

# **Energizing People's Work**

## ***Transforming Organizations Through Gamification***

Bernhard Peischl<sup>1</sup>, Johannes Schantl<sup>1</sup> and Andreas Holzinger<sup>2</sup>

<sup>1</sup>*Softnet Austria, Inffeldgasse 16b/II, 8010 Graz, Austria*

<sup>2</sup>*Medical University of Graz, Auenbruggerplatz 2/V, 8036 Graz, Austria*

**Keywords:** Gamification, Enterprise 2.0, Engaging People, Empowering People, Game Mechanics.

**Abstract:** In this article we motivate how enterprise 2.0 technology and gamification can be used to transform today's organizations. The notable benefits include higher engagement of employees, productivity enhancements, improvements in efficiency, innovation and community building. We identify the major building blocks of games and outline how enterprises and NGOs apply these principles in real world scenarios.

### **1 MOTIVATION**

Gamification is one of the major human-computer interaction trends of the 21<sup>st</sup> century. According to (Salen, Zimmerman 2004) a game is a system in which players engage in an artificial conflict, defined by rules, that result in a quantifiably outcome. Informally, with a game, one associates the idea of a structured experience with rules and goals that is fun. Games get into our primal response patterns and engage us in flow.

In the recent past, gamification has become a modern business practice that uses game mechanics to measure, influence and reward target user behaviours. When applied in a non-gaming context, these game mechanics work as a catalyst for making technology more engaging by influencing user behaviour and stimulating social interactions. Fundamentally, gamification acts as a layer on top of social collaboration software and has tremendous potential in engaging with customers, employees, and partners. Thereby game mechanics make an interactive experience more fun, compelling and addictive.

Also, games include many characteristics of problem solving, i.e., an unknown outcome, multiple paths to a goal, construction of a problem context, collaboration in the case of multiple players etc., and games add elements of competition and chance. Further, social technologies provide the additional possibility of building teams that might be geographically scattered (Ebner, Holzinger 2007).

In bringing gamification into organisations, one has to answer the question of what makes a computer application enjoyable to operate. Malone (Malone 1980) emphasizes that environments should be neither too complicated nor too simple with respect to the end-user's existing knowledge. However, these aspects must be carefully chosen to create intrinsically motivating environments and to appeal the target audience. Usually, user interfaces are designed for tools and not games but much of the motivation for using a system depends on the user's motivation to achieve an external goal. In cases where an external goal fails to provide the necessary motivation, particularly where the subject of the specific task is routine and boring, a user interface incorporating game mechanics can be useful in making the activity more enjoyable (Ebner, Holzinger 2007).

### **2 GAMIFICATION**

Within organisations (enterprises and Non-Governmental Organizations - NGOs) gamification can be used to drive behaviour in a non-gaming context. When implemented in the right way, this allows an organization to increase employee engagement, gain efficiency improvements, enhance the productivity and foster innovation. Given this benefits, it is no surprise that there is an increasing interest in how to apply gamification and in gaining a deeper understanding of game mechanics. Google

Trends confirms the increasing interest in gamification (see Figure 1) and Google scholar refers to over 4600 matches since 2010 in scientific literature. Organisations of all sizes and in diverse sectors are increasingly interested in products, communities and principles around gamification.

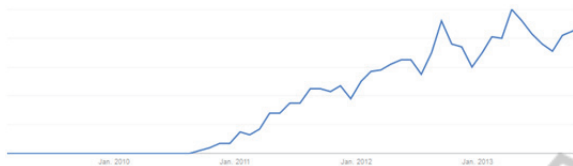


Figure 1: Increased interest in gamification: Google Trends confirms Google Scholar.

Gamification is of particular interest, as it is an effective way to engage and motivate “Millenials”. According to Brack (Brack 2012) this cohort will make up 46% of the workforce in the US. McGonial (McGonial 2010) notes that this generation has typically spent 10,000 hours of gaming by the age 21. As a result on this extensive experience with games, “Millenials“ (digital natives) are most engaged when using game-like user interfaces. The sheer volume of “Millenials“ combined with the fact that the generation of “Baby-Boomers” becomes retired results in the fact that organizations will need to address their gaps by increasingly looking for “Millenials“. As a substantial part of motivating this new workforce, organisations must provide attractive means of gamification solutions (Rauch 2012).

In the following we have selected two scenarios, where introducing game mechanics allows the organisation for initiating a transformation process.

