, the train would cost only \$6

billion to build as opposed to the \$68 billion currently estimated for another high-speed train solution already approved by voters in California. Musk indicated that he developed the Hyperloop concept because he was disappointed both in the high cost of the currently proposed system as well as the significantly slower speeds. The Hyperloop could be completed on the same time table for a fraction of the cost and the end result would allow passengers to arrive at their destination in one-fifth of the time. (Baker, 2013, ¶1)

A Mega Project currently underway is the Alaskan Way Viaduct and Seawall Replacement just started in Seattle, WA. The \$3.1 billion project is using the world's largest tunneling machine, lovingly referred to as Bertha, to bore a 56-foot-diameter tunnel approximately two miles long under downtown Seattle. Despite the advanced equipment, difficulties and technicalities have delayed the project schedule already. Since the launch of the project on July 30, 2013, Bertha has only progressed a mere 24 feet. (Lindblum, 2013, ¶2) Although things have not gone according to plan, the project team implemented a rigorously inclusive public involvement program to help define and communicate project goals and develop political consensus. Project visualization proved to be an invaluable tool to inform the public and as a design tool to determine the viability of proposed concepts.

An example of a completed Mega Project is the Abraj Al Bait Towers in Mecca, Saudi Arabia, currently the third tallest freestanding structure in the world. With construction beginning in 2004 and completion in 2012, the 601 meter-high tower cost approximately \$15 billion (US). There were two separate fires during the construction phase – the worst in 2008, and a second in 2009. Atop the building is a four-sided clock tower, the highest in the world at over 400 meters above the ground and visible from 16 miles away. (Abraj Al Bait Towers, 2013)

PM Expansion. Project management is steadily expanding into new market segments and will continue to do so. Although the methodology will remain the same, project managers will need to tailor and develop relevant project management tools to use in these new market segments. Additionally, project managers will need to cultivate “soft” leadership skills and strengthen communication and planning skills to better serve these previously unexplored arenas. (Loden, 2013, ¶2) This leadership expectation of project managers as project management expands warrants the development and display of charisma, analysis, business acumen, and motivation. Project managers will go beyond simply managing work, gauging risks, and calculating values. As project management expands, project managers will create value and influence through leading people. “In the years to come, we will start to see more and more ‘accidental’ and unofficial project managers in a wider range of industries that will change the way we approach and view projects and project management as a whole.” (Logan, 2013, ¶5)

Sustainability and Social Meaning. Because the only thing constant is change, in the future, measuring project success will go beyond the triple constraint. Project success will be determined by effective project governance as project managers coordinate holistically. Projects must align with organizational objectives, and project managers must deliver effective governance in a sustainable manner. The harness of sustainability will necessitate the refreshing of infrastructure as project management evolves to the next level. “As in a relationship, it is the bits in between – the unquantifiable human elements – that influence the failure or success.” (Sankaran & Stevens, 2010, ¶11) This also necessitates that PMs be more innovative and more strategic, and that they take more ownership as they look beyond their project at the entire program or portfolio. (Rao, 2012, ¶4)

Additionally affecting the transformation of project management is the new IT architecture known as SMAC (social, mobile, analytics, and cloud). As material-based value chains go virtual, as knowledge processes are dematerialized, we move from an information era towards a foresight era with greater capacity to make recommendations based on analytics and sophisticated algorithms. Armed with just a smartphone, project managers have more computing power than what was required by all of NASA to put a man on the moon in 1969. This allows project managers to move towards a loosely coupled organizational state, where people and processes are coupled virtually. “If applied holistically, [SMAC] can help an organization unbundle tightly-coupled, industrial-age value chains and transform business, if not entire markets, creating boundaryless ways of working.” Since Millennials (Gen Y) are digital natives, organizations with higher concentrations of Millennials are more apt to move towards SMAC. Utilizing key knowledge processes in SMAC, project managers will be able to create value and establish a competitive advantage. (Frank, 2012, pp 4-22)

The Next Generation – the Future of the PM Workforce and Tools



The emerging possibilities of project management necessitate that future project managers approach projects creatively. Project teams are spread among various geographic locations and time zones. Generation X'ers and Millennials demand an appropriate work/life balance, requiring flexibility in how projects are scheduled and tasks are assigned. It becomes a matter of who is available and not "who wants to", as time, geographic location, and schedules constrain project progression. Future project managers will need to place greater focus on understanding the business value of their projects, develop greater governance abilities, and establish strong communication skills as they utilize project collaboration tools to effectively manage virtual teams. (PSMJ)

The next generation of project managers was practically born playing video games. While the skills necessary to become a successful project manager can be gained through formal training, mentoring, and consulting, this next generation will gain much of their training in simulated environments, like Minecraft. "New tools will be developed that will allow the project team to simulate virtually every project management decision, built using advances in technology used for the current generation of games, adapted and enhanced to apply to all situations that might arise in the typical project. The software development genius behind games such as *Grand Theft Auto* and Nintendo's *Wii Fit* will be unleashed on project management's simulation development to produce platforms to train and enable project managers to fully understand decision ramifications." (Balestrero, 2013, ¶8) Here, future PMs will experience realistic pain points and learn how to adapt, communicate, and interact within a simulated environment. These environments give future PMs opportunities to break down tasks, eliminate data silos, leverage the technologies, and develop governance abilities.

Expectation of Tools. Getting people to connect today is fairly simple, however, getting them to collaborate is an entirely different thing. Enter Social Project Management. "Companies have seen improvements in their productivity by deploying departmental collaboration and other social-oriented solutions. McKinsey's survey on social tools shows we have reached critical scale: 72% of respondents report that their companies use at least one and over 40% say they are using social networks and blogs." (Rachelson, 2012, ¶5) Communication and interaction outside of the project boundaries creates synergy and increases collaboration within a project team.

