IMPROVE GAMIFICATION DESIGN WITH UX DESIGN ELEMENTS: A SURVEY WITH PRACTITIONERS

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ABSTRACT

Since the emergence of Gamification, many design frameworks have been proposed. However, the implementation of this concept is still subject to risk due to the lack of tools, best practices and complete processes that cover the end-to-end product cycle. This article proposes an online questionnaire addressed to UX and Gamification practitioners to explore the UX design elements that can enhance Gamification design. Therefore, the aim of this paper is to investigate the relevance of adapting and adopting UX design elements in order to enhance the design of gamified products from the practitioners' perspective. To achieve this goal, this study proposes and analyzes the results of a survey to which 123 practitioners responded. We sampled the participants by inviting over 1200 practitioners extracted from the LinkedIn network. The purpose of the survey is (i) to collect feedback from Gamification and/or UX practitioners on the design of gamified products, (ii) to identify the UX design elements that need to be adapted to the specificities of Gamification, and (iii) to conclude guidelines to help unify a design process for a meaningful user experience.

The survey results show that, in general, UX and Gamification practitioners share the relevance of strengthening Gamification design via UX design elements. Several recommendations have been highlighted in order to adapt UX processes to deal with the specificities of Gamification such as the adaptation of the tracks of the MAP journey to better analyze the motivation and engagement of users. The Persona is also concerned by adaptation proposals to include player profiling in the current model. Finally, we conclude by suggesting starting points for the unification of a UX process specific to gamified products.

Keywords: *Gamification, User experience Design, UX Design Element, Process, Survey.*

1. INTRODUCTION

Gamification as a psychological concept has largely proven its effectiveness in changing human behavior on two major aspects: first, by making people more motivated in the experience both extrinsically and/or intrinsically [1][2], and second, by developing the desired viable or sustainable user engagement [3]. However, the application of gamification in a context presents a real challenge if the design has not been done properly [4]. The lack of specific engineering tools for Gamification makes this problem uncontrollable since the outcome cannot be guaranteed.

Gamification design methods are in their infancy, the field remains to be filled in terms of design processes and artifacts. In this context, we have studied in our previous research how to contribute to the enrichment of engineering tools for the design of a good quality gamified product. As a basis for our work, we conducted a study [5] on more than 90 relevant Gamification design frameworks resulting in real experiments and specific case studies. It allowed us to identify a set of patterns that can guide us towards quality elements of a gamified product or service. Among these patterns, we noted the importance of addressing intrinsic and extrinsic motivation mechanisms in order to engage the user in the system while maintaining the balance between business objectives and playability during the experience.

Within the same issue, we have seen the interest of the use of UX (User Experience) tools, methods and artifacts for the realization of gamified products as we deal with the needs for user-centered systems through both concepts. Even though the integration of Gamification in a user experience design approach puts the improvement of the user experience at the forefront of all these analyses [6], it remains important to confirm the relevance of this proposal with experts and practitioners in the field, as well as to study the relevant avenues of the use and

adaptation of UX artifacts according to the particularities of Gamification.

Therefore, the objective of this study is to evaluate the relevance of reinforcing the design of gamified products with UX elements. The choice of adoption or adaptation based on the specificities of Gamification was evaluated according to the practitioners' area of expertise. This study allows us to understand the reasons and motivations for adapting or not adapting the tools. To achieve this goal, we analyze the results of a questionnaire sent to 1200 candidates with 123 responses.

The rest of this article is organized as follows: Section II provides the theoretical background for the study; Section III describes the study design, research questions, and methods; Section IV presents the results of the study; Section V discusses the major findings and implications of the study; Section VI discusses potential biases that threaten the validity of this study; Section VII presents related work; and finally, Section VII presents our conclusions and future work.

2. STUDY SETTINGS

In this study, we have chosen a quantitative research method that focuses on exploratory research. The questionnaire is used as the primary data collection method for this study. This section describes the chosen sample, the selected survey instrument, the data collection procedures and the analytical methods used to analyze the data collected. This section also explains how we planned and executed this study in the following order:

- Section 2.1 presents the purpose of the study and the research questions.
- Section 2.2 discusses the research method we have adopted.
- Section 2.3 describes the questionnaire and the process used to conduct it.
- Section 2.4 describes our target population and the strategy used to invite study participants.
- Sections 3 presents data standardization, analysis and reporting of results.

2.1. Study objective and research questions

The good design of gamification has shown an optimistic sign of the ability to address human motivators [7]. However, there is still a lack of a design model to effectively harness the benefits of gamification and help designers ensure that a

meaningful experience is achieved [4] [8] [9]. In this study, our aim is to investigate a design model that provides designers and teams of software developers with a more explicit framework of the benefits of gamification that achieve an engaging experience. To achieve this goal, we formulated the following 3 research questions (RQs):

RQ1: Do UX and Gamification practitioners share the gaps of the Gamification design frameworks and processes reported in the literature?

> *Motivation: Distinguish the gaps in the Gamification design frameworks from the point of view of practitioners in both fields.*

RQ2: Do UX and Gamification practitioners share the relevance of enhancing Gamification design with UX design elements?

> *Motivation: Evaluate, with practitioners, the relevance of strengthening the design of Gamification with UX Design, then learn more about the adaptation and adoption aspects from a process point of view.*

RQ3: What are the tools and phases of the UX process requiring the most adaptations to integrate the specificities of Gamification?

> *Motivation: Identify the tools and phases of the UX process that can bring the most added value to the design of Gamification.*

These research questions must be analyzed from the point of view of practitioners and according to their areas of expertise, distinguishing the following 3 communities:

- G Community: Practitioners with experience mainly in the field of Gamification
- UX Community: Practitioners with experience mainly in UX
- UXG Community: Practitioners with expertise in the field of Gamification and UX

2.2. Study design and research methods

To answer the research questions, we conducted an opinion survey. According to Easterbrook et al. [10], Sample studies are used to identify characteristics of a large population and are usually associated with the application of questionnaires. Surveys aim to collect data in order to describe, compare or explain knowledge, attitudes and behaviors [11].

Survey is a type of quantitative research instrument that is used not only for the collection of data or information about a problem or phenomenon, but a series of complete steps to collect information

to describe, explain or compare knowledge, attitude and behavior in certain circumstances. This type of research is a simple and efficient method used by researchers to collect information about the product, brand, context, event, employees and workers [11].

2.3. Questionnaire design

To answer the research questions, we created an electronic survey using Google Forms. The survey consisted of 7 questions divided into three sections: (1) general information on the participants, (2) the adaptations to be made at the level of the design process and framework and (3) the adaptation of the tools and phases of the design process. design. We used multiple-choice and open-ended questions in the questionnaire. Tables 1, 2 and 3 present the circulated version of the questionnaire. Table 1 presents the questions on the course of the participants through identifying the area of experience of practitioners which encompasses UX, Gamification and Game profiles. We supplemented this question with the concerned area of application in order to distinguish conclusions that depend on one scope from another.

Table 1: Background questions.

ID	Questions
R1	Last name, First Name
R2	What is your area of expertise and the number of years of corresponding experience? - Gamification expert - Gamification designer - Game designer - UX Designer - Design Thinking Consultant - Other
R3	In which field of application, have you experienced Gamification or UX? - Education - Software Engineering - Social - Business - Marketing - Other

Table 2 presents the questions on design processes and frameworks. The first question focuses on the difficulties observed with existing frameworks and processes. In the list of choices, we tried to consolidate a set of issues raised in the literature. Then, we discuss the integration aspects that can be carried out between the phases of the UX and

Gamification process in order to better address the specificities of gamified products. Q3 aims to learn from practitioners about the frameworks they deem suitable for developing meaningful gamified products. In the last two questions, we look at other avenues for improving design processes.

Table 2: Questions about processes and frameworks

ID	Questions
Q1	According to scientific studies and expert opinions, we still have gaps in the existing frameworks and processes for designing meaningful gamified products. If you share the same opinion, can you select the relevant aspects? - Diversity: Presence of several frameworks that address specific needs - Divergence: treatment of specific needs or a particular design aspect (ethics, sustainability, etc.) - Completeness: absence of an important part of the design (player modeling, objective, measurement element, etc.) - Partial coverage of the product life cycle - The meaningful aspect is not considered - Lack of analysis tools - Lack of assessment tools - Lack of good practices - Other
	Do you have any proposals to improve these gaps?
Q2	In order to improve the design of gamified products, we believe that it is relevant to use UX processes, which requires the integration of the specificities of Gamification. Can you select the phases that can be integrated to ensure a balance between business aspects (user-friendliness) and user motivations (pleasure)? The vertical line relates to the process phases of the UX - Understand user (work and needs) - Analysis - Design solution - Prototypage - Evaluation (usability testing) - Improvement The horizontal line concerns the process 'phases of Gamification': - Know your player - Identify the mission - Understand human motivation - Apply mechanics - Manage, monitor and measure
Q3	Can you tell us the type and name of the

	design framework that you think is the most appropriate for building meaningful gamification products? *NB: We invite you to answer in the following format: type - name (the type must have the following values: UX framework, Gamification framework, hybrid framework or personalized framework) => Example: Gamification framework - Octalysis*
	If you use your own frameworks, can you tell us which aspects were missing in the existing models and which you have customized?
Q6	The design of a gamified product involves a balance between business objectives and user needs. Based on your experience, how can we ensure this balancing? - Use an innovation approach (eg: design thinking) - Integrate extrinsic motivations into the product design - Integrate intrinsic motivations into the product design - Involve the end user in product testing (acceptance testing) during the various stages of the design process. - Design through iteration: The feedback loop with end-users should be short and quick - Other
Q8	Do you have any other advice to share with us for the good design of gamified products?