## 2.1 Enterprise Gamification

Classical enterprise applications like enterprise resource planning, sales software, and customer relationship management (CRM) can learn from computer games and integrate the basic building block of games into the business process to influence behaviours of employees, partners and customers. Broadly the benefits of enterprise gamification can be categorized in four areas (Maan 2013): Engagement of employees, enhancement of productivity, improvement of efficiency, and establishing a constructive setting for innovation. Briefly we discuss each of these issues.

### 2.1.1 Employee Engagement

Enterprises are attempting to use gamification to encourage employees to make valuable contributions to their collaboration platforms. Often, game mechanics are used to recognize key contributors and to design user-centric motivations as well as to reward achievements and desirable behaviour of employees across enterprise-wide community networks.

For example, a sales person receives points on creating a new entry within the CRM system. The earned points further motivate this sales person to improve data quality of the provided entries. Contouring this process, this sales person may receive recognition (e.g., leader board, social activities, etc.). Overall the sales team will get a more accurate view on the opportunities, which in turn motivates the team to improve the quality of their services to potential customers (Maan 2013).

### 2.1.2 Productivity Enhancement

Social enterprise technology allows one to implement various kinds of performance management support activities by monitoring contributions in real time and visualizing these activities within the community. This increases collaboration and communication within the community and directly results in enhancing productivity within the enterprise. Further visualizing activities fosters intergenerational cooperation which helps to bridge the gap between the generation of the “Millenials“ and the generation of the “Baby-Boomers”. For example, visualizing customer satisfaction numbers and granting rewards for taking care of unsatisfied customers can be provided in terms of a natively gamified user experience.

### 2.1.3 Efficiency Improvement

Efficiency on the workplace means making people work better by focusing on core competencies and getting rid of unnecessary overhead. For example, knowledge workers waste lots of time in reading and answering e-mails, clearing mailboxes or sorting out spam mail. Embedding game mechanics into this process can raise the awareness of how much time one spends with the inbox every day. For example, a progress bar indicating how much one has spent with organizing and writing e-mails along with a point system, that provides rewards for quickly disposing mails can encourage to deal with e-mail efficiently. In today’s organizations this would save

lots of time. As a popular example, we like to mention the ‘Zero-E-Mail Initiative’ which attempted to replace all internal e-mails by introducing a company-wide enterprise social networking platform within the ATOS enterprise (Taylor 2013).

### 2.1.4 Innovation

For organisations working in distributed expert teams it has become important to encourage their employees to come up with new ideas. In the recent past several enterprises have started to exploit the potential of bringing together distributed teams of experts via a social enterprise platform to incubate, share and execute ideas from the various business domains. Thereby, some of the enterprises make use of gamification mechanics to drive such initiatives. For example, Siemens has established a knowledge networking platform particularly for creating innovations by using the crowd of employees (Mörl et al. 2011; Wiener et al. 2012).

### 2.2 Gamification in NGOs

The ongoing process of geo-political dislocation questions many of the ongoing practices like, for example, free movement of capital, trade-agreements, and harmonization issues. For example, in Europe, the number of citizens with a negative image of the European Union has considerably increased, whereas the number of those citizens with a positive image of the block has decreased (see Figure 2). As a result of that, citizens are engaging in using and developing instruments (e.g., petitions) fostering direct democracy. For example, recently the petition “Freiheit für Vielfalt!” (a petition to stop an enactment regarding emblems) received over 400.000 supporters (Osterbauer 2013).

The initiative “Wörthersee Stadt” (Wagger, Wuksch 2013) used social media to initiate a movement towards arranging the communities around the “Wörthersee” lake in the form of a town with around 215.000 citizens.

The above given examples, illustrate the willingness and the increasing tendency to engage in active citizenship. In particular, due to the given demographics, the generation of „Millenials“ will play a major role in this process. Thus, such initiatives – no matter whether driven by individuals or NGOs – will use Enterprise 2.0 technology and can benefit by making extensive use of automatic translation, video conferencing, community building and gamification. The riots in the middle east (e.g.,

the Egypt spring), the prohibition of the micro blogging service in Turkey (Turam 2014) and “ZunZuneo”, the “Cuban Twitter” (Guardian 2014), exemplify that social technology nowadays has a real impact on community building and democracy.