Another way to foster collaboration within teams is through gamification. "Gamification describes the broad trend of applying game mechanics to non-game environments to motivate people and change behavior" by utilizing motivation, momentum, and meaning. (Gartner, 2012, ¶1) This capitalizes on an emerging trend, considering that the number of people playing video games in the United States has increased by 241% since 2008. (Lauby, 2012, ¶5) Research has shown that massively multiplayer online role-playing games, in particular, create a window into the coming environment and offer opportunity to develop real-world business leadership. "The organizational and strategic challenges facing players who serve as game leaders are familiar ones: recruiting, assessing, motivating, rewarding, and retaining talented and culturally diverse team members; identifying and capitalizing on the organization's competitive advantage; analyzing multiple streams of constantly changing and often incomplete data in order to make quick decisions that have wide-ranging and sometimes long-lasting effects." (Reaves, Malone, O'Driscoll, 2008, ¶1) Simulation games are more successful than traditional training programs and are more cost-effective, increasing productivity and performance. (Lauby, 2012, ¶8)

By 2014, Gartner anticipates that over 70% of Global 2000 companies will have a gamified platform in their office. (Gartner, 2012, ¶1) "One desired outcome of gamification is engagement – getting stakeholders passionately and deliberately involved with your organization. Interaction, collaboration, awareness and learning are related effects, where individuals are encouraged to make new connections and share information. The key is defining a powerful "win" condition that can work across a range of personality types, align with business objectives and foster sustained engagement." (Briggs & White, 2012, p. 8) Additionally, gamification creates an environment of recognition, a significant motivational factor for the emerging project managers in Gen Y. Participants can compete for points and rewards, earn displayed badges, and display their competencies and accomplishments, which are celebrated by the team. (Beaty, 2011) Gamification incentivizes behavior and facilitates sharing accomplishments as well as failures to contribute to lessons learned.

Tools and Technology Trends. There's an app for that. Most standard Enterprise Resource Planning (ERP) systems are unable to meet every project management need. However, with mobile applications and cloud-based solutions, PMs are able to practically customize their own technology experience. With the increasing sophistication of mobile technologies, many project managers feel empowered to no longer travel with a laptop opting instead for an iPad or other tablet device. Project Management software is trending towards web-based applications that allow for seamless communication with a focus on both scheduling accountability and flexibility as well as a focus on collaboration. Instead of locking users in by requiring a



licensing fee, many Project Management applications and software offer “pay-as-you-go” options allowing project managers the opportunity to explore different options and determine which program flows most organically or integrates most fluidly with their team. Cross domain integration becomes important for programs to interact with other platforms like Dropbox, Google Drive, and other file storage services. “The open source movement gained momentum because the tools and technologies (like Apache, Tomcat, Jboss, Hadoop) created by the open source community have significantly saved the cost of building software applications. These technologies have also enhanced performance and scalability.” (Zilicus, 2012, ¶13)

Additionally, new technology like Build Information Modeling (BIM) utilizing 3D modeling allows project managers to communicate more clearly with customers and designers by producing a to-scale model of the project and actually visualizing the aesthetic impact of decisions. Overall specification and sequencing accuracy is improved as tasks can be broken down and visualized, saving time and costs. BIM has also helped improve coordination during the construction process by eliminating mistakes and reducing communication errors. (Heaton, 2012, ¶6)

In a 2011 Forbes study of 308 C-suite executives, 79% of respondents indicated that technology focused on fostering greater internal collaboration was effective in driving business innovation. (Jang, 2011, p13) The future of project management hinges largely upon innovation and the current and emerging technologies that will help project managers address the evolving world of project management. For the next generation of project managers, this means making information readily available, searchable, and digitally accessible. Analysis of this information will allow the next generation of project managers to better predict project behavior and proactively communicate with their teams. Socialization in project management will allow this next generation to feel emotionally connected with coworkers, mentors, and coaches, keeping them engaged and motivated. Developing gamification will allow future project managers to experience the transparency and recognition they expect. In order to become more engaging, collaborative, and approachable; some organizations will require change on the project or leadership level to better engage this new generation of project managers.

Conclusion

The future cannot be known. There is no magic crystal through which we can determine exactly what tools, techniques, and competencies the project managers of 2030 or 2040 will require. Yet we can reflect on the past to identify trends and cultural indicators and estimate how they will affect the project management discipline. The technologies today’s children use daily free them from the constraints of their physical environment—their home, school, and community—and enable them to collaborate and work in a global digital marketplace. Their capabilities and competencies will evolve to adapt to these changes, and as more of the world comes online to participate in this digital space, new types of projects and methods will develop. This paper described some of those emerging project management trends in order to provoke awareness and thoughts to improve how we delivery those global needs. Now it is our job to pursue it.

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Bill Fournet is the Founder, President, and CEO of The Persimmon Group. In addition to leading The Persimmon Group since its inception, he also leads the practice areas of leadership development and business consulting to clients in various industry verticals including energy, financial services, aerospace, telecommunications, government, human resources and healthcare.

Over the past two decades, Bill has led strategic programs spanning years, staffed by hundreds of people, sourced globally, and managed budgets in excess of \$2 Billion. Bill is in-demand as a speaker and educator from organizations across the globe. He earned a bachelor's degree from Vanderbilt University and a master's degree from Oklahoma State University. He is a member of the State of Oklahoma Governor's Business Roundtable, a member of the Oklahoma State Chamber of Commerce's Board of Directors, and a member of the Oklahoma City and Tulsa Metro Chambers of Commerce.

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