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Gamification Design Patterns for User Engagement

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Abstract. The rapid development of technology in today's times make business' survival a rather complex task. It is therefore necessary for the specialized organization and administration of each company to differentiate and strengthen its competitive advantages. Gamification is an established practice in many business domains and can enforce employees to engage in business processes and change aspects of their behavior. Even though numerous gamification patterns that are described in literature have been used so far by businesses to various working environments, the outcomes were not the best possible that we would expect in terms of their right utilization to business non-game contexts. Thus, there is need for concise gamification patterns that can offer right guidance to game designers in business. Gamification design patterns can provide a distilled knowledge of techniques of how to design object-oriented software. This paper aims to address this gap in existing literature by describing new gamification design patterns, classifying them according to specific criteria and providing new information to this research domain. Our study is a descriptive literature review and is based on review of previous works. This descriptive literature review tries to give a better understanding by proposing new gamification design patterns in the continuously evolving research domain of gamification design patterns.

Keywords: gamification, design patterns, software design, game design.

1. Introduction

Gamification from its very beginning around 2010, has become a technological trend with many successful implementations in software industry. It is an informal umbrella term for describing the use of game-based elements to enhance user experience and engagement in non-game activities and applications (Deterding *et al.*, 2011; Huotari and Hamari, 2012). It uses elements and mechanics of game design in a non-game environment to bring on certain behavior in individuals, as well as to enhance their motivation and engagement in specific tasks (Sailer, Hense, Mayr & Mandl, 2017). Similar concepts that have been strongly connected to gamification are also 'gameful design' or 'game-like design' (McGonigal, 2011). The popularity of gamification is obvious the last nine years in the development of enterprise information systems and

e-commerce systems, and while it has successfully been implemented in various working environments, it still remains unclarified how employees really act inside gamified environments. Meder *et al.* (2015) examine the concept of gamification under the following hypotheses:

(i) Gamification refers to diverse types of users that use game elements with many different ways.
(ii) Gamification is used in order to accomplish a set of goals, as for instance the issue of assigning each user a game design element that will encourage him to accomplish these goals.

Gamification is the process of employing the integration of game design concepts into non-game scenarios and non-game environments such as websites and mobile applications, to obtain instant feedback of services offered. According to Phillips (2014), successful implementation of gamification requires a consistent design process. He mentions that a successful design process should include the following features:

- **Purpose**: the designer must set a specific goal to achieve.
- **Human-centered**: user-experience should be one of the priorities.
- **Balance**: it is important the existence of balance between analytical and critical thinking.
- **Iteration**: focus on prototyping and testing.

Based on the above mentioned, Werbach (2014) has developed a gamification framework of the following six steps:

- **Define** the goal behind gamification implementation.
- **Outline** the desirable user behavior with the initial goal.
- **Describe** the target audience.
- **Devise** activity loops with emphasis on achieving progress and enhancing engagement.
- **Do not forget** the fun part.
- **Deploy** gamification efficiently with the use of the right tools.

The basic goal is to increase users' engagement by urging them to interact more with the gamified environment of the software application. A gamified software application that includes specific interactive user-interface game elements such as challenge, badges and stickers, leaderboards and storytelling is more likely to inspire users and increase their motivation and engagement.

Designing gamification is a user-focused process. Thus, when designing how to apply gamification we should carefully choose the game design elements that best fit to our users' needs and expectations, in order to incentivize them to accomplish goals and bring the desirable outcomes in their workplace (Usability.gov., 2014).

Gamification is a significant tool for designers to drive user engagement. It is important to embody game elements into applications and systems that will incentivize users to achieve goals. For example, users want to win awards and enjoy facing challenges. Therefore, the embodied game dynamics in gamified projects can act as effective intrinsic motivation because they encourage users to engage with a gamified system at their will. As Jane McGonigal, an American designer and author states:

"Games give us unnecessary obstacles that we volunteer to tackle."

In the set of rules that are part of the design process of a gamified app, there are some types of rules that are commonly reused in many gamified software apps. A set of design patterns for gamification can be reused for other gamification projects.

2. Related Work on Gamification Frameworks

Meaningful gamification in software industry refers to the improvement of software design with game-like features to create engaging and enjoyable experiences to users exactly with the same way games do (Deterding *et al.*, 2011; Huotari and Hamari, 2016; Deterding, 2015). Nowadays, the software is designed to be useful and practical. Software is designed using the utilitarian principle of research software development which emphasizes that software should reduce the overall human effort (Van der Heijden, 2004). However, most users expect that software is designed not only to be practical, but also enjoyable and easy to use (Deterding *et al.*, 2011; Hamari *et al.*, 2014). Therefore, software designers embody gamification techniques in software development projects in order to design, analyze and optimize utilitarian software with hedonic elements (Van der Heijden, 2004).