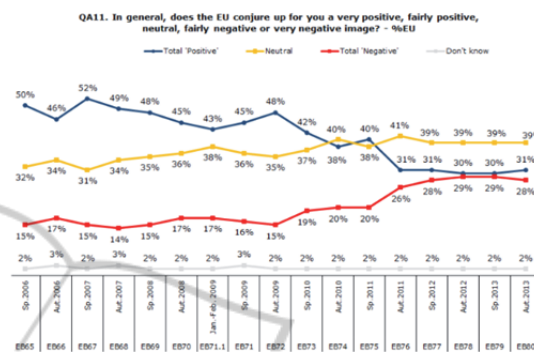


Figure 2: Citizen's view on the European Union.

## 3 BUILDING BLOCKS FOR GAMIFICATION

Applying game mechanics to everyday software is not a trivial task. In an ideal case, the game mechanics is embedded into the real world problem, so that the user does not even notice this. As the (hidden) game taps in the primary response patterns by engaging us in flow, gamification is considered a powerful tool for engaging citizens and employees. It is thus of uttermost importance to understand the elementary building blocks of games.

According to (Amy Jo 2012) we can identify the following basic building blocks in games:

1. **Collecting Items:** With collecting items one can express what is of importance. Also humans usually try to complete a set of items, i.e., visualizing items as a collection motivates the users to fill out potential gaps. For example, LinkedIn uses this idea when it comes to completing profiles.
2. **Points:** Earning points acts as a simple score system to engage users. Besides of simple points, there are social points, which are points that only other users can grant. Social points are able to express the values of items for the community. Points can be calculated via aggregate behaviour (e.g., Flickr). Further there are redeemable points which are able to drive loyalty of users. For example, eBay allows users to grant social points for online transactions, in this way building up trust in

users. Amazon uses social points for book reviews. Once one has established points, we can create leader boards to innately increase competitiveness and drive the behaviour of users. Parallel leader boards offer to increase diversity which can be used to on-board a bigger crowd. In serious scenarios it is often necessary to substitute leader boards with some kind of statistical ranking, for example, due to the fact that leader boards can be used to monitor productivity of employees. Further levels can act as a shorthand for accumulating points and thus levels can capture the game experience. With levels one can challenge the user in the appropriate amount, so that the state of flow is ideally maintained during interacting with the software or service.

3. **Feedback:** We use feedback to motivate users, giving them signals and signs that they are on the right track sometimes showing users they achieved something. Most of the time feedback provides proof on progress making a user feel good. At the same time this offers transparency. Due to the feedback, users of a game know exactly where they stand within the game, but also compared to other players. That can be rewarding. Increasing the velocity of feedback loops helps to maintain engagement of users. Subconscious feedback might even be more powerful. It is presented in such a logical, natural way that users are no longer aware that it basically is feedback. Moreover, social feedback is known to drive engagement. In summary, feedback is able to draw attention through movement and change, accelerates mastery, and makes tasks more fun and compelling. Ideally, adequate feedback is able to induce flow and makes boring tasks more fun.
4. **Exchanges:** Exchanges are well-structured social interactions. Social exchanges can be explicit (e.g., a chess game, where structured exchanges are built into the rules) which requires at least two partners. Implicit exchanges refer to exchanges where a user can give feedback, but the recipient(s) do not need to answer necessarily (e.g., comments within an activity stream).
5. **Customization:** Customization and personalization allows one for deeper levels of emotional attachment by the user. As the users personalize profiles they create a bond, and the profile becomes an extension of themselves. The difficulty levels seen in games are not

appropriate for all users. The system should allow users to customize a range of settings so that the game accommodates their individual needs. Further user interfaces need to be customized to the device to provide an accessible user interface under all circumstances (e.g., access via tablet, smart phone or workstation). Customization also applies to data objects. First, users like to re-mix and re-distribute basic data objects and establish different views on these data objects. We refer to such objects as recombinant data objects, i.e., different feeds on the objects can easily be established by end users. Second, content that lives outside of its source can be re-mixed and re-scanned to allow the user for smooth integration of this content.

After having elaborated the main building blocks in the mechanics of games, we briefly have a look at popular applications in the consumer market. In particular we show how the video portal Youtube and the micro blogging service Twitter makes use of these principles to provide a gamified user experience. Table 1 lists the basic building blocks of game mechanics and the corresponding elements for the products Youtube and Twitter.



Figure 3: The elements used in incorporating gamification when it comes to usage of social apps in enterprises.

