# Creative Interactivity: Customizing and Creating Game Content

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## CREATIVE INTERACTIVITY: CUSTOMIZING AND CREATING GAME CONTENT

Have you ever watched a movie where you rooted for the protagonists, feared for them and cheered with them throughout the story? And, once the movie is over, felt sad because the story is over? Or, did you feel like some characters should have been portrayed differently? That the movie should have had a different ending altogether? Now, imagine what it would take to bring the cast of the movie back together and shoot a sequel, change certain aspects of the movie, or elaborate on a part of the

story that you think should have been told in more detail. Clearly, this would require considerable effort and, at least for the average moviegoer, is impossible to do. The same goes for most other forms of entertainment media. For audience members, it is rather difficult to add another chapter to a book, record another album track, or change the appearance of a character in one's favorite TV series.

This is different with video games because of their interactive nature. Unlike traditional media such as television and movies, the interactive features of video games allow users to manipulate both form (e.g., design elements, style, and medium) and content (e.g., the message, the storyline, and the meaning) (Grodal, 2000; Weber, Behr, & De Martino, 2014). Players can—and even have to—interact with a game in order for it to progress and for its story to unfold. But video game interactivity (VGI) is not limited to these aspects of the playing experience. In most games, players can also access game settings and adjust various parameters to match their preferences. This might range from simple manipulations of game settings such as muting or unmuting sound effects to very complex choices like using third-party software to add new features to a game. Thus, players can influence game content by manipulating and combining various game features (Raney, Smith, & Baker, 2006). For instance, a *World of Warcraft* (Blizzard) player who installs the Carbonite add-on (a combination of the game's map, head-up display, sound, chat, and item database) receives guided instructions for how to accomplish various game objectives. This may allow for more efficient play compared to players without Carbonite who must explore the expansive game world in order to accomplish game objectives.

While such instances of customization require relatively little creativity, the interactive nature of games often provides opportunities for greater creative expression. Some games afford players the ability to generate entirely new content (Richards, 2006). For example, players use game technology to develop additional items, levels that relocate games to different environments, or even so-called "total conversions" with different storylines and game types (Postigo, 2003, 2007). *Defense of the Ancients* (DotA) is a famous example where a small group of designers used the level editor provided in *Warcraft III: Reign of Chaos* (Blizzard) to create an entirely different form of game play. Thus, in addition to the game content created by the developers, players co-create (Morris, 2003) their own content.

In this chapter, we turn our attention to the unique nature of VGI and how interactivity allows for creative expression. Specifically, we focus on content creation that takes place beyond core game play, namely customizing game settings and creating new content through modifying games. We argue that both phenomena provide players an opportunity for creative expression. Drawing on Amabile (2012), we understand creativity as "the production of a novel and appropriate response, product, or solution to an open-ended task" (p. 3). A behavior is creative if it is not only new,

but appropriate to the task to be completed or to the problem to be solved. Thus, creative responses must be "valuable, correct, feasible, or somehow fitting to a particular goal" (p. 3). Moreover, Amabile (1983) recognizes that creativity is not a categorical construct—behaviors can be more or less creative. At the low end are commonplace solutions to the problems experienced in everyday existence. High levels of creativity are found in works of art, scientific breakthroughs, and other behaviors where an elegant solution is applied to a difficult problem. Thus, degree of creativity arises from both individual and environmental factors.

In the following section, we will briefly frame content creation as an aspect of interactivity. Subsequently, we will describe customization via game settings and content creation via game modifications in more detail. Along the way, we discuss how each relates to player creativity. This chapter concludes with a discussion of research on motivations for and effects of video game entertainment as a result of customization and content creation.

## CONTENT CREATION AND INTERACTIVITY

The first definitions of interactivity were related to content access or usage (Richards, 2006), and were best suited for understanding the relationship between medium and experience. For instance, linearly reading text in a book is considerably less interactive than the nonlinear experience of using hyperlinks to navigate a website. However, these early conceptualizations of interactivity in terms of information access ignored the relationship between interactivity and content creation. Modern definitions treat interactivity as "the possibility for users to manipulate the content and form of communication and/or the possibility of information exchange processes between users or between users and a medium" (Weber et al., 2014) This is a wide-ranging definition and it mirrors the various perspectives that have been developed on the subject. For instance, interactivity has been conceptualized rather broadly in order to compare very different media applications such as online weather forecasts vs. e-mail vs. text messaging (e.g., Leiner & Quiring, 2008; Steuer, 1992). Other approaches conceptualize interactivity very specifically for selected media offers like websites and available technological features like hyperlinks (e.g., Liu, 2003; Liu & Shrum, 2002; McMillan & Hwang, 2002; Warnick, Xenos, Endres, & Gastil, 2005; Wu, 1999). Interactivity is usually described from one of the three perspectives (Bucy & Tao, 2007): (1) as an exchange of messages between two or more communicants; (2) as a technological attribute or media feature; or (3) as a user perception.