In enterprise gamification, most gamified systems embody game design elements such as points, badges, leaderboards and progress bars in order to increase motivation, engagement, knowledge sharing and productivity of businesses and organizations (Morschheuser *et al.*, 2017). Gamification software engineering is a complex domain, and a multidisciplinary approach should be followed, including basic principles from the fields of psychology, game design and programming to handle efficiently the complexity of designing effective gamification software development (Brookey, 2010). Software engineering of gamification aims to create gameful engaging and enjoyable experiences to increase users' motivation towards specific behavior patterns through the implementation of game design elements from games into non-gaming contexts (Huotari and Hamari, 2016 ; Deterding, 2015). In most cases, game designers that implement gamification aim to design and implement gamified software that is:

i) A functionally well-designed software to function in a proper way.
ii) A user-friendly software which encourages users' interaction and leads to desirable behavioral changes.

Gamification can be classified and modelled in many ways, e.g., with UML (Unified Modeling Language) diagrams (Dormans, 2008; Taylor, 2006), Petri Nets (Araújo and Roque, 2009), or other custom tools that allow users to communicate structure, behaviour, and interaction. MDA framework (standing for Mechanics, Dynamics, and Aesthetics), developed and taught as part of the Game Design and Tuning Workshop at the Game Developers Conference, San Jose 2001–2004, is a formal approach, which attempts to contribute to a better scientific understanding in the research area of game design and production, game criticism and research on technical gaming and playful

interaction (Hunicke *et al.*, 2004). The MDA framework is a tool that can help designers and researchers in game research area. Games and gamified applications are created by designers and developers, and they constitute a product or service consumed by users (players) (Vieira, Silveira & Martins, 2019). Game Mechanics are built from algorithms and data and refer to specific game components that are presented to users. Game Dynamics illustrate the run-time game system operation and behavior. Aesthetics represent the emotional stimuli that come from the way users interact with the whole game system.

Embodying specific structural schemes and design forms as solutions to common repeatable problems, show the meaningful use of design patterns in software industry. Design patterns are offering a distilled knowledge of techniques of how to design object-oriented software. They are concise and simple solutions to specific type of problems (Gamma *et al.*, 1995). In particular, Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides state about design patterns in their software engineering book, that design patterns are created to solve design problems, like finding the right objects, choosing granular objects which are at low level detail in the code, and achieving intelligent code reuse (Gamma *et al.*, 1995). Object-oriented programs may have complex structure of components and interactions among them, which means that components and interactions among them can be defined on different levels of granularities. Design patterns show in a much simpler way how developers can structure classes and objects to solve specific problems (Freeman *et al.*, 2004). Game design patterns are design patterns that are especially useful for making games or gamified projects. Many of the design patterns introduced by Gamma *et al.* (1995) can be useful in game-based projects, but Robert Nystrom (Nystrom, 2009–2014) has described in his book many other design patterns that are also very useful especially in the production process of game-like based projects. Nystrom's expertise in software industry as a game developer at Electronic Arts for eight years is obvious in his book Game Programming Patterns, where he describes some of the old Gang of Four design patterns, and presents many new design patterns, created with main aim to solve repeatable problems in game programming. Design patterns constitute a necessity in intelligent software design in a continuously changing and evolving software industry.

3. Defining User Experience (UX)

User experience (UX) focuses on a deeper understanding of users. In particular, it is very important to understand users' needs, abilities and limitations. Also, we must focus on the business objectives in order to improve the quality of users' interaction with the business products or services. Nick Babich a UX architect and writer, mentions that user-centered design consists of user-focused processes in the product design and development stages. In the design process of a gamified product, designers focus on users' requirements, objectives, and feedback (Babich, 2019).

According to the five-stage Design Thinking model proposed by the Hasso-Plattner Institute of Design at Stanford there are the following five basic stages in the design pro-

cess: Empathise, Define (the problem), Ideate, Prototype, and Test. The Design Thinking process is a step-by-step and flexible process that can help both businesses and individuals to find solutions to a problem. It helps the design team to understand users' needs (Empathy), define the problem to be solved (Define), create new ideas (Ideate), adopt a specific approach in prototyping (Prototype) and develop a prototype/solution to the problem (Test) (Rikke Friis Dam and Yu Siang Teo, 2020).

User experience (UX) is a continuously developing field. Creating a successful user-centered design contains the principles of human-computer interaction (HCI) including the following basic disciplines (Usability.gov):

- **Project Management** is the application of knowledge, tools, and techniques on planning and organizing a project and its resources. In particular, this includes identification and management of the lifecycle to be used and its application to the user-centered design process.
- **User Research** focuses on a better understanding of users' behaviors and needs, that occurs with specific observation techniques, task analysis, and feedback methodologies.
- **Usability Evaluation** focuses on how users can learn and use efficiently a product to meet their goals. It also refers to how satisfied users are through that process.
- **Information Architecture** focuses on the overall organization of information, and, in particular, how information is structured and presented to users.
- **User Interface Design** focuses on ensuring that a user interface contains elements that are easy to access, understandable and friendly to use from users.
- **Interaction Design** focuses on creating engaging interactive systems.
- **Visual Design** focuses on ensuring a friendly interface that meets brand objectives.
- **Content Strategy** focuses on useful content by planning its creation, delivery and overall management.
- **Accessibility** focuses on the open access and user-friendliness of a site, system or application and its ease of use from disabled individuals.
- **Web Analytics** focuses on the collection, reporting, and analysis of websites data.