Table 3 addresses the issues around the tools for analysis and measurement. Q4 and Q5 concern the personalization of the Persona and Journey MAP tools to integrate the specificities of Gamification. Q7 deals with the metrics that can be used to assess gamified products.

Table 3: Questions about analysis and measurement tools

ID	Questions
Q4	We believe that designing a Gamified product with a UX approach necessarily involves integrating the specifics of the player profile into the Persona model. From the list below, can you choose some of the most important features to add? if there are other important features, can you add them to "other" option: - Player type (ex: Bartle) - Motivational factors - Business profile - Skills level - Pain point - Integration between player profile and business profile - Other
Q5	The Journey MAP tool addresses several aspects of the user experience. We believe it is necessary to add another track to achieve a meaningful gamified experience. Can you select the appropriate track to add? - Intrinsic motivation elements - Extrinsic motivation elements - Reason of engagement (or disengagement) - User Value elements - Business value elements. - Other
Q7	How can we measure the effectiveness of a gamified solution and distinguish the effect of gamification from another event? - Gamification Element Statistics (points, badges, …) - Gamification KPI (Key Performance Indicator) - Balancing (Rate of objectives with intrinsic benefit for the user) - Emotional status - Playing frequency - Engagement indicators - Other

2.4. Selection of participants: Population and sampling strategy

The target population for this study is practitioners in the field of Gamification or UX or both. To select an appropriate sample of this population, we identified more than 1200 practitioners with actual experiences in the studied fields. The search was done mainly on LinkedIn given the level of reliability of this data in the professional field.

Finally, we checked the profile of each candidate to validate their inclusion in the population targeted by the questionnaire. This step was very important to guarantee a direct contact with the contacts selected for the questionnaire. For each contact collected, we sent a personalized invitation email to participate in our study. The personalization of the emails was intended to distinguish our emails from spam and marketing emails, and that the participant would notice that they were objectively chosen because of their relevance in our sample. This particular strategy worked very well: for the 1200 invitations sent, we had 123 responses in our survey (10%). This participation rate met our expectations, considering that the target population was very specific. Therefore, we believe that our sample is large for our target population.

3. RESULT & DISCUSSION

This section presents the results of our questionnaire and a discussion based on the practitioners' responses. Our results and discussions are based on several analysis criteria that we have identified through a systematic mapping study of the Gamification and UX design frameworks [8]. Below are the analysis criteria used:

- Gaps in existing frameworks: Studies [8][9] have identified a set of issues that Gamification still faces. This vision allows us to initiate our analyzes based on current difficulties and to invest in new proposals in order to improve them. The list of identified gaps includes: diversity (Presence of several frameworks that address specific needs), divergence (treatment of specific needs or a particular design aspect, ethics, sustainability, etc.), completeness (absence of an important part of the design (player modeling, objective, measurement element, etc.), partial process coverage, lack of consideration of the meaningful aspect, lack of analytical tools, good practice and assessment tools.

- Choice of improvement solution: systematic mapping [8] enabled us to choose UX Design as a relevant reinforcement track for improving the design of gamified products among other user-centric concepts (e.g. UCD, Design Thinking …).

- Type of process: the type of process is a key element for the analysis of the result, because it allows, according to the background and experience of the practitioners, to classify the type of proposals for improving the design process of gamified products. The objective is to distinguish between proposals that rely solely on purely Gamification, UX frameworks, or those that offer custom frameworks in the context of experimentation, including the design process of the unification tracks of the two concepts.

- UX analysis, design and evaluation tools: The mapping study [8] allowed us to identify a set of proposals for customizing UX tools for the context of Gamification. These proposals are mainly based on the integration of factors and types of motivation, commitment and profiling of players / users.

- Scope of Practitioners: Scope allows us to better understand and analyze practitioner responses. Gamification practitioners and experts can help us understand the difficulties of designing gamified products and explore possible areas for improvement. UX practitioners can provide their feedback and criticism of UX adaptation and adoption proposals, while practitioners with experience in both areas can guide us towards the most relevant areas for improvement by merging the two visions.

The result of the questionnaire will be discussed in detail according to these different projections in the following sections:

3.1 Gaps in the existing frameworks and processes for designing meaningful gamified products

The results of the gaps identified in the existing frameworks and processes show a diversity of causes. This diversity can be linked to the application domain, the scope of expertise of the practitioner or the type of process / framework used, which will be discovered in detail in the next sections.
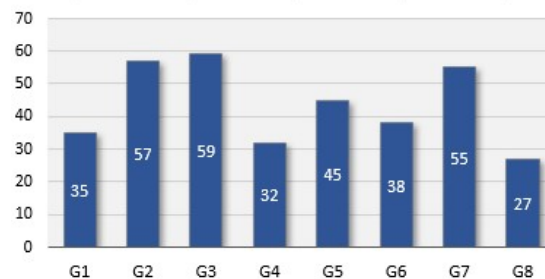
G1: Diversity, G2: Divergence, G3: Completeness, G4: Partial coverage of the product life cycle, G5: The meaningful aspect is not taken into account, G6: Lack of analysis tools, G7: Lack of good practices, G8: Lack of assessment tools

Figure 1: Gaps Identified In Existing Gamification Frameworks And Processes

3.1.1 By type of gap:

Regardless of the practitioners' area of expertise, the issues identified in the Gamification design frameworks and processes were defended with the same coverage rate. The most dominant reason was the completeness (36) of the current models manifested in the presence of all the important elements for the design of a meaningful gamified product [12]. According to the experience of UX practitioners, the current Gamification processes neither allow for a complete user research phase nor a user experience evaluation that still suffers from tooling. Moreover, these practitioners recommend strengthening the user research phase in Gamification processes to help in understanding the real needs and motivations of users. Experts in the field of Gamification focus more on player modeling which does not sufficiently cover the needs [quote]. We are limited to models designed specifically for the game and for the players thus the interest in developing a model that allows to project on the roles of a player in a business context or other. The community of UXG practitioners is mainly interested in the behavioral part which is insufficiently present in the current design frameworks. Because of the gaps remaining in the translation of scientific findings into real designs and concepts [quote], practitioners recommend treating any gamification problem as a behavioral problem. Among the theories that can be used to assess what kind of mechanics should be used are the theory of self-determination [13] and BJ Fogg's model of behavior [14]. Yu-Kai Chou's Octalysis model [15] has proven to be very effective in selecting mechanics types for the solution/concept.

Figure 2: Gaps In Frameworks And Design Processes By Area Of Expertise Of Practitioners

The lack of good practice (33) has been highlighted in particular by UX experts in the context of software engineering. There are still not enough good practices to carry out the end-to-end design of the product which causes difficulties on several software projects [4]. It is true that the evolution of Gamification since its appearance has enabled the development of some good practices that allow us to guide the proposed solutions [8][9]. However, the expectations of designers in this type of technical field are not covered. The experts of Gamification share these difficulties but with a lower rate, because it depends on various application areas such as education, social and other, besides areas where Gamification has experienced more experimentation and evolution in terms of good practice.

Regarding **divergence** (32), we have a common rate between Gamification and UX experts, because it is the most dominant character on current frameworks. The majority of practitioners have pointed out that current frameworks have been designed to address a specific need without the possibility of using them to address the needs of other different areas. In addition, the particularity of Gamification requires customization of the solution according to the case study. For Gamification experts, they are also stressed that the divergence of frameworks is observed at the level of the most dominant aspect at the level of each model, in this case, we can find frameworks that are particularly interested in the ethical aspect given the sensitive context of application (e.g. banking field) [16], or models which prioritize the sustainability aspect given the associated business issue such as the case of the education field [17] [18].
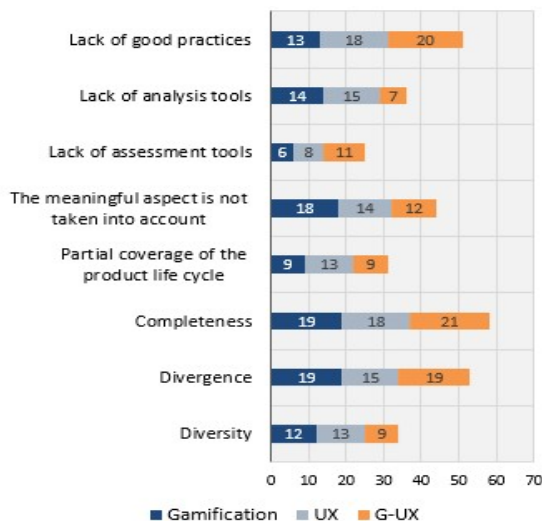
The **meaningful aspect is not considered** (25): Following the survey, the integration of the meaningful aspect in the design framework or process is not systematically ensured. In many cases, the experience fails because of a poor design that does not rely on the intrinsic motivation of users. UX experts have defended this option the most, as current approaches do not sufficiently cover user motivations in product design. Gamification experts share the same opinion but with a smaller number of responses given the progress made to date on this need, particularly with the evolution of certain frameworks such as Octalysis, which allows several aspects of human motivation to be covered [15]. Another problem that impacts the meaningful aspect directly and was raised during the survey is the cost of Gamification where companies are looking for a quick payback and return on investment; thus, easily turning it into dark gamification that pushes people

instead of giving them a better life. Indeed, the biggest problem is getting the customer to understand the power of motivation and gamification. For example, loyalty programs only focus on discounts and bribes while research shows that money is not the best way to motivate a target group.