## 4 CASE STUDIES: ENERGIZING PEOPLE'S WORK

In the following we discuss how the basic principles of game mechanics are nowadays used in businesses

Table 1: Use of game mechanics in popular consumer applications.

game mech. elem.	Youtube	Twitter
Collecting items	favourites, subscribers, videos	followers and friends
Points	multiple leader boards, star-ratings, points allow for different ways of exploring content	no. of updates, tweets, followers, users one is following
Feedback	comments, inbox, statistics as competitive leader boards	users can decide which messages to receive via e-mail
Exchanges	comments, video-responses	direct messages
Customization	profiles, user can decide on widgets, videos can be uploaded very easily from any device, recombinant data (set of streams) and syndicated service	backgrounds, easy to use, easy integration, recombinant and syndicated data (blogs)

and NGOs. First, we discuss safebook (social apps for enterprises), an enterprise 2.0 software that engages office workers. Secondly, we outline how an NGO (teamfreiheit.info) applies the same principles of game mechanics to build-up an online community that supports democracy and human rights.

**Safebook:** Safebook (Wagger 2013) is a social business platform, a kind of "Facebook for the Enterprise". It brings the best of the consumer web into business (social, mobile, activity stream, salesWiki, recommender, rating, tagging, social analytics, etc.). Figure 3 illustrates safebook's entry page, presenting the main elements for incorporating game mechanics.

1. **Collecting items:** Todos, notes, activities, working times, files, and i-Tweets (a form of tweets for the business domain) are presented in the form of collections. This encourages office workers to complete all items stimulating the completion of specific tasks.
2. **Points:** The number of todos, notes, activities, files and iTweets are displayed. A working time calculator supports easy and intuitive recoding of working times. Further the number of colleagues a user is following and the number of followers is shown. Products from a

product catalogue ("Produpedia") can be rated by making use of a star rating.

3. **Feedback:** A timeline shows i-Tweets, users can like or dislike i-Tweets, and progress of work is displayed via a progress bar. Statistics regarding the working artefacts (e.g., average todo priority, number of reversed or undone todos) are rendered in real time so that the user obtains immediate feedback.
4. **Exchanges:** Implicit exchanges by providing comments on all elements, sending direct messages via i-Tweets and by integrating e-mails and a semantic layer for e-mails that supports exploration of e-mails via semantic analysis (Wagger 2014).
5. **Customization:** The main site is customized with upcoming events, which are extracted from the calendar. Users customize their account with a profile picture to support emotional attachment. Further, there are various ways for customizing projects. As safebook runs within a browser, it is accessible on all platforms. Data objects can be re-mixed and re-distributed. For example, scanning a business card updates the address book and/or a CRM database.

**teamfreiheit.info:** The teamfreiheit.info community (Teamfreiheit 2014) is a start-up human-right's community (see Figure 4) enriched with social network elements (friends network, user timeline, etc.), with the following major goals: (1) informing users about topics concerning freedom, (2) engaging citizens to perform hero-actions, and (3) interacting and discussing with other users. The community adds an additional gamification layer to create a playful user experience and to additionally motivate users to be active within the community.

1. **Collecting Items:** Friends, hero actions (users can create a history of all accomplished hero actions) and timeline posts including status messages, videos and links can be collected.
2. **Points:** Experience points gathered by doing hero actions, bronze, silver and gold badges achieved for doing challenges, likes on posts and forum entries, and the number of comments. Users can increase their level (starting from level 0 as a passive civilian and ending at level 11 as a hero of freedom) by getting experience points and doing challenges. The level represents the major visible status of the user within the community and is shown all along the community next to the profile picture of the user.

3. **Feedback:** A progress bar shows the missing points to reach the next level, notifications after getting points, badges, likes and comments.
4. **Exchanges:** Discussions in the forum with multiple users, implicit exchanges by providing posts and comments, direct communication using a message system.
5. **Customization:** The main site can be customized by adding a profile picture. Further, one can also change the current visible level by being active within the community. A user can customize whether he/she wants to receive e-mail notifications for incoming messages, likes, comments, etc., and also set several privacy settings for the user profile.



Figure 4: An example of a gamified community for the human right NGO teamfreiheit.info.

The problem of adaption of enterprises and other organizations to customs of digital natives is important to future business. However, young digital natives have good experience with entertainment instead of professional work. Although some concepts like user-centricity and gamification can be brought to business, e.g., there is a difference when it comes to responsibility. This issue needs further investigation.