Peter Morville a pioneer of the fields of information architecture and user experience explains information architecture and user experience with the following diagram (see Fig. 1). The three circles show the distinction between user experience and user-centered design (Morville, 2004). Peter Morville went further and designed a new more detailed diagram to show the facets of user experience (see Fig. 2). According to him a system must be: (a) *useful* by providing innovative solutions, (b) *usable*, with emphasis in web design on the interface-centered aspects of human computer interaction, (c) *desirable* by using efficiently elements of emotional design such as images, identity, brand and others, (d) *findable* with main purpose the efficient design of navigable web sites and locatable objects to meet users' expectations, (d) *accessible* to everyone, (e) *credible* and (f) *valuable* by delivering of value to its sponsors (Morville, 2004).

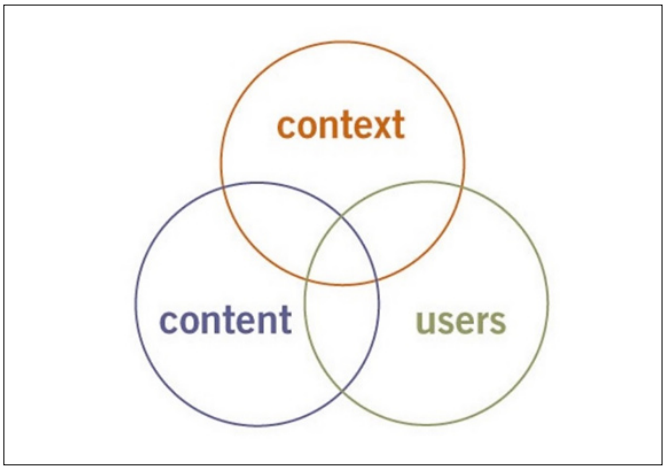


Fig. 1. Three Circles of Information Architecture (Morville, 2004).

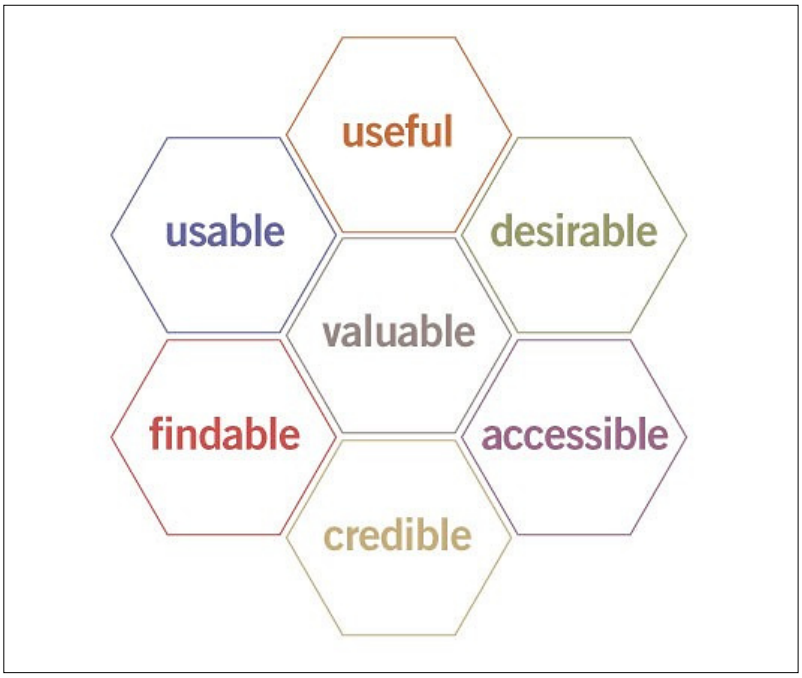


Fig. 2. User Experience Honeycomb (Morville, 2004).

According to usability expert Jakob Nielsen, usability is a quality feature that evaluates the ease of use of user interfaces with emphasis on specific methods for improving ease of use during the design process. He states about usability on the Web the following (Nielsen, 2012):

"On the Web, usability is a necessary condition for survival. If a website is difficult to use, people leave. If the homepage fails to clearly state what a company offers and what users can do on the site, people leave. If users get lost on a website, they leave. If a website's information is hard to read or doesn't answer users' key questions, they leave. Note a pattern here? There's no such thing as a user reading a website manual or otherwise spending much time trying to figure out an interface. There are plenty of other websites available; leaving is the first line of defense when users encounter a difficulty.

The first law of ecommerce is that if users cannot find the product, they cannot buy it either."