Importantly, content creation is not a key aspect of these concepts. The first approach treats interactivity as process-related and refers to the communication settings of a mediated environment (e.g., whether the communication

process is linear or nonlinear), the kind of participant relationships that are developed, to what extent the roles of sender and receiver are exchangeable, and to what extent messages are reciprocally dependent (Kiousis, 2002; Rafaeli, 1988; Rafaeli & Sudweeks, 1997). These approaches put an emphasis on how messages are *exchanged*, but not on how they are *created*. The second and third approaches appear different but are closely related: Technology-oriented concepts of interactivity focus on media attributes that make "an individual's participation in communication settings possible and efficient" (Lee, Park, & Jin, 2006, p. 261), such as the number of hyperlinks on a website (Warnick et al., 2005), the rate at which user input can be assimilated into the mediated environment, the number of action possibilities, and the ability of a system to map its controls to changes in the mediated environment (Steuer, 1992). The third approach focuses on how users perceive and use the technological features of a medium (e.g., Leiner & Quiring, 2008). Again, content creation is neither of major importance for technology-oriented approaches nor for approaches focusing on user perceptions. While these concepts do account for two-way communication, this is often limited to counting (perceived) options for users to provide feedback, such as feedback forms and "contact me" buttons on websites (Liu & Shrum, 2002; McMillan & Hwang, 2002). Taken together, we can conclude that most interactivity concepts focus on accessing existing content. Unfortunately, these conceptualizations of interactivity overlook options for adjusting or creating new content, features that are usually limited when browsing a website but are common when playing a video game.

Indeed, recent technological advances grant users considerably more agency than simply accessing content; therefore a broader perspective should be applied when conceptualizing VGI. How players interact with a video game is not limited to actually playing the game, even though this is certainly the inner nucleus of VGI and comes to mind first when thinking of interactivity and video games. In their work on adolescents and video games, Raney et al. (2006) noted that a high degree of *modification* (e.g., options to create characters, change backgrounds, and adjust audio effects), and options to *personalize* or *tailor* games to players' specific intentions and interests are interactive features that contribute to the games' appeal. Weber et al. (2014) found that besides game-play-related and technical dimensions of VGI,[1] the nongame-play-related dimension *customization/co-creation*

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[1] Game-play-related dimensions included *exploration* (i.e., the extent to which players can control narrative, objectives, and pace of a game), the game's *artificial intelligence* (i.e., how the system responds to player actions); and *perceptual persuasiveness* (i.e., the extent to which the game provides a sense of "being there"). Technical interactivity dimensions included *feature-based interactivity* (the ability to adjust technical game features like advanced graphic options, sound, music, dialog, game control layout to meet player expectations) and *controller responsiveness* (the appropriateness and ease of use when interacting with the game's interface).

contributes to interactivity experiences. *Customization/co-creation* is possible when game designers grant players agency over specific details of a game and describes the amount of control players have over content-relevant features, for instance the ability to control the physical appearance, abilities, performance, accessories, and equipment of game characters and to create new game characters, accessories, and equipment. *Minecraft* (Mojang) demonstrates this point nicely. *Minecraft* is classified as a sandbox game, one in which game features are designed to encourage players to generate novel content.

For their VGI scale, Weber et al. (2014) hypothesized that customization and co-creation would be separate dimensions of interactivity where customization occurs when players use game settings to change existing characters and objects in a game and co-creation takes place when players use a game engine, level editor, or similar tools to develop entirely new content for a game. However, it seems that from a player's point of view, there is no strict distinction between customizing a game via game settings compared to developing new content using the game's technological basis. Rather than a dichotomy, customizing games and co-creating content is probably a continuum ranging from simple in-game options to complex modification scenarios. However, the endpoints of this continuum seem to be very far from each other (e.g., using the mute/unmute option in a browser-based game compared to creating a total conversion that equips an existing game with a different game environment, game play, and story). In order to address the unique characteristics of these endpoints on a continuum for content creation in video games, we will look at customizing and creating new content separately in the following sections.

## CUSTOMIZING GAME CONTENT

Video games vary considerably in the degrees of freedom they offer players to customize the game according to their preferences. Browser-based casual games like *Bejeweled* (PopCap Games) and *FarmVille* (Zynga) usually offer very few options to adjust game settings (e.g., choosing the level of difficulty from one out of several game modes). Games that are played on personal computers usually offer additional options to adjust the game to the computer's performance (e.g., changing the displayed graphic details), and in most computer and video games users can adjust the game control layout according to their preferences. These mostly technical features ensure that users can avoid frustration caused by delayed feedback from the game or from sounds and music that are experienced as annoying. Players can also adjust these game settings to avoid frustration caused by tasks that are perceived as too difficult or too easy, or that otherwise prevent success in the game.