## 5 DISCUSSION AND RELATED WORK

Schubert and Williams (Schubert, Williams 2013) present the findings from a study of projects that are in the early stages of adoption of social software in organisations. The authors analyse the case studies and reveal possible beneficial factors for the adoption of social software such as improved personal information management, and better

workspace and presence awareness. However, the authors do not address the issue of gamification.

Maan (Maan 2013) notes that gamification is an emerging business practice to enable and transform social business initiative across organisations. Thereby the possible business scenarios for gamification are widespread ranging from customer service and support to community building and collaboration.

The main challenge in the design of communities is to motivate users to participate and contribute (Lampe et al. 2010). Lampe et al. (Lampe et al. 2010) studied users in a moderately large community (Everything.com) and found that users may continue to participate in a site for different reasons than their initial motivation when looking for the site.

Especially a feeling for belonging to the site is very important and social and cognitive factors are probably more important than usability issues in the contribution to communities (Lampe et al. 2010).

According to Kollock (Kollock 1998) reputational benefits and learning as motivation can overcome the lack of motivation in communities. Dholakia et al. (Dholakia et al. 2004) identified five different motivational factors to contribute in online communities:

- **purposive value**, refers to a predetermined instrumental purpose, such as giving or receiving information,
- **self-discovery**, covers aspects of social interaction to gain knowledge and social resources,
- **maintaining interpersonal connections**, refers to keeping in contact with other people and creating new friendships,
- **social enhancement** is linked to the value derived from the user's reputation within the community, and
- **entertainment**, describes the fun and relaxation of interacting with other users and the community.

The idea of using elements of game design in non-game contexts can leverage both, motivation and engagement. However, the recent trend towards gamifying applications often reduces the complexity of a well-designed and balanced approach to a gamified application to its simplest components: badges, levels, points and leader boards. This can actually damage existing interest or engagement with the software product or service (Rigby, Ryan 2011). It is thus of uttermost importance to identify the abstract basic building blocks for gamifying applications to understand how to amplify the

intrinsic motivations of employees, customers or communities. Besides of the five basic building blocks identified in this article, useful guidelines for gamification design are provided by Werbach (Werbach, Hunter 2012).

Holzinger et al. (Holzinger et al. 2012) report on the design and development of a mobile application to support archaeological education and to raise awareness for our cultural heritage by making use of the powerful notion of play. The application reads information from Quick-Response Codes (QR-Codes) on paper sheets, which can be placed directly at the points of interest. Users can now follow an archaeological scavenger hunt along those points of interest. They start at one point of interest and get hints on how to find the others. This makes use of collective intelligence, i.e., using the mobile devices amongst the group of users as social communicators in order to get specific information on the target.

Dynamic, interactive computer simulations, designed to teach complex processes and concepts, have become very popular in all domains of science education, for example, physics, chemistry and biology, as demonstrated in the high number of sales. The nature of such simulation ranges from compelling visualizations but also covers the domain of educational computer games (Ebner, Holzinger 2007; Kickmeier-Rust et al. 2007).

Ebner and Holzinger (Ebner, Holzinger 2007) state that the use of an online game for learning in higher education aims to make complex theoretical knowledge more approachable. An online game was used for the first time during a lecture on structural concrete. According to Nielson (Nielsen 2005) a factor called "joy of use" was introduced, which was amazingly high. Ebner, Holzinger's experimental findings confirm the efficacy of game playing.

For the purpose of e-learning, Dolog et al. (Dolog et al. 2004) point out the importance of personalization and describe an approach to bring personalization (resembling the notion of customization in game mechanics) to the semantic web. The authors show how personalization functionalities can be embedded into semantic web services, supported by other services for retrieving learning resources or user information.

## 6 CONCLUSION

In this article we motivate how today's enterprise 2.0 technology and gamification can be used to transform organisations. We relate this trend to the

changing workforce and conclude that enterprises and NGOs will need to address this issue in the near future. We present two scenarios (enterprise software and citizen engagement within a NGO) where gamification is used to initiate a transformation process. Afterwards we identify five basic building blocks within games, and show how these game mechanics are applied in mainstream consumer software (Youtube and Twitter). Two novel case studies show how gamification is used to engage people in their specific tasks. The first study, shows how game mechanics are applied when it comes to applying social apps in enterprises. The second one, reports how a NGO applies the same mechanics to foster community building. Finally we discuss our findings and relate our work to most recent research work.

## ACKNOWLEDGEMENT

The work presented herein has been partially funded and from the SME program "Innovationscheck" of the Austrian Research Promotion Agency (FFG, contract no. 840346).

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