4. Research Methodology

This literature review aims to make a synthesis of research and findings on the content of gamification design patterns and user engagement. Following guidelines by Paré *et al.*, we conducted a descriptive literature review of selected studies that fitted for final detailed analysis. Our research methodology tries to address the gap in existing literature by describing new gamification design patterns, classifying them according to specific criteria and providing new information to this research domain. Our research methodology is based on review of previous works and the following basic steps show our basic research plan:

Step 1: Initial Search in bibliographic databases

The basic aim of our research methodology was at first to direct our research to find relevant studies about gamification design patterns and user engagement. To find more publications of high scientific rigor, a detailed and focused search process was run in relevant bibliographic databases such as Scopus database, and SpringerLink (a search with "Gamification Design Patterns" and "User Engagement" in the field including titles, abstracts and keywords in the Scopus and the SpringerLink databases, accessed 1 October, 2022). The total number of publications after a search in Scopus Database within 2011–2022 amounted to 377 documents in the year 2022, 401 documents in the year 2021, 338 documents in the year 2020, 227 documents in the year 2019, 192 documents in the year 2018, 136 documents in the year 2017, 127 documents in the year 2016, 86 documents in the year 2015, 57 documents in the year 2014, 34 documents in the year 2013, 8 documents in the year 2012 and 5 documents in the year 2011 (see Fig. 3 and see Fig. 4). Also, considering the documents by affiliation, the greatest number of documents were by affiliation: the Tampere University (31 documents), the Northeastern University (18 documents), the Delft University of Technology (17 documents), the Universiteit Ultrecht (17 documents), the Politecnico di Milano (16 documents), the Aalto University (16 documents), the Turun yliopisto (15 documents), the Karlsruher

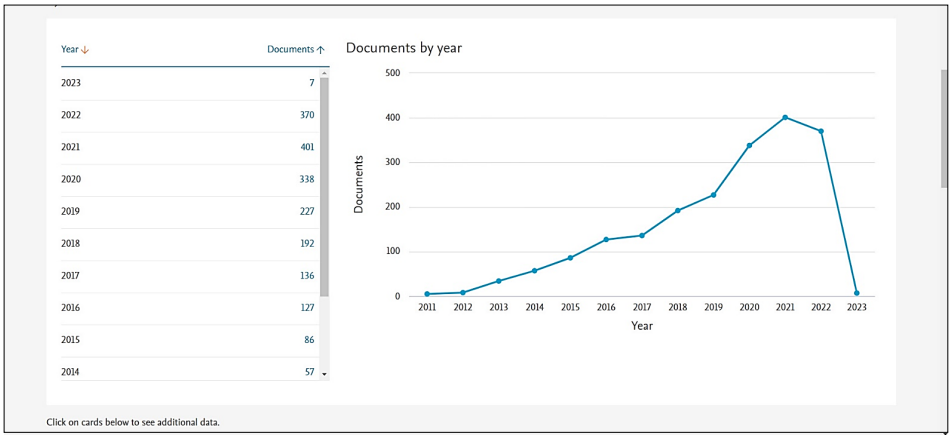


Fig. 3. Scopus indexed papers within 2011–2022.

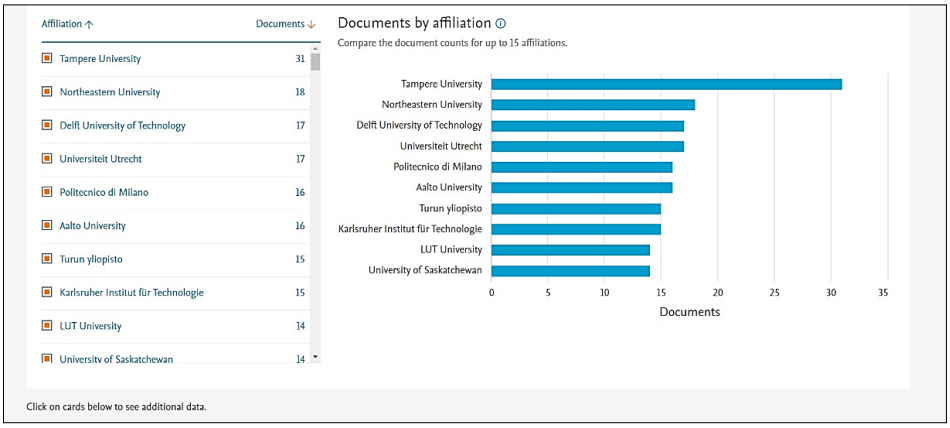


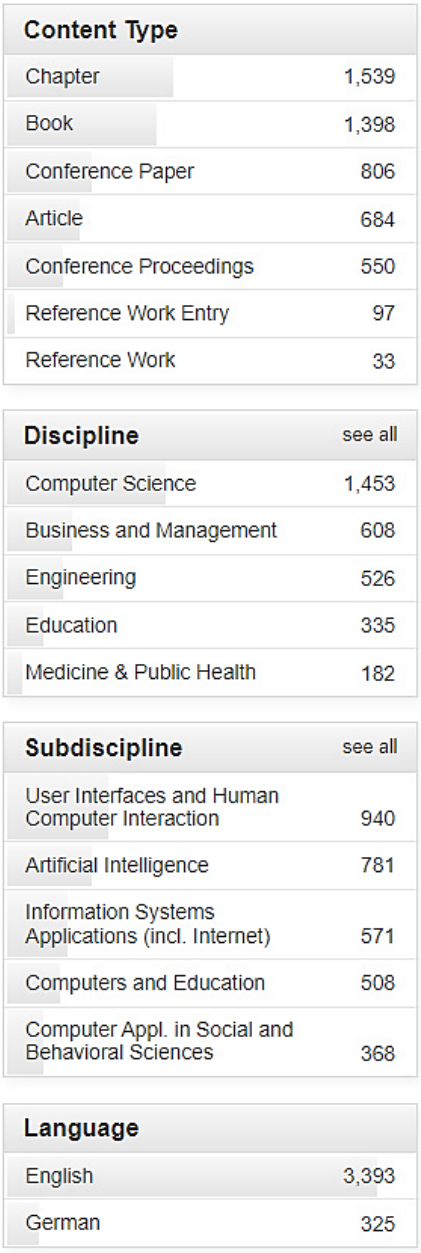
Fig. 4. Documents by affiliation indexed by Scopus database.