Diversity (23): Presence of several frameworks that address specific needs: Regarding the diversity point, Gamification UX practitioners recognize the presence of several types of frameworks that have been proposed to solve a problem for a specific domain or context [8][9]. Although this diversity provides tailor-made solutions for some contexts, it still leaves gaps for other cases. The recommended approach in this context is to study the advantages and disadvantages of several frameworks and to choose the right one. We can even mix and match several frameworks to meet specific requirements, yet this single and specific framework may not produce the desired results; we can cite the design of educational gamification as an example [17] [18]. Indeed, much of the focus is on lesson design OR lesson series design. The next step is a framework that considers the lesson, the series of lessons, and the larger academic environment, as well as the interactions between these levels. "

Lack of analysis tools (25) / **Lack of assessment tools** (23): The absence of analysis and assessment tools in current Gamification frameworks and processes is also an important point that was reported by a large community of practitioners; precisely 25 for analysis tools and 23 for assessment tools. Regarding analysis tools, practitioners strongly recommend improving the user research phase, relying on UX tools including interview and questionnaire, in addition to end-user observation using the actual product. More storytelling also needs to be introduced in the discovery phase. Better end-user needs analysis helps bring together business goals and end-user needs and align them. These user behavior research and analysis tools can contribute significantly in improving current Gamification frameworks. Regarding evaluation tools, practitioners report difficulties in the ability to assess the quality of the solution implemented during the early design phases.

Partial coverage of the product life cycle (18): This latter was also reported by 18 practitioners. It concerns the absence of important phases in the existing processes, notably the evaluation phase and the implementation and realization phase of the solution, as the current processes are limited to a general vision of what needs to be put in place

3.1.2 By practitioner application area:

Software Engineering:

Practitioners in the software engineering field have pointed out gaps in best practices and completeness of existing processes and frameworks; which is consistent with the study of the existing Gamification lacking progress on engineering tools [8][9]. Practitioners also point to the lack of a solid foundation of Gamification, and only apply badges and points in a random manner, which reduces usability and does not really achieve the business objectives of investing in Gamification. This shortcoming is a consequence of the relationship between game theory and its application in software products that were totally separated from the underlying semantics of IxD (Interaction Design) [citation]. In the completeness of a framework, practitioners also pointed out the difficulty of evaluating the Gamification experience as the design progresses as it is impossible to know if the design meets expectations or not until the first iteration is released. However, on the diversity and divergence side of the models, the lowest rates are observed; which heralds the advancement of solutions towards models that cover a wider scope. In addition, several practitioners have recommended the use of the Octalysis framework in this context.
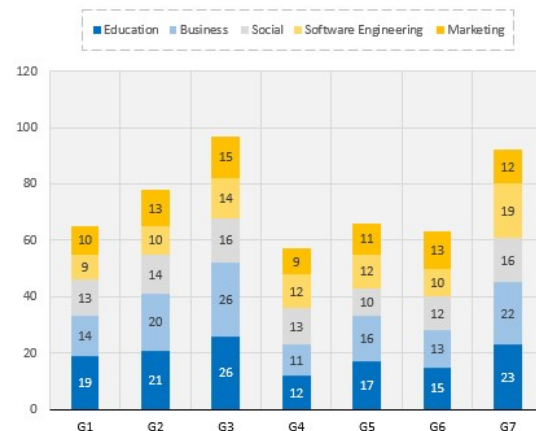
1: Diversity, G2: Divergence, G3: Completeness, G4: Partial coverage of the product life cycle, G5: The meaningful aspect is not taken into account, G6: Lack of analysis tools, G7: Lack of good practices.

Figure 3: Gaps In Frameworks And Design Processes By Area Of Application

Other area:

The completeness issue is the most dominant element concerning the reasons for the current gaps in the design of gamified products. It concerns all application domains except software engineering. Indeed, practitioners have identified the most gaps in

the completeness and divergence of existing models. In the education domain, practitioners use their own system that links educational outcomes and objectives as well as the end user. It is about studying all aspects of their profile and applying the corresponding gamification principles. In the business domain, design must focus on the intersection of user motivation and business objectives; systems must understand where they overlap to build a successful program.
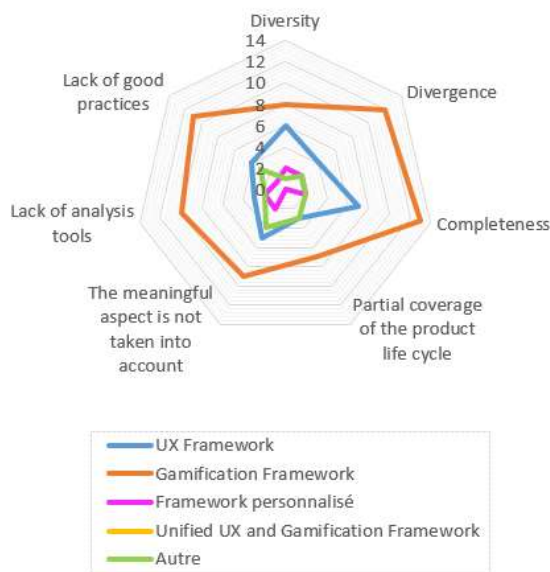
3.1.3 By process type:

Figure 4: Gaps By Type Of Framework

Gamification Framework: This category represents the highest volume of responses and covers all the difficulties with more focus on the aspect of completeness (13), divergence (12) and good practice (11). Indeed, practitioners report difficulties on its various aspects since the current frameworks do not cover the design process from end to end, and permit it to deal with problems addressing only specific contexts. Good practices must be enriched to better fit the context of software engineering.

Unified Gamification and UX Process: Out of the 8 contributions, there is almost an absence of gaps in the frameworks used. Despite the low participation, this vision announces a good result in the process of unification of the UX and Gamification process to fill the gaps of each process and answer the different issues raised in the design of Gamification or UX.

Customized process: In the community of practitioners (123) who participated in the survey, only 5 participants recommended the use of a customized process. According to their feedback, this type of process improves the coverage of the entire product lifecycle However, on the other aspects, the same difficulties still remain, with a high rate (40%), namely diversity, divergence and lack of analysis tools.

UX Framework: The difficulties reported in the use of UX processes concern the completeness of existing models, in addition to a diversity of processes. However, in terms of good practice, this is the least reported point in the practitioners' responses.

3.2 In order to improve the design of gamified products, it is relevant to use UX processes, but it requires the integration of the specificities of Gamification. Can you select the phases that can be integrated to ensure a balance between business aspects (user-friendliness) and user motivations (pleasure) (Q2)?

This question discusses the importance of integrating UX processes and Gamification to improve motivation and user experience. Experts from both fields responded positively to this question, which confirms the commonalities between the two models helping to unify the two types of processes. Moreover, the majority of practitioners agree with the hypothesis that Gamification and UX address the same objective from 2 different perspectives. Indeed, gamification is often approached from the idea that it is about mechanics, rules and rewards, but these are only means to achieve an end. The following sections make it possible to distinguish the specific aspects to be distinguished for the integration of the two processes:

Table 4: Mapping Between The Phases Of The UX And Gamification Process

	Know your player	Identify the mission	Understand human motivation	Apply mechanics	Manage, monitor and measure
Understand user (work and needs)	99	61	87	18	31
Analysis	60	64	65	26	53
Design solution	55	56	71	72	41
Prototypage	34	37	45	84	50
Evaluation (usability testing)	40	32	47	41	89
Improvement	42	39	55	57	81

Understand user (work and needs): At the level of this first phase, we note a concentration of the mapping on the first 3 phases of Gamification, because it is the main phase that allows us to know our players, their missions, as well as their motivations. These elements are essential for performing an effective and in-depth study of the user, mission and other key factors in order to design a system that perfectly matches the user, the objectives and the situation. Analysis based on fake data can poison the entire process and impact product use without triggering any of the main drivers of human motivation. According to practitioners, the understanding of player types is not limited only to this phase of user research, but rather encompasses all phases of the process, as the "end" is always the next start of a game loop. In addition, without understanding the internal needs of the end user, we will not be able to motivate them.

Analysis: Unlike UX, gamification practitioners have reported a lack of analytical tools, hence the importance of referring to the tools offered in other user-centric concepts of which UX is a part. The mapping presented in figure X, only confirms that the analysis phase can help in the analysis and understanding of the behaviors and motivations of the players, as well as their missions in the system. UXG practitioners recommended using the Journey MAP tool, which is a great way to analyze user behavior over time and identify triggers for motivation and engagement in the experience.

Design solution and Prototyping: According to practitioners, this phase is mainly focused on the application of game mechanics. Its objective is to produce the fastest prototype in order to continuously evaluate and improve it. This phase also refers to other phases of Gamification, including understanding player motivation, as this is the key to identifying the most suitable game mechanics. Consequently, the close relationship between these two phases is revealed, as the choice of mechanics totally depends on the motivation of the players.