Adjusting a game to computer performance and individual skills would probably not be considered particularly creative. Using game settings to adjust the sound volume is neither a response to an open-ended task nor a novel response. However, technical game features can be used in creative ways. For example, there is anecdotal evidence that users of first-person shooter (FPS) games like *Counter-Strike* who compete online against other players set the graphic details to the lowest possible level in order to compensate for slow internet connections, even if their computers are perfectly capable of displaying all graphic details. While this is certainly not intended by the game developers, such behavior can still be considered a creative response by the players to a game play situation where speed matters more than graphics. If creativity is conceptualized as a continuum ranging from low to high levels (Amabile, 2012) this response could be positioned near the low-creativity end of the continuum.

Besides technical aspects, many games allow players to adjust parameters that are directly related to the game's narrative and content. This applies first and foremost to character customization. For example, in the 2011 role-playing game *The Elder Scrolls: Skyrim* (Bethesda Softworks), players can customize the character's appearance down to facial features like the breadth and length of the nose or the shape of the eyebrows. They can also choose among several fantasy races for their character that come with different cultures and specific skills. Importantly, these choices affect performance. For instance, players who chose a race with strong magic skills will perform better when using spells and charms; however, this decision also affects how different nonplayer characters will react to the player character and whether they will be friendly and helpful or more reserved.

In other genres such as FPS games, players can customize the equipment a character carries by combining different weapons, ammunition, and protection gear. Such decisions have a considerable impact on content. For instance, in the popular *Call of Duty* series, players can outfit their character differently according to preferred play style. Those who prefer to "camp" (stay in a fixed location and score opportunistic kills by surprising enemies) might select heavy armor, long-range weapons, and equip their character with stealth skills. Alternatively, players who prefer fast-pace and aggressive action often outfit their character with comparatively lighter armor, weapons suited for close quarters combat, and abilities that maximize speed and accuracy. These decisions are known as "loadouts" and they grant players the ability to creatively optimize a character for a preferred play style. Moreover, players regularly share different loadout configurations online, either as a demonstration of creative mastery of the game, or in an effort to gain feedback from other players.

In general, users prefer playing with a customized avatar compared to a predetermined or assigned character. For instance, the ability to customize an

avatar is associated with increased self-report feelings of presence as well as elevated skin conductance levels (a measure of arousal) (Bailey, Wise, & Bolls, 2009). The more options players have to customize a character's appearance, abilities, performance, and accessories and equipment, the more interactive they rate a video game (Weber et al., 2014). In fact, a content analysis on game recordings of participants who had played an FPS showed that of their entire playing time, participants spent 14% using the equipment menu to customize the character's appearance and equipment, twice as much time as they spent in combat situations (Weber, Behr, Tamborini, Ritterfeld, & Mathiak, 2009). These results suggest that players not only enjoy the opportunity to customize their character, but also that players use customization features to creatively tune their character based on momentary game demands.

If players have the option to create a main protagonist for a game in (almost) any way they like—How do they choose to design their character? Several studies support the idea that players prefer avatars that are similar to themselves in terms of personality features (Hsu, Kao, & Wu, 2007; Hsu, Lee, & Wu, 2005; Ogletree & Drake, 2007; Trepte & Reinecke, 2010). Playing with a (customized) character that is perceived as similar to oneself is related to increased enjoyment (Hsu et al., 2005; Trepte & Reinecke, 2010).

However, players also account for a game's context when creating an avatar. When asked to create an avatar for game scenarios that require features commonly perceived as masculine, such as physical strength, or feminine, such as "warm" or "affectionate," players seem to apply a mixed strategy (Trepte, Reinecke, & Behr, 2011): Both men and women preferred "male" avatar features when they expected to play games prejudged as "masculine," and "feminine" features for avatars in so-called "female" games. A similar outcome has also been observed for player roles seen as more "masculine" (e.g., warriors and paladins) or "feminine" (e.g., priests and mages) (Ducheneaut, Yee, Nickell, & Moore, 2006). This suggests that in terms of avatar attributes, video game players prefer avatars designed to meet the requirements of the games (and possibly even stereotypical gender roles). Avatar features that are chosen in accordance with the game's demands help facilitate mastery of the game, which in turn increases enjoyment (Grodal, 2000; Klimmt & Hartmann, 2006; Tamborini et al., 2011). Deciding what equipment the player's character should carry is of strategic importance for being successful in the game. Yet when it comes to biological sex, players seem to strive for identification with their avatar—men preferred male avatars and women favored female avatars. In sum, the participants create male or female characters to match their own sex, but equip these characters with personality features based on perceptions of game requirements.