Institut fur Technologie (15 documents), the LUT University (14 documents) and the University of Saskatchewan (14 documents). The total number of publications after a search in SpringerLink Database amounted to 1,539 chapters, 1,398 books, 806 Conference Papers, 684 Articles, 550 Conference Proceedings, 97 Reference Work Entries and 33 Reference Works (Fig. 5).

Step 2: Defining Selection Criteria

To select our papers, we defined the following criteria:

1. Peer-reviewed full-text papers published in an international venue were selected for review.
2. Research methods in the papers are clearly explained.



Content Type	
Chapter	1,539
Book	1,398
Conference Paper	806
Article	684
Conference Proceedings	550
Reference Work Entry	97
Reference Work	33

Discipline	see all
Computer Science	1,453
Business and Management	608
Engineering	526
Education	335
Medicine & Public Health	182

Subdiscipline	see all
User Interfaces and Human Computer Interaction	940
Artificial Intelligence	781
Information Systems Applications (incl. Internet)	571
Computers and Education	508
Computer Appl. in Social and Behavioral Sciences	368

Language	
English	3,393
German	325

Fig. 5. SpringerLink indexed papers.

Step 3: Selected Studies

The number of selected papers is presented in Table1:

Table 1
Selected Studies

Selected Studies	Gamification Design Patterns	Design Patterns	User Engagement
Alexander, Ishikawa, Silverstein, Jacobson, Fiksdahl-King, Shlomo, 1977	-	✓	✓
Araújo & Licinio, 2009	✓	✓	✓
Aseriskis and Damasevicius, 2014	✓	✓	✓
Babich, 2019	-	-	✓
Brookey, 2010	✓	✓	✓
Chou, 2016	✓	✓	✓
Deterding, Dixon, Khaled, & Nacke, 2011	✓	✓	✓
Deterding, 2015	✓	✓	✓
Direkova, 2012	✓	✓	✓
Dormans, 2008	✓	✓	✓
Dymek & Zackariasson, 2016	✓	✓	✓
Freeman, Freeman, Sierra & Bates, 2004	-	✓	✓
Gamma, Helm, Johnson & Vlissides, 1995	-	✓	✓
Hunicke & Leblanc & Zubek, 2004	✓	✓	✓
Hamari, Koivisto & Sarsa, 2014	✓	✓	✓
Huotari, & Hamari, 2012	✓	✓	✓
Kapp, 2013	✓	✓	✓
Lewis, 2014	✓	✓	✓
McGonigal, 2011	✓	✓	✓
Meder, Jain, Plumbaum & Hopfgartner, 2015	✓	✓	✓
Morschheuser, Maedche and Walter, 2017	✓	✓	✓
Morville, 2004	-	-	✓
Nielsen, 2012	-	-	✓
Nystrom, 2009–2014	✓	✓	✓
Phillips, 2014	✓	✓	✓
Triantafyllou & Georgiadis, 2022	✓	✓	✓
Zichermann and Joselin, 2010	✓	✓	✓
Vieira, Silveira & Martins, 2019	✓	✓	✓

5. Gamification Design Patterns for User Engagement

5.1. *Game-based Practices with Gamification*

The optimist scenario when applying gamification in web-based systems especially in eCommerce is to boost engagement, increase motivation, give options, enhance progress, and create social habits (Zichermann and Joselin, 2010). In virtual project management of software applications, embodying game-like elements in a system leads not simply to an increase of engagement of employees at work, but to a constant

rising progress and the creation of a habit to use software on a regular basis (Triantafyllou, 2022). When gamified software is designed in a proper and successful way, it has the capability to overcome any challenges that might appear in virtual projects by creating effective communication standards and tracking information about others team members' interactions available (Aseriskis and Robertas, 2014). In addition, a gamified system has the potential to provide a basis for automated processes due to the rise of motivation that occurs when team members establish a relationship of mutual trust and friendship (Dymek and Zackariasson, 2016; Triantafyllou and Georgiadis, 2022).

5.2. *Pattern Recognition*

5.2.1. *Motivational User Stories and Design Patterns*

User stories are an approach in software engineering that ensures that software applications meet users' needs and expectations. They must be specific with well-defined requirements and methods, and well-designed features and outcomes (Lewis, 2014).

Design patterns were firstly introduced by Christopher Alexander and others in their book "*A Pattern Language"* (Alexander *et al.*, 1977). The patterns described in this book refer to the general use of design patterns as architectural solutions at construction levels. However, we focus our research on the use of design patterns in software. Design patterns are offering a distilled knowledge of techniques of how to design object-oriented software. According to Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides, design patterns are concise and simple solutions to specific type of problems (Gamma *et al.*, 1995). In their software engineering book "*Elements of Reusable Object-Oriented Software"*, they explain that design patterns are created to solve design problems and this book had so much influence on software engineering field that its authors were referred to as the "Gang of Four" in the software engineering circles.