With the unification of the two processes, not only design solutions that can provide satisfactory answers to identified needs can be created but also the intrinsic motivations of users can be addressed; this is the key to lasting user engagement. in the experience. In this phase, the persona model was cited among the tools that must be adapted to address the specificities of player modeling in the context of Gamification.

Evaluation and improvement: Evaluation is the most important phase to measure and identify areas for improvement. Practitioners insist, in this phase, on the monitoring and evaluation of the product throughout the development cycle. The improvement phase is based primarily on the application of new game mechanics in order to attempt meeting the user's needs with other solutions. Then, the phase of understanding the user and his mission is in second priority, with the idea of reinforcing our understanding of the need in an iterative way. This phase is not limited only to the assessment, but also refers to the other phases because monitoring must be considered from the start.

3.3. Can you tell us the type and name of the design framework that you think is the most appropriate for building meaningful gamification products? (Q3)

3.3.1 General vision:

Overall, we see a diversification in the types of frameworks used in the design of gamified products. At the top of the ranking comes the Gamification frameworks with 34 responses. According to practitioners, the strong use of this first category depends on the availability of several gamification frameworks that partially or totally meet the needs. Then comes the typology of personalized frameworks of which 26 practitioners have defended the importance of adapting the existing Gamification frameworks according to each context of use Moreover, the typology of the frameworks which is based on the unification of UX and Gamification

design is just one example. Another type of framework which relies on a design thinking methodology combined with certain aspects of Octalysis can be cited as an example (such as using the methodology of creation of personas but reducing the 8 main drivers to the most important 4 psychological factors; while the other 4 were considered secondary). Indeed, existing models are not sufficient for all use cases. You have to be aware of the limits of existing models and not hesitate to try new paradigms to guarantee user centricity in relation to the model centricity.
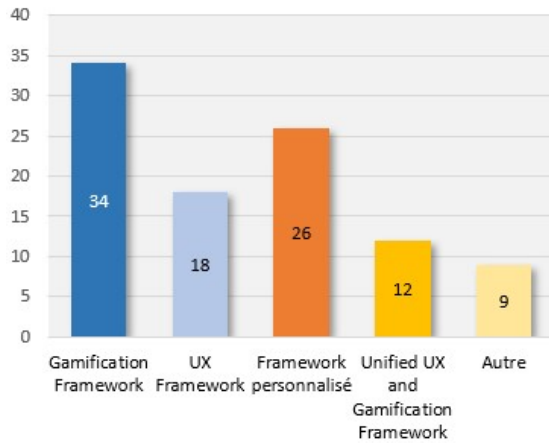

Figure 5: Classification Of Frameworks Offered By Practitioners According To The Category Of Membership.

Then, the typology of frameworks specific to UX comes with 18 answers. In this category, practitioners believe that using UX frameworks and processes is sufficient, as Gamification is already part of UX. Among the recommended models, is the process proposed by Rex Hartson and Pardha Pyla [19], which allows to address not only the business aspects of the experience but also the motivations of the user and to ensure as much as possible the added value that the system brings to him. he last typology has all the other options that have been experienced by practitioners. This category represents a variety of frameworks used in relation to the field of expertise of the practitioner and also to the specific context of experimentation, as for the case of the Game Thinking [20] model applied by a few practitioners with additional experience in the field of games.

3.3.2 Projection by field of expertise of practitioners:

Figure 6 makes it possible to distinguish the most used framework typologies according to the field of expertise of the practitioners. According to this result, below is the analysis of the responses of the practitioners by field of expertise:

Community "G":

Experts in the field of Gamification rather recommend the use of design frameworks specific to their field with 17 responses, and custom frameworks with 12 responses. This category explains another orientation towards a specific model which allows to cover the lack in the current models. For the other categories, the lack of experience in the field explains the low response particularly in the UX, and the equivalent rate in the unification proposals between the UX framework and Gamification. The other proposals include a diversification of proposals based on the experience of each practitioner, including Game Thinking.
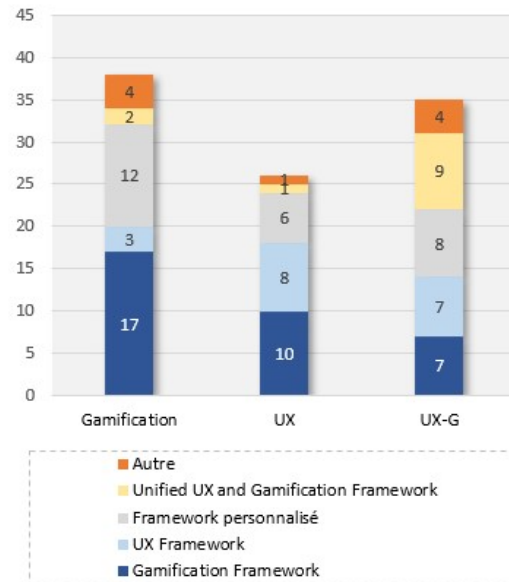

Figure 6: Type Of Framework By Field Of Expertise Of The Practitioner.

Community "UX":

UX practitioners also recommend a majority use of Gamification frameworks with 10 responses, UX frameworks with 8 responses, then custom frameworks with 6 responses. The last two categories represent a very low response rate that does not exceed a single response. This distribution confirms the interest of constantly relying on Gamification frameworks as it well addresses the specific aspects of Gamification, such as the motivation of users and others [1], but also permits thinking about avenues to complete the current gap; hence the 6 initiatives reported in the category of custom frameworks.

Community "UXG":

Practitioners with experience in both fields overwhelmingly recommended the use of a custom framework to fill in the gaps in current models of gamification. This is the case of the unification of the Gamification and UX process with the highest rate, at the rate of 9 responses, and the category of custom frameworks at the rate of 8 responses. On the gamification side, Octalysis [15] is the most widely used framework as it offers a deep and simple understanding of motivation and how to work with it; it also helps identify player motivation and tactics that take advantage of human nature. On the UX side, the R.Hartson model is highly recommended [19]. Based on the comments, the unification of these two models was recommended to have deep empathy for users, as well as prototyping, testing and iteration. The increase in proposals in this category only confirms the relevance of this track on the part of the communities having mastered the two concepts concerned.

3.3.3 Projection by type of gap:
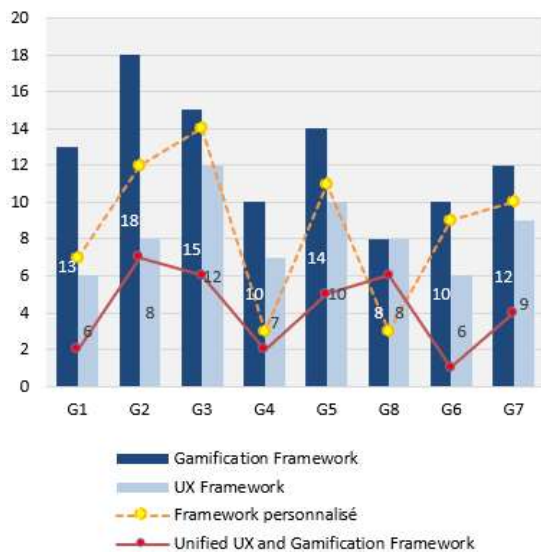
G1: Diversity, G2: Divergence, G3: Completeness, G4: Partial coverage of the product life cycle, G5: The meaningful aspect is not taken into account, G6: Lack of analysis tools, G7: Lack of good practices, G8: Lack of assessment tools

Figure 7: Type Of Process By Type Of Gaps.

According to the projection of the types of frameworks by difficulty reported by practitioners, there are more concerns at the level of Gamification frameworks, and less feedback on UX frameworks. The distribution between the different difficulty components remains relatively balanced. With the use of custom or unified frameworks, the improvement of some aspects of the gap encountered in the existing frameworks can be noticed, such as

the partial coverage of the process and the lack of analysis tools for unified processes.

3.4. We believe that designing a Gamified product with a UX approach necessarily involves integrating the specifics of the player profile into the Persona model. From the list below, can you choose some of the most important features to add? if there are other important features, can you add them to "other" option (Q4)

The 3 communities of practitioners responded actively on all the points proposed for the improvement of the Persona model in the context of gamification. The inclusion of motivational factors had the highest number of responses (64 responses). Practitioners believe it is also important to add skill levels as this is an important element of intrinsic motivation and value proposition for users, the number of responses in this category was 50 responses. The addition of the pain points of Gamification was also recommended since it allows to identify the points of negative impact on the motivation and engagement of the users. Then, we have the integration of the business profile and player type having had an equivalent number of responses (~ 41 responses), because it is important to identify the business profile that the user represents in the system, but also the type equivalent player from the point of view of Gamification. The last category concerns the integration between these two types of profiles with 38 responses.
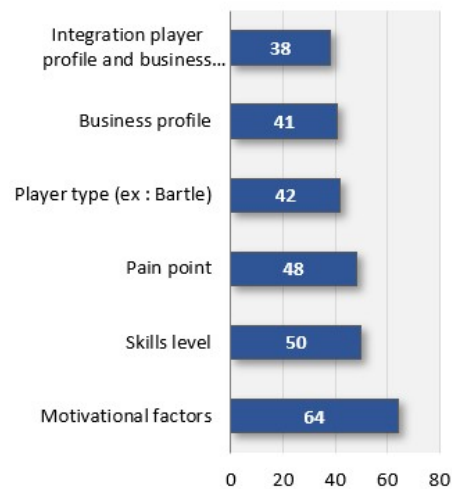

Figure 8: Characteristics Proposed For Integration Into The Persona Model.

Community "UXG":

For UXG practitioners, all the elements proposed to enrich the Persona model are important and can be

considered as useful lenses to better understand the behavior and motivation of the player, their priorities may vary depending on the context of use. This community advocates the importance of integrating the Persona model and player types to better address user modeling of gamified products. The most focus was given to business profiles at the rate of 18 responses, as this falls within the nature of the Persona model. Adding player types (15 responses) further identifies the types and motivators specific to each user, and ensures a mapping of the two types of profiles (13 responses) for a successful user experience. Some practitioners even think that this is the ideal solution to cover the prerequisites of both concepts. It should also be noted that the balance between business and player profile may vary depending on the context. For example, a product that gamifies daily water intake so that employees drink healthy water levels focuses more on the type of gamer than the business profile of the company.

In the experience of UXG practitioners, player types are difficult to apply in all settings. Henceforth, the importance of strengthening user modeling in the context of Gamification to better identify motivating factors, reasons for fears, points of uncertainty and potential doubts that can influence the design of the solution.

The enrichment of the persona model can also be done by adding pain points and skill levels with both 13 responses. These last two categories are already addressed in the Persona model, but the particularity of prioritizing them in the context of gamification comes down to their impacts on human motivation. Indeed, the level of competence is an important element of intrinsic motivation and value proposition for the users. The importance of pain points for gamification comes down to identifying points of negative impact on user motivation and engagement.
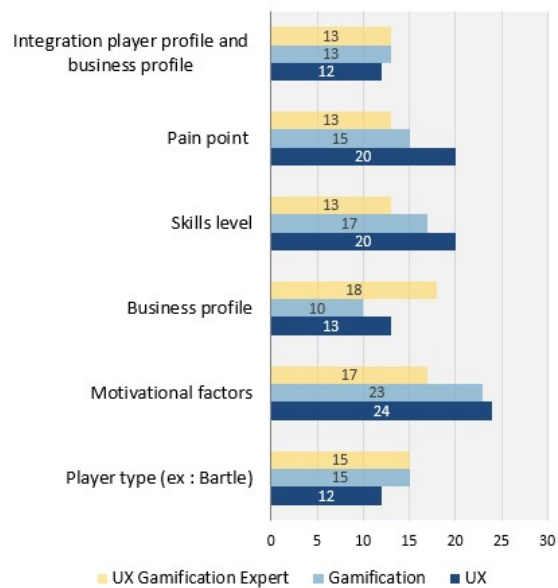

Figure 9: Characteristics Proposed For Integration Into The Persona Model By The Field Of Expertise Of Practitioners.

Community "G":

Like other communities, Gamification practitioners have responded to all of the elements proposed for improving the Persona model as they are all important and might differ depending on the problem to be solved. These practitioners also believe that the addition of these factors can move towards a meaningful gamification design, including understanding the motivators and pain points that help designers design a gamified user experience, and therefore generate better solutions.

This community joins the global projection which prioritizes motivational factors (23 responses), skill levels (17 responses) and pain points (15 responses) since it allows us to better analyze the reasons for the motivations (and demotivations) of users. he player type comes next at the rate of 15 answers given its importance in the design of a gamified solution. Indeed, knowing the type of user / player and what elements motivate them in the commercial context and how to integrate their player profile with that of the company is very crucial to design a successful gamification project. The aspect of integration joins in identifying how user motivation affects business bottom line.

While player types can help designers understand and segment the majority of users from a Gamification perspective, it is important to choose the types that best suit your needs. Moreover, some practitioners have developed their own models in

order to best cover the motivations of users as well as the associated business context.

Community "UX":

Even for UX practitioners, motivators are still the top priority in improving the Persona model for the design of gamified products. Moreover, this category received the highest number of responses with 24 responses, then the pain points and skill levels with 20 answers each. These two categories have already confirmed their importance in the existing model, so UX practitioners believe that it can also provide value in the context of Gamification.

3 categories impact user profiling, both from the point of view of Gamification, business or even the proposition which aims at the integration of the two models. UX practitioners share the same opinion of other communities on the importance of enriching the Persona model with the types of players while fitting into the business objective of the solution.

3.5: The Journey MAP tool addresses several aspects of the user experience. We believe it is necessary to add another track to achieve a meaningful gamified experience. Can you select the appropriate track to add? (Q5)

3.5.1 General vision:

Overall, despite the varying opinions on the importance of each track, the adaptation of the Journey MAP is deemed necessary by the majority of Gamification and UX experts. However, other experts believe that the current version of the Journey MAP [19] is already sufficiently powered to conduct the analysis and design of a gamified solution without the need to overload it again with other tracks, which can impact the efficiency of its use to the point where the team will no longer fill it. Even for this community, he offers the alternative of adapting the current version rather than adding new tracks (for example, some cards already have Emotion as a track while for Gamification Emotion would replace Motivation)

In this question, the new tracks were added in the journey MAP tool in order to better conduct the analysis and design of a gamified solution. The integration of elements of intrinsic motivation makes it possible to define at each step why and whether the user is intrinsically motivated. This option was defended by the vast majority of experts with 69 responses. These experts voted for the importance of this element as it helps to understand the users'

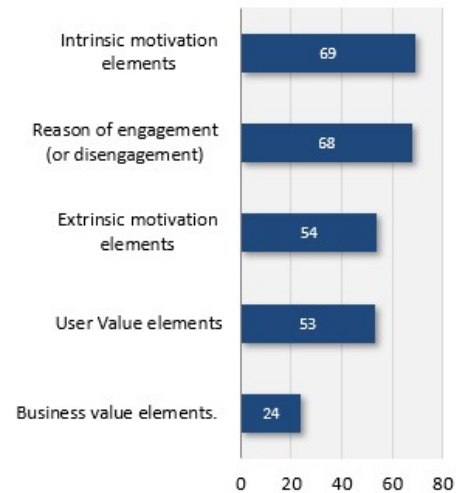motivations and therefore identify the reasons that keep them engaged in the experience.

Figure 10: Tracks Proposed For Integration Into The Journey MAP Model.

Then, the reasons for engagement and disengagement have 68 responses. The addition of this track is also important because it allows to complete the analysis of the other tracks by identifying what increases the user's engagement. in the system or vice versa. The mapping of the result of this track with those of the motivational elements makes it possible to distinguish the reasons that can lead to the users' engagement in the experience.

The elements of extrinsic motivation come with 54 responses, representing a lower rate than the elements of intrinsic motivation. On the one hand, it is not essential to motivate the user to use a gamification solution, and on the other given the risk of focusing only on this type of motivation by depressing the solutions that allow the user to deeply engage in the gamified experience. This can also be interpreted by the significant balance to be ensured between extrinsic and intrinsic motivation in order to offer a gamified solution adapted to the need and to the objective of leading the user to gradually focus on intrinsic motivation.

The user value item has 53 responses. Indeed, some practitioners think that it is also important to identify what the system offers as value for the user in order to engage them more in the experience by developing their intrinsic motivation. People's motivations come down to two things: they want to or someone is pushing them (to varying degrees) to do it. Items of value will help if someone is mindful of their reasoning and is not throwing buzzwords.

Finally, the business objective comes with 24 responses. Indeed, the majority of practitioners think that this element should be addressed outside of the Journey MAP. The practitioners who recommended this track believe that it can be used to analyze the balance and the link with the elements of value for the user.

3.5.2 Projection by field of expertise of practitioners:

Community "G":

According to practitioners in the field of Gamification, adding the element of intrinsic motivation is very important and recommended by the majority of them with 30 responses. This element is the key to the design of gamification, and is the most powerful and effective solution to engage the user and understand what motivates them and what impact the item used has on their motivation. With 21 responses, Gamification practitioners share the importance of adding the extrinsic motivator in order to ensure a balance in the system, especially in the onboarding phase, and then gradually convert them to a more meaningful experience by developing the intrinsic motivations of the user. The value proposition for the user is a key element allowing this progression to be successful; that is why this community of practitioners responded favorably for the addition of this last track in the MAP journey with 15 responses.

21 responses concern the reasons for engagement and disengagement. According to Gamification practitioners, the addition of these tracks in the MAP journey makes it possible to identify the reasons and triggering events that influence the users' engagement in the experience (For example: I stopped because I was bored or busy, I started because it was recommended / sounded interesting and so on).

In the last ranking, the business value track offers 8 responses. Indeed, the majority of practitioners think that it is not necessary to include it in the Journey MAP because it is managed elsewhere, but others think that it is important to take it into account in order to study the balance that the system brings between what we have to treat as a business need in relation to the value to be offered to the users.
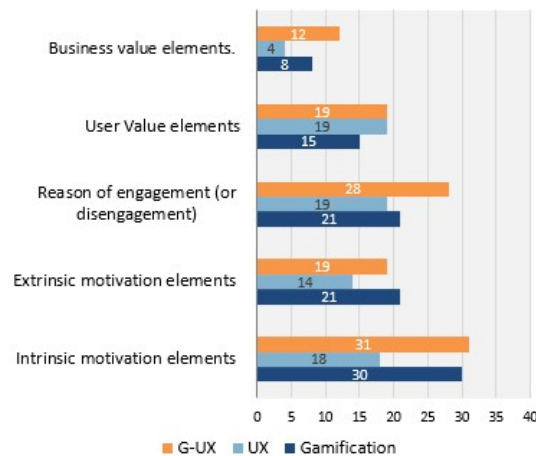

Figure 11: Tracks Proposed For Integration Into The Journey MAP Model By Area Of Expertise Of Practitioners.

Community "UX":

The UX community of practitioners prioritizes the addition of the user value element track and the reason for engagement with 19 responses each, in addition to the intrinsic motivation element with 18 responses. The combination of these 3 indicators allows us to identify whether the experience will be interesting and engaging for the user or not. According to UX practitioners, the priority given to these first tracks enriches the MAP journey even with the specific objective of UX. The addition of motivation types also allows to project on the specificities of Gamification and gain more on the design of human motivation which is not sufficiently covered in the existing UX processes and frameworks. In addition, intrinsic and extrinsic motivations have a very special relationship, and it is important to know exactly which part of the journey to predominate.

Community "UXG":

Practitioners with experience in both fields have appreciated the enrichment of the MAP journey with these different tracks because they allow more control over the analysis, design and evaluation of the user experience. Indeed, all of these elements are important in determining whether people actually engage in the experience or not.

This community of practitioners share almost the same views of Gamification practitioners regarding the addition of the intrinsic and extrinsic motivational element track and the significant balance to be struck between the two types of tracks to keep the user motivated. In practice, extrinsic motivations evaporate after extrinsic rewards dry up.

Intrinsic motivations are built over time and are easier to maintain, more points, badges or other gamification elements can always be earned. Indeed, the use of gamification already consists in considering that the subject needs an extrinsic motivation, and it is the search for this intrinsic motivation that seems to be the key. The search for values can also be an interesting key as well as the search for subjects which fascinate individuals. The reasons for engagement relate to the value that the user thinks the product or service brings.

3.5.3 Projection user profile adaptation:

Table 5: Characteristics proposed for integration into the Persona model by track of the MAP journey

	Player type (ex : Bartle)	Motivational factors	Business profile	Skills level	Pain point	Integration between player profile and business profile
Intrinsic motivation elements	35	48	29	39	39	23
Extrinsic motivation elements	29	41	23	29	26	16
Reason of engagement (or disengagement)	29	43	30	33	33	26
User Value elements	21	35	24	25	27	21
Business value elements	16	24	21	18	18	16

The projection of the tracks proposed by improvement proposal at the level of the profiling model allows us to conclude the following points:

The addition of motivation and engagement tracks at the Journey MAP level must be accompanied by the motivational factors to be identified at the level of the profiling model. These same tracks allow mapping with skills and pain points.

Motivation types also have a direct link with the type of player, hence the importance of keeping this link between the Journey MAP and the user profile.

The integration of the business and player profile leads us to the heart of user engagement and intrinsic motivation.

3.6: The design of a gamified product involves a balance between business objectives and user needs. Based on your experience, how can we ensure this balancing? (Q6)

3.6.1 General vision:

In this question, we have proposed different options that can help in the implementation of a gamified solution ensuring a balance between business objectives and the specific needs of users.

The most dominant option, with a response rate of 54%, is to put in place an iterative design process. This is an important element in offering, testing and improving the gamified solution. The choice of the Gamification strategy is not always easy given its direct impact on the motivation and engagement of users. With an iterative process, the result can be improved and the most suitable solution can be offered.
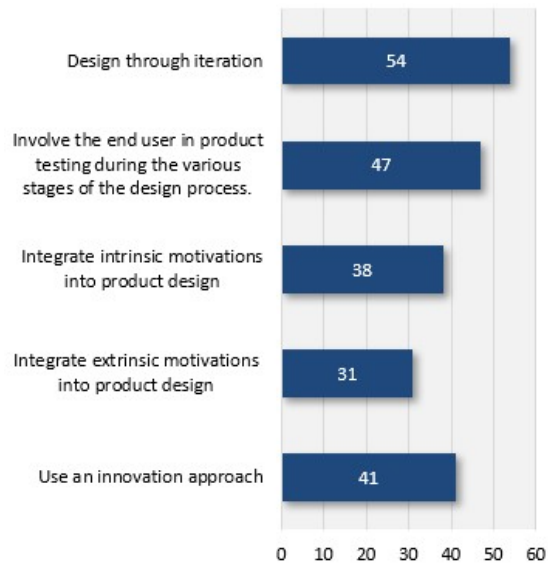

Figure 12: Proposals To Ensure A Balance Between Business Objectives And User Needs.

The involvement of end users in the tests is an important prerequisite in the process of validating the solution in the different phases of the design process. In this category, 47% responses were obtained from practitioners who confirm this importance.

38% of responses concern the integration of the intrinsic motivation in the design of the product. This element ensures if the solution covers this need during the design of the product so as not to focus only on business objectives; regardless of what the system offers as a value proposition for users. The use of an innovation approach was defended by 41%

of practitioners as it ensures an iterative design approach and strongly involves the user in testing the solution.

In the last ranking, the integration of intrinsic motivation in the design of the product has a response rate of 31%. This positioning reflects the interest given to strengthening the design of gamified solutions by relying on extrinsic motivational elements, but also the risk of relying solely on this type of gamification element. Moreover, some practitioners have considered that it is even dangerous to integrate too much extrinsic motivation into the bottom line of a product; since it is unstable over time.

3.6.2 Projection by field of expertise of practitioners:

Community "G":

Gamification practitioners share the same opinion of prioritizing the iterative design compared to other communities of practitioners at the rate of 20 responses. It allows the solution to be continuously improved until it ensures that it is best suited to the need of use. The integration of intrinsic motivation into the end-to-end product design has 18 responses; it is the most powerful and effective solution to engage the user and understand what motivates them and what is the impact of the element used in his motivation. The involvement of end users in the tests during the different phases of the product process comes with 15 responses, because it becomes urgent to evaluate on the first iterations the result of the options put in place and their effects on intrinsic motivation. This prioritization helps to ensure that the system is primarily focused on the value proposition for users and can be reinforced with extrinsic motivation design which comes fourth with 13 responses. The choice of using an innovation approach was made by 15 practitioners as it brings together most of the other elements already mentioned, particularly with an empathy approach to ensure close proximity with the user. It also makes it possible to identify the elements of their motivation and commitment, then to start an iterative process by involving the end user in the tests.
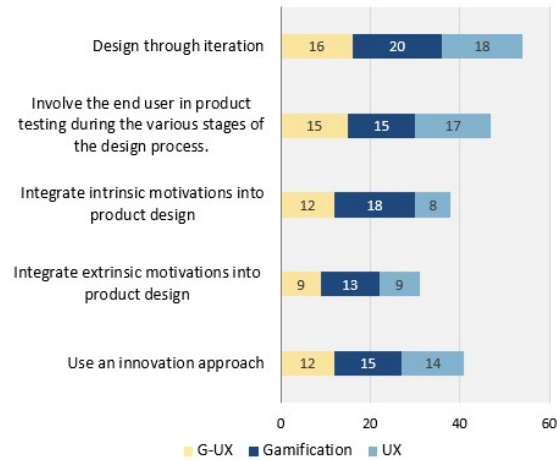

Figure 13: Proposals To Ensure A Balance Between Business Objectives And User Needs By Area Of Expertise

Community "UX":

Like other communities of practice, the priority is of course iterative design and user testing with 18 and 17 responses respectively. Indeed, UX practitioners consider the development of a gamified product to be an iterative process, in addition to the fact that the feedback loop with end users must be short and fast. For the 14 responses of the use of an innovation approach, design thinking was among the most recommended options. The intrinsic and extrinsic motivation were recommended with a relatively close response rate, namely 9 responses for extrinsic motivation and 8 responses for intrinsic motivation. Indeed, a big part of successful gamification is aligning business goals as closely as possible with the user's intrinsic motivations, using extrinsic motivation sparingly and wisely. This can be done using mechanisms that bridge the gap between intrinsic motivation and business purpose.

Community "UXG":

UXG practitioners are joining other communities on the importance and prioritization of iterative design with 16 responses and then including end users in testing with 15 responses. This represents the key to ensure the gradual progress on mastering the needs and intrinsic motivation of users during the various iterations.

3.7: How can we measure the effectiveness of a gamified solution and distinguish the effect of gamification from another event? (Q7)

3.7.1 General vision:

In general, all of the proposals were recommended by practitioners with more emphasis on some

elements of measures than others. According to practitioner feedback, it is noted that all of the measures are good to follow and give a broader understanding and knowledge of what has been designed.
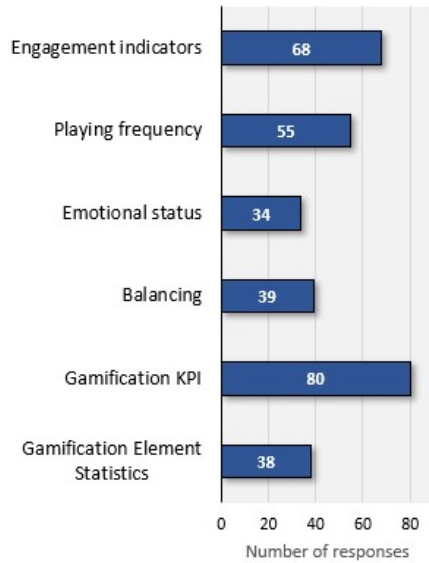

Figure 14: Suggested Measures To Assess The Quality Of Gamified Products

At the top of the list, the KPIs which represent a priority for the implementation of Gamification has a response rate of 80%. These KPIs can correspond to the achievement of target objectives (mission, badge, challenge or other) defined for a user after a defined period of time. They must also be linked to business objectives by ensuring an improvement in the result between the operation before and after the gamified solution. In the second ranking, 68% of practitioners recommend the engagement indicators. Indeed, commitment is essential to ensure the implementation of a meaningful solution. Frequency of play represents a type of engagement inherited from the engagement gaming domain, and it is the most recommended metric after engagement metrics with a response rate of 55%. The statistical elements of Gamification are the different measurement indicators that depend on the game elements, particularly the evolution of points, obtaining badges, progress in levels or any other changes in the game elements in the system. These indicators are used to complete the analysis of the level of user engagement and motivation in the system. The 38% of practitioners who recommended these measures defend this vision. In addition, more than 34% of responses concern the emotional status that reflects the motivation of users. Balancing was also recommended by 39% of participants to ensure that

the objectives set contribute to the value proposition for users and not only to purely business issues.

3.7.2 Projection of measurement elements by field of expertise of practitioners:

According to the projection of the elements of measurement by the field of expertise of the practitioners, t all the proposals were defended by the 3 communities. Generally, a relatively close rate exists between them. Below are the only aspects of differences:
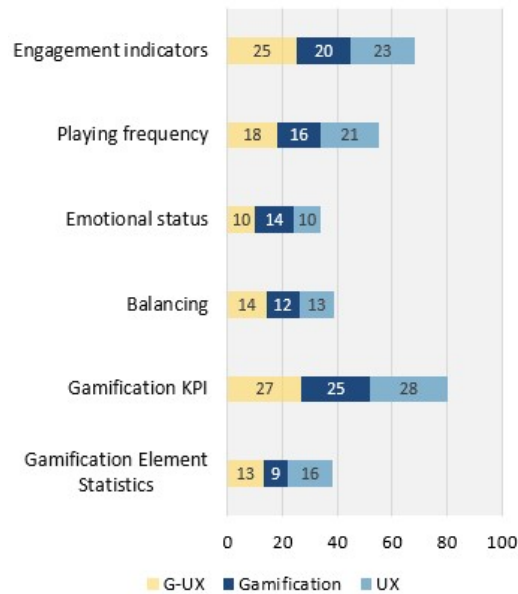

Figure 15: Suggested Measures To Assess The Quality Of Gamified Products By Field Of Expertise Of Practitioners

Prioritization of KPIs, engagement indicators and frequency of play by the 3 communities reveal that the highest rate is present for UX, UX-G and Gamification experts in order.

Emotional status has been championed more by Gamification experts as this community is more interested in motivating users into the experience.

3.7.3 Projection of measurement elements by field of application:

The distribution of measurement indicators by field of application follows the same trend with regard to the global vision. This view only confirms that each indicator has the same level of importance across all of the areas covered by our study, except for a small gap in the prioritization of statistical elements of gamification and emotional status.

Table 6: Projection Of Measurement Elements By Field Of Application

	Education	Software Engineering	Social	Business	Marketing
Gamification KPI	22	15	13	21	14
Engagement indicators	18	9	12	19	10
Playing frequency	13	9	7	13	7
Balancing	12	9	6	11	5
Gamification Element Statistics	11	5	5	8	5
Emotional status	7	7	6	9	4

According to this projection, below are our findings:

KPIs and engagement indicators are the highest priority for areas, especially education and business.

The elements of Gamification are more used in the context of education and marketing; given the particular character of these fields which rely on advantages of this type of elements in connection with the extrinsic and intrinsic motivation of the players.

4. PROPOSITION

The result of this study confirms the shortcomings that the existing gamification frameworks still meet and that have been highlighted in our previous studies [8][9], particularly in terms of divergence and incompleteness.

Indeed, some proposals only aim to strengthen empathy with the user through active Design Thinking techniques [21]. Other studies [22, 23] propose methods for the different phases of UCD to complement the classical methods of the user experience researcher with a user-centered design that includes the aspects important for the gamification design. The methods used in this study concern, in particular, the Player Persona, the mechanical cards, the motivation cards, the survey, etc.

These studies asserted that successful gamification software applications can benefit from existing processes, concepts, methods, and tools available and applied in UXD. The contribution of our article focused on the different ways to successfully apply gamification with UX to software-supported tasks. This proposal aims to allow covering as much as possible the specificities of Gamification and its contexts of use, such as the unification of the process of Gamification and UX. This choice has been defended by a large number of practitioners as it permits benefitting from the advantages of UX in order to fill the lack of tools and good practices from which Gamification still suffers.

The following sections summarize the examination of the results obtained from the survey and the recommendations of practitioners according to each phase of the UX process:

Understand player motivations:

As in any UX project, it is essential to know and understand the target audience. This phase of study and analysis of the user experience enables to take stock of the existing situation and to determine the suitability of Gamification as a solution to the problem studied. Obviously, Gamification cannot consistently be used for all needs but only for those aimed at improving user motivation and engagement in the experience. The success of Gamification largely depends on this phase which should lead to a good understanding of our players. Indeed, the quality of the user experience of the product stems from the identification of the expectations and needs of end users. User research helps identify the factors behind individual behaviors, and discover the motivational drivers that influence them.

Analysis:

The purpose of the analysis phase is to derive insight from the data collected during the research phase, moving from "what" users (players) need to "why" they think they need it. This phase of the process generally relies on several analytical tools of which can be found: The Persona and the Journey MAP. In the context of Gamification, we have focused only on these tools because they allow us both to strengthen our understanding of the needs and motivations of players as well as to ensure a detailed analysis of their behaviors and commitments in the experience. The following sections provide an overview of these tools from a Gamification perspective:

Journey MAP:

Based on feedback from practitioners, an in-depth analysis of the different JM tracks was conducted in order to identify those allowing to address the motivational and engagement aspects concerned by Gamification, then study the possible adaptation or adoption proposals to take better advantage of this tool in the analysis and design of gamified products. Below are the tracks selected accordingly:

● *Motivational Journey*: Emotional journeys are graphs showing the satisfaction level of the lead actor at each stage, often on a scale of –2 (very negative) to +2 (very positive). An emotional journey visually reveals obvious issues within a specific experience. For Gamification, we are more in the "Motivational Journey" context where practitioners recommend identifying the level and type of motivation (intrinsic or extrinsic) of the user (player). Vision UX, the analysis of this track permits to identify the "pain points" that we can address to solve the problems of the user experience. In the context of Gamification, we go beyond this vision to extend the reflection on all the variations impacting the motivation of the users. On the one hand, the cases of high motivation of the users can be distinguished with details of the type or trigger (intrinsic or extrinsic), the analysis of this type of variation provides an in-depth understanding of the types of motivation impacting the behavior of target users, allowing the most suitable MDA design elements to be chosen. On the other hand, moments of demotivation are also important to analyze because they allow us to confirm the types of motivation that are likely to negatively influence the user experience.

● *Engagement arc*: A dramatic arc illustrates the level of engagement of the lead actor at each stage - from 1 (very low) to 5 (very high). In service design, these arcs are often used to reflect on the pace of an experience. As for Gamification, we are more on an arc of engagement because it allows us to assess the durability and the ability of the application to retain users for longer.

Personas players.

For a better understanding of users, UX relies primarily on the Persona model to closely study the types of profiles. It is a fictional character who enlightens us on the barriers, aspirations, uses, contexts of those who constitute the heart of the target audience. Although this model deals with the motivations aspect of users (players), several studies have seen the interest of integrating player types into the design of Personas in order to better appropriate the specific motivations that the gamification system deals with. In fact, it helps designers focus more on specific player characteristics and motivations, rather than designing for all user motivations.

Create Gamification Design Solutions

When the motivations, needs and expectations of users for a product are clear, we can move on to the design phase of the gamified solution to make the idea tangible using low fidelity prototypes. The

design of the Gamification proposals is also based on an iterative approach aimed at identifying the right gamification solution to the problem studied.

This phase also refers to other phases of Gamification, including understanding player motivation, as this is the key to identifying the most suitable game mechanics. This shows the close relationship between these two phases as the choice of mechanics totally depends on the motivation of the players. Indeed, a successful application of Gamification should not rely solely on a superficial implementation of game mechanics such as points, badges or any mechanical element of extrinsic motivation. However, it is necessary to study in depth the reasons of intrinsic motivation of the players and to identify the game mechanics which engage them in the long term in the experience.

During the process of designing a gamified software product, it is important to support the analysis and design of the problem addressed by gamification with prototypes of a level of fidelity adapted to each phase of the process. Prototyping can occur from the early stages of design in the form of sketches representing the game elements affected by the solution (example: dashboard) and continues to occur in wireframes and other forms throughout the design process. Prototyping allows you to envision and evaluate the effectiveness of a design as a problem solution. problem solution.

Evaluate Gamification Design Solutions

Assessment is an essential step in the design process because it helps teams understand whether their design is working for their users. Once a prototype is built, developers and users are then able to test and evaluate their product. On the other hand, it is not enough to choose "standard" UX evaluation methods and techniques, gamified products require points of correspondence and adaptation vis-à-vis the objectives and constraints specific to gamification. The idea is to adapt the assessment methods to include new metrics to assess the experience in the context of gamification.

Based on the advice of practitioners, we recommend relying primarily on key performance indicators (KPIs) to measure the success of a gamified solution. KPIs are defined at the level of the organization, then adapted to each unit down to the finest level for users. In addition, KPIs are important in gamification to ensure a direct link between the business issues of the company and the behavior of employees. Moreover, a good implementation of Gamification not only allows to effectively achieve business objectives (example: productivity gain) but

also to improve employee motivation, and this is the objective of the indicator of balancing. The latter helps ensure a balance between business objectives and the value proposition for the user.

The implementation of the Gamification solution is not aimed at triggering only the motivation of the users, but rather is concerned with making them continuously engaged in the experience. Hence the importance of defining context-specific engagement indicators in order to assess the level of user engagement in the system. Moreover, "Playing frequency" is an example of engagement indicators inherited from the gaming industry.

The statistical elements of Gamification allow to provide more elements of measurement to better understand the behavior of the users. These are the number of points, badges or other type of rewards obtained. These elements do not make it possible to clearly distinguish the type of motivation behind their commitments, and if they are really engaged for an intrinsic reason which we can consider a real improvement, or if they are simply in a temporary commitment linked to extrinsic motivations. that we risk losing easily in time. Emotional status is also recommended because it allows us to complete the analysis of user behavior and check whether their commitments or disengages are accompanied by moments of enjoyment, pleasure or boredom.

Improvement

Designing a gamification solution is not a linear process; it is an iterative and continuous process that continues for as long as a product is in use. Developers must continually evaluate it to see if the solution becomes more and more meaningful for the user (gamers) and if improvements can still be made, especially in the choice of the Gamification strategy. It is important to accept the fact that the "Gamification Meaningful" risk cannot be achieved from the first iteration, hence the need to continue to advance in the understanding of the behaviors of the users (players) as well as in the improvement of the design by targeting the most appropriate mechanics.

5. CONCLUSION AND OUTLOOK

This article presents the results of a survey of UX and Gamification practitioners to explore avenues for improvements in the design of Gamification with the elements of UX Design. 1200 practitioners were invited to participate in the study. A total of 123 participants answered a questionnaire of 7 questions.

The questionnaire was related to the following 3 research questions:

RQ1: Do UX and Gamification practitioners share the gaps of the Gamification design frameworks and processes reported in the literature?

In response to this first question, practitioners confirm the difficulties currently encountered in Gamification design frameworks and processes. Among these difficulties is the aspect of completeness which is not covered by the vast majority of frameworks (absence of player profiling, measurement elements, etc.), besides the divergence of frameworks which depends on the multidisciplinary nature of Gamification [8]. In this category, proposals that focus on specific aspects depending on the context of use are found, such as the ethical case addressed in the field of health [24], or sustainability which is of more interest to the field of education [25, 26].

RQ2: Do UX and Gamification practitioners share the relevance of enhancing Gamification design with UX design elements?

Practitioners have argued for the relevance of choosing UX design as a design enhancement solution for gamified products.

RQ3: What are the tools and phases of the UX process requiring the most adaptations to integrate the specificities of Gamification?

At the process level, the recommendations of practitioners tend towards adaptations that cover all phases. It is about putting more attention on researching, analyzing and evaluating the motivation and engagement of users throughout the process. In this context, several adaptations must accompany this objective, in particular the addition of the tracks of the elements of motivation (intrinsic and extrinsic) and reason for engagement and disengagement in the journey MAP, as well as the integration of the type of player in the Persona model. The evaluation phase also requires special attention in order to be able to evaluate the specific result of Gamification by relying on adapted KPIs, statistical elements of Gamification, engagement indicators and

other indicators that help to measure the contribution of Gamification.

Through this questionnaire that was addressed to practitioners and experts in the UX and Gamification fields, we were able to carry out an initial assessment of the integration of the two UX and Gamification design models to better improve the design and user experience of gamified products. The difficulties have already been reported in our previous studies [8][9] and have also been confirmed in the experimental context by practitioners. The choice of UX Design as the basic design approach to strengthen the Gamification design has been validated as a relevant solution by most practitioners.

Finally, our future work aims to follow up on these recommendations to lead them towards a proposal for a unified process of UX and Gamification to guarantee a better gamified user experience.

REFRENCES:

[1] Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: defining gamification. InProceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp.9e15). ACM

[2] Ryan RM, Deci EL. Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. Contemporary Educational Psychology. janv 2000;25(1):54-67

[3] S. Nicholson, "A recipe for meaningful gamification," In: Reiners T., Wood L. (eds) Gamification in Education and Business, pp. 1-20.

[4] Gartner. (2012). Gartner says by 2014, 80 percent of current gamified applications will fail to meet business objectives primarily due to poor design. Retrieved 10/28, 2013, from http://www.gartner.com/newsroom/id/2251015

[5] O. Azouz, Y. Lefdaoui. Towards a new software quality model for evaluation the quality of gamified systems. EAI Endorsed Transactions. Volume 5. (2018) [DOI: 10.4108/eai.16-1-2018.153640]

[6] Botha, A., M. Herselman, and M. Ford. 2014. "Gamification Beyond Badges." In IST-Africa Conference Proceedings. 1–10. IEEE.

[7] M. Herger, "Enterprise Gamification: Engaging people by letting them have fun," 1st ed. CreateSpace Independent Publishing Platform, vol. 1, 2014.

[8] O. Azouz, N.Karioh, Y. Lefdaoui (2021). A systematic mapping study: how can ux design be adapted to improve the design of meaningful gamified solutions? Int. J. of Innovation and Technology Management. 1-41

[9] O. Azouz, Y. Lefdaoui. Gamification design frameworks: a systematic mapping study. IEEExplore. 2018 6th International Conference on Multimedia Computing and Systems (ICMCS). (2018)

[10] S. Easterbrook, J. Singer, M. A. Storey and D. Damian, "Selecting Empirical Methods for Software Engineering Research". Guide to advanced empirical software engineering. Springer-Verlag. pp.285-311, 2008

[11] S. Pfleeger and B. Kitchenham, "Principles of Survey Research: Part 1: Turning Lemons into Lemonade". SIGSOFT Software. Engineering Notes, 26, 6 (November 2001), 16-18. 2001.

[12] Nicholson S (2012) A user-centered theoretical framework for meaningful gamification. In: Proceedings of Games + Learning + Society 8.0 (GLS 8.0)

[13] Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory: an organismic-dialectical perspective. In E. L. Deci, & R. M. Ryan (Eds.), Handbook of selfdetermination research (pp. 3–33). Rochester, NY: University of Rochester Press.

[14] Fogg, B. BJ Fogg's Behavior Model. A behavior model for persuasive design URL: http://bjfogg.com/fbm_files/page4_1.pdf [accessed 2014-01-09] [WebCite Cache]

[15] Chou, Y. (2017, October 17). Octalysis – complete Gamification framework. Retrieved October 17, 2017, from Gamification & Behavioral Design: http://yukaichou.com/gamification-examples/octalysiscomplete-gamification-framework/#more-2275

[16] L. Rodrigues, C. Costa and A. Oliveira, "Gamification: A framework for designing software in e-banking", Computers in Human Behavior, vol. 62, pp. 620-634, 2016. Available: 10.1016/j.chb.2016.04.035.

[17] Z. Fitz-Walter, D. Tjondronegoro, and P. Wyeth, "Orientation passport: using gamification to engage university students,", In Proceedings of the 23rd Australian Computer-Human Interaction Conference, November 28-December 2, 2011, Canberra, Australia, ACM, pp. 122-125.

[18] Fitz-Walter, Z., Tjondronegoro, D., and Wyeth, P. 2012. A gamified mobile application for engaging new students at university orientation.

In Proceedings of the 24th Australian Computer-Human Interaction Conference, 138 - 141

[19] Hartson H. R. (2019). The UX Book? Agile UX Design for a Quality User Experience, 2nd Edn. Burlington, MA: Morgan Kaufmann.

[20] Werbach, K., & Hunter, D. (2012). For the Win: How Game Thinking Can Revolutionize Your Business. Philadelphia, PA: Wharton Digital Press.

[21] Villegas E., Labrador E., Fonseca D., Fernández-Guinea S., Moreira F. (2019) Design Thinking and Gamification: User Centered Methodologies. In: Zaphiris P., Ioannou A. (eds) Learning and Collaboration Technologies. Designing Learning Experiences. HCII 2019. Lecture Notes in Computer Science, vol 11590. Springer, Cham

[22] Hoos, Sebastian. "Gamification in UX Design - one way to do it." Usability Professionals (2016).

[23] Marigo Raftopoulos. 2015. Playful Card-Based Tools for Gamification Design. In Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction (OzCHI '15), 109--113.

[24] L.F. Rodrigues, C.J. Costa, A. Oliveira, "Gamification: A framework for designing software in e-banking", Computers in Human Behavior, vol. 62, pp. 620-634, Set. 2016.

[25] Z. Fitz-Walter, D. Tjondronegoro, and P. Wyeth, "Orientation passport: using gamification to engage university students,", In Proceedings of the 23rd Australian Computer-Human Interaction Conference, November 28-December 2, 2011, Canberra, Australia, ACM, pp. 122-125.

[26] Fitz-Walter, Z., Tjondronegoro, D., and Wyeth, P. 2012. A gamified mobile application for engaging new students at university orientation. In Proceedings of the 24th Australian Computer-Human Interaction Conference, 138—141