In sum, options to customize a game are an important aspect of VGI. This applies to technical characteristics of a game, but also—and probably more so—to options for customizing the player's character and its

equipment. Games which can be customized are rated as more interactive and enjoyable, and users prefer playing with characters they can adjust to meet game requirements and to resemble aspects of themselves. Finally, these opportunities to customize a game to suit individual needs allow players to creatively alter the video game experience.

## MODIFYING GAME CONTENT

Within the definition of creativity offered by Amabile (2012), customizing a game and altering individual game characters can be considered the less creative endpoint of content creation in video games. Alternatively, modifying a video game may represent the more creative endpoint. In the following, we will provide a brief introduction to the technical and historical background of this complex phenomenon, and analyze the development of game modifications as a creative activity and regarding its contributing factors to creativity.

Modifying games means that players use the program code of a game, editor, or software development kit designed by game manufacturers (Humphreys, Fitzgerald, Banks, & Suzor, 2005) to change game items, characters, environments, and game rules. Such behavior is quite different from customization. Customizing content uses affordances embedded within a game whereas modifications are technical alterations to the affordances of a game. These modifications of commercialized computer games are also called "mods" (Postigo, 2003, 2007). They are pieces of software, often distributed over the internet for free, for players to download and use mods. Usually, installing mods requires a legal copy of the original, commercialized game installed on the player's computers (Humphreys et al., 2005).

Users first started to modify games at computer labs of universities in 1962 with the game *Spacewar* (Herz, 2002; Laukkanen, 2005). Game enthusiasts modified text-based adventures like *Dungeons & Dragons* or *Star Trek* in the 1970s (Kushner, 2002, 2003), and games like *Castle Wolfenstein* in the 1980s (Au, 2002; Laukkanen, 2005). With the advent of games using 3D graphics in the early 1990s, like *Wolfenstein 3D* and *Doom,* modding became quite popular (Kushner, 2003). *Doom* was published in 1993 and by May of 1994, the first user-generated editors for the creation of new levels could be found on the internet. Soon the game's manufacturer, id Software, permitted the use of modifications so long as they were not commercialized. In an unprecedented move, id Software went so far as to publish parts of the game's program code (Lowood, 2006). The popularity of *Doom* was surpassed by the success of *Quake* (id Software), released in 1996, as well as *Half-Life* (Valve) and *Unreal Tournament* (Epic Games), both being released in 1998. To this day, the development of modifications is still a phenomenon

that applies mostly to games played on personal computers. Games that are played on video game consoles such as a PlayStation (Sony), an Xbox (Microsoft), or a Wii (Nintendo) are less accessible in technical terms. Among the more than 6200 modifications hosted by The Mod Data Base (www.moddb.com)—one of the largest communities for modders—less than 100 modifications are for game consoles or mobile phones.

Some mods alter small components of a game whereas others fundamentally change the very nature of a game. For example, the largest unofficial website for *The Sims* games (Maxis/Electronic Arts) currently hosts more than 930,000 modification files for *The Sims 1*, *The Sims 2*, and *The Sims 3*, among them more than 150,000 pieces of clothing and almost 2000 pets (The Sims Resource, 2014). For the role-playing game *The Elder Scrolls: Skyrim*, more than 36,000 unique mods (available on nexusmods. com) change the game character's appearance or equipment, add remodeled cities, new quests, dungeons, or new companions to the game (e.g., Batman and Chuck Norris), or increase the usability of the game interface. Interface modifications are also very popular for massively multiplayer online role-playing games (MMORPGs) like *World of Warcraft* (Blizzard). For instance, the modification *Recount* graphically displays damage and healing. This popular mod was released in 2007 and has been downloaded more than 51 million times from www.curse.com (World of Warcraft Add-ons, 2014). An extreme example for a game modification is the *Star Wars Mod: Galactic Warfare*, a total conversion for the 2007 FPS game *Call of Duty 4: Modern Warfare* (Activision). *Galactic Warfare* was released in 2009. It combines the *Call of Duty* game play with a Star Wars setting and transforms the game into a battle between imperial and rebel forces, using authentic Star Wars locations, characters, and weapons. One of the most popular total conversions is *Counter-Strike,* created in 1999 by two students as a multiplayer version for the single-player FPS game *Half-Life. Counter-Strike* was later purchased by the game manufacturer Valve and released as a commercial add-on (Morris, 2003).

It is hard to quantify the proportion of computer game players who engage in modifying games, but it is a niche phenomenon. In a survey among adolescent boys