Staffan Björk and Jussi Holopainen present in a very interesting way game design patterns in their named book "Patterns in Game Design" (Bjork and Holopainen, 2004). They present game design patterns in similar scope to motivational design patterns and describe creative experimentation that helps in the creating of emotional experience for the players. Björk and Holopainen (2004) defined game design patterns as follows:

> *"Semiformal interdependent descriptions of commonly recurring parts of the design of a game that concern gameplay."*

Similarly, Lewis (2014) suggests the following definition of motivational design patterns based on the above definition:

> *"Semiformal descriptions of commonly recurring parts of the design of an application that concern motivating user behavior."*

As with game design patterns, motivational design patterns are inaccurate tools, thus the "semiformal" aspect must be kept in the above definition. The key difference is that motivational design patterns are not as interlinked as game design patterns. Game design patterns have very strong connections and the inclusion of one pattern in a game may enable or disable the inclusion of another. Motivational design patterns have more independency and can be combined to create different forms of applications (Lewis, 2014). For a motivational design pattern to function properly it must meet users' needs. Users must be aware about the functionality of the pattern. But they do not do this consciously and it is important to examine some of the following levels that a user faces when he/she is working with a motivational design pattern:

1. **User interface widget:** The user interface widget represents what the user can see.
2. **Affordances:** Affordances describe how the widget enables the user to interact with the interface.
3. **Desire:** These affordances refer to give answers to the question of what really drives the users to interact with the widget.

A common element in gamification that is closely connected with the development of academic or professional skills, refers to the process of creating, identifying or predicting a pattern. Karl Kapp (2013) states about the pattern recognition that:

> *"Pattern recognition is the ability to recognize order in a chaos or to see relationships in disjointed information. Patterns can be found in concepts, ideas, and series of words, symbols, numbers, and images. They can also be found in behavior, economies and historical events. In every discipline, patterns are crucial for predicting the future, estimating the right course of action and determining diagnostic steps. Salespeople use patterns to sell product, psychologists use patterns to help patients, lawyers use patterns to help settle cases and researchers use patterns to fight disease."*

In gamification, pattern recognition can be used to teach a salesperson to see a pattern in a specific type of product. In teaching, a learner might be asked to identify the pattern of behavior in a certain circumstance. Adding pattern recognition into gamified learning events provides challenges to learners and incentivizes them as they work to identify what constitutes a pattern (Kapp, 2013).

According to Kapp (2013) some simple guidelines that we can follow in pattern recognition are the following:

- Start with simple patterns and then move to more complex patterns.
- Start with more tangible patterns and then move to more abstract patterns.
- Provide many opportunities in the process of pattern recognition.
- Keep the patterns simple for new learners in a studied subject and more abstract for the knowledgeable learners.

5.3. *Specific Design Patterns for User Engagement*

5.3.1. *Successful Gamification is Based on the Core Drivers of Motivation*

Gamification is about using game-based mechanics, aesthetics, and game thinking to enhance users' engagement, motivate action, and support learning. If done with the proper way, research by Karl Kapp who is an Instructional Technology Professor at Bloomsburg University, has shown that gamification can enhance employee motivation by 51.6%.

Research has shed new light on why users prefer to play games and use gamified applications by revealing what is actually happening inside the brain. Games and gamified processes are very effective at driving users to encode, store and retrieve information, resulting in meaningful learning. In gamified environments, users are driven to contextualize information in their attempt to achieve their goals. Gamified environments often produce strong emotions, resulting in knowledge activation focused on facilitating the recall of knowledge. The cooperative and social elements of games and gamified projects draw on these emotions producing strong long-term pleasant memories.

Successful gamification is based on the core drivers of motivation. The mechanics of game elements (badges, points, leaderboards and quests) don't automatically lead to gameful and enjoyable user experience. Based on Yu-kai Chou's extensive research in the gaming industry, Yu-kai Chou has discovered that all successful games have eight core drivers of motivation. Specifically, Chou has proposed the "Octalysis framework" and the following eight core drivers:

- Epic Meaning & Calling
- Development & Accomplishment
- Empowerment of Creativity & Feedback
- Ownership & Possession
- Social Influence & Relatedness
- Scarcity and Impatience
- Unpredictability and Curiosity
- Loss & Avoidance

Yu-kai Chou has identified and classified the following 78 gamification techniques depending on the type of motivation (see Table 2) (Chou, 2016).

5.3.2. *Gamification Design Patterns for User Engagement*

Gamification is the application of game elements and digital game design techniques to non-game problems, such as business and social impact challenges. Gamification is defined by Oxford University Press, as the *"application of concepts and techniques from games to other areas of activity."*

Nadya Direkova who works as a Game Mechanic and Senior UX Designer at Google, states that the language of game mechanics is a relatively new language in consumer software (Direkova, 2012). Game mechanics are design patterns that promote play and

Table 2
Chou's 78 gamification techniques

Epic Meaning & Calling	Narrative, Higher Meaning, Elitism, Humanity Hero, Destiny Child, Beginners Luck, Free Lunch, Co-Creator
Development & Accomplishment	Points, Progress Bar, Step-By-Step Tutorial, Leaderboards, Badges, Quest Lists, Boss Fights, Fixed Action Rewards, Win Prize, High-Five, Crowning, Level-Up Symphony, Aura Effect
Empowerment of Creativity & Feedback	General's Carrot, Evergreen Mechanics, Blank Fills, Real-Time Control, Chain Combos, Milestone Unlock, Boosters, Choice Perception, Voluntary Autonomy, Instant Feedback
Ownership & Possession	Virtual Goods, Avatar, Build From Scratch, Learning Curve, Earned Lunch, Collection Set, Monitoring, Protection, Recruitment
Social Influence & Relatedness	Friending, Mentorship, Group Quest, Bragging, Touting, Water Cooler, Social Treasure/Gifting, Thank-You Economy, Social Prod, See-Saw Bump
Scarcity and Impatience	Dangling, Appointment Dynamics, Fixed Intervals, Moats, Throttles, Countdown, Prize Pacing, Options Pacing, Patient Feedback
Unpredictability and Curiosity	Easter Eggs, Sudden Rewards, Oracle Effect, Mini Quests, Glowing Choice, Rolling Rewards, Random Rewards, Mischief, Visual Storytelling, Obvious Wonder
Loss & Avoidance	Sunk-Cost Tragedy, Progress Loss, Fear Of Missing Out, Evanescence Opportunity, Scarlet Letter, Status Quo Sloth, Weep Tune, Visual Grave

game-like engagement. Design patterns can be defined as repeatable solutions to design problems.

According to Direkova, there are design patterns that create game-like user engagement. She describes the following three main aspects of the user engagement (Direkova, 2012): (a) "Come and try the new gamified product or service", (b) "Bring Friends to try the new gamified product or service", (c) "Come back to retry the new gamified product or service (as frequent customers)". The first aspect refers to the beginner experience that occurs when we invite users to come and try a gamified application. The second aspect refers to the social experience that occurs when we encourage users to bring new friends to try the gamified application. The third aspect refers to the repeatable engagement that takes place when we call users to come back and try again the gamified application as frequent customers. According to Direkova, all gamified applications must have the above mentioned three aspects fulfilled successfully by the use of game mechanics.

Examining with detail the above three aspects we can identify specific design patterns for user engagement. Starting to explore the first aspect "*Come and try the new gamified product or service*" with more detail, we can identify the following patterns (Direkova, 2012):

1. **Prize and awards**: Prize and awards is a design pattern to attract users' interest. They are very popular and are used often in gaming and non-gaming context. A realistic example of their use is the XPrize project (`https://www.xprize.org/`). XPRIZE is a non-profit organization that designs and manages public competitions intended to encourage technological development that could benefit humanity.

Their Board of Trustees include James Cameron, Larry Page, Arianna Huffington, and Ratan Tata among others. XPrize was a project that offered a prize to the first private company that would land on the moon and take a picture of the planetary rover. In fact, there were about 30 private companies that had participated in the mission for the XPrize.

2. **Visual storytelling**: Game designers in most cases reserve assets in order to design a gamified application with more visual features and not with too much text instructions. Gamification for business is the practice of adding game elements and mechanics to digital experiences to improve engagement, participation, and trust. Brands are becoming gamification adopters and Groupon is an example of these recent gamification adopters. Groupon and Zipcar have introduced their value propositions in order to bring new innovative digital experiences to users. In particular, they have used a visual language and set of rules that promote quick and direct engagement. A lot of startups are using this kind of methodology of explaining their value propositions through interactive website layouts, pleasant text messages, specific icons and organized steps. A value proposition refers to the value a company promises to deliver to their customers if they choose to buy their product. It is also a clear statement that describes the company's brand to consumers by announcing them what the company stands for and how it operates.
3. **Visual Cues**: This design pattern emphasizes on the visual elements of a software application. An example of the use of this design pattern has been implemented by Facebook. Facebook has used a similar pattern for the development of a new feature of their mobile app. This new feature named "Facebook places" playing "Flashlight" was designed to help users interact with the app and use it more easily. In Facebook they have decided to put a screen of darkness around "Facebook places" and create a flashlight effect around "Facebook places" in order to help users to click on this feature.
4. **Tutorials and Coaching**: Tutorials and coaching are used in games and gamified environments in a lot of scenarios. These scenarios are designed to help users use these gamified environments and understand how they operate.
5. **Reward schedule**: This pattern describes the new idea of a reward schedule. Game designer Sid Meier, the creator of Civilization strategy game, states that: "*You cannot over-reward the player in the first 10 minutes"*. In other words, Sid Meier explains that when we use game elements and mechanics in software, it is not the right approach to give too many rewards from the beginning. Foursquare for instance, has many kinds of badges. For beginners, Foursquare gives to new users a newbie badge. However, there are some badges for experienced users with high level of difficulty to achieve them. Experienced users can earn their badges after the successful completion of their mission.

All the above-mentioned design patterns (Prizes and awards, visual storytelling, visual cues, tutorials and coaching and the reward schedule) emphasize on enhancing precious initial engagement which is very important for businesses aiming to incentivize users to start using their software.

Starting to explore the second aspect (b) "Bring Friends to try the new gamified product or service" we can identify the social aspect of bringing friends and identify the following design patterns in our attempt to achieve social engagement (Direkova, 2012):

1. **Gated Trial-Form a team to start**: It is important to invite users to work as a team. When we invite users to participate in a gamified environment or log in to use a gamified application through their social media account, we encourage social engagement of users because users can bring new friends to participate in our gamified environment or use our gamified application.
2. **Design conversations**: Another pattern is to design conversations in order to receive social feedback from users' opinions. By enabling conversations and comments of users inside the gamified environment of our website or application, we achieve the desirable social engagement. For example, Zynga is using many types of buttons to increase user engagement. In addition, many companies adopt the idea of a "thank you" button. In particular, when a user posts a question in the gamified app and another person replies, a "thank you" button recognizes the courtesy of the user that communicates with the other user by answering to the question.
3. **Structured social feedback**: By urging users to write comments and express their preferences about the gamified software they use, we get important feedback.
4. **Reputation:** All the above-mentioned patterns help companies to gain reputation. Reputation is used to many games and gamified applications to make users feel good, to give users a sense of belonging to a community and for many other purposes. For instance, Uber Technologies, Inc. is an American multinational ride-hailing company offering services that include peer-to-peer ridesharing and a micromobility system with electric bikes and scooters. Uber allows to rate not only taxi drivers' behavior but also clients' behavior through the taxi ride. Concluding, the reputation system is that establishes how efficient players are by using a gamified software application.
5. **Sharing achievements**: Another very interesting pattern is the idea of sharing achievements. For example, users in Xbox platform want to express their digital achievements to other users, because they can show by that way their meaningful achievements.
6. **Mischief**: In any community there are uncertain circumstances that we have to embrace. For example, Farmville does exactly that by allowing users to keep the farms of their friends that were designed according to their preferences.

After the initial successful engagement of users, companies focus on finding new ways to bring users back and retry the gamified website or software application. Starting to explore the third aspect (c) "Come back to retry the new gamified product or service (as frequent customers)" we can identify the following design patterns (Direkova, 2012):

1. **Create scores**: Keeping scores can affect behavior in many ways. For example, *The Tidy Street Project* in Brighton is part of *CHANGE*, an *EPSRC* funded research

collaboration between The Open University, Goldsmiths, Sussex University and Nottingham University. In particular, residents who volunteered for a new energy-saving initiative, they had been given electricity meters so they could monitor their daily energy use, and identify which devices are using the most power, and when. In the Tidy Street project people's energy consumption was written down on the sidewalk and was updated every time the energy consumption changed.

2. **Throttle actions**: After achieving scores, the next step is throttle actions. In the game design process, it is important to design gamified applications that incentivize users to interact with the whole gamified system.
3. **Advanced User Paths:** In software gamified applications it is necessary to incorporate simple tasks for users, that are gradually become more challenging. For example, in YELP app website there is a special section that refers to specific users – an elite squad, that rank the website by writing reviews. In every user are assigned specific privileges to work on a specific section of the website.

6. Discussion

Within a gamified workplace, gamification design patterns can lead to better user motivation and engagement by gradually improving the devotion to work and finally, the productivity of employees. Undoubtedly, literature shows that gamification design patterns help to provide better and reusable solution in everyday workplace conditions. Gamification is a user-focused process and gamification design patterns are offering a distilled knowledge of techniques as well as guidance for their use by work gamification designers.

Within a gamified workplace, most of the employees want to engage in repetitive learning tasks, overcome failure experience and continue to try to accomplish their goals despite the difficulties. Even though numerous gamification techniques and patterns that are described in literature have been used so far by businesses to various working domains, the outcomes were not the best possible that we would expect in terms of their right utilization to business non-game place. Thus, there is need for concise gamification patterns that can offer right guidance to game designers in business. In this paper, our main goal was to describe the usage of new gamification design patterns in the workplace and classify them according to specific criteria by providing new information to this research domain.

7. Conclusion

Through this piece of work, some conclusions are drawn. The continuous flow of information and the rapid development of technology in today's times make business' survival a rather difficult and complex task. It is therefore necessary for the specialized organization and administration of each company to differentiate and strengthen its competitive advantages. All of these are prerequisites for operating in the long run.

Designing gamification is a user-focused process. The basic goal is to increase users' engagement by urging them to interact more with the gamified environment of the software application. A gamified software application that includes specific interactive user-interface game elements such as challenge, badges and stickers, leaderboards and storytelling is more likely to inspire users and increase their motivation and engagement. Gamification is a significant tool for designers to drive user engagement. It is important to embody game elements into applications and systems that will incentivize users to achieve goals. Embodying specific structural schemes and design forms as solutions to common repeatable problems, shows the really meaningful use of design patterns in software industry. Design patterns are offering a distilled knowledge of techniques of how to design object-oriented software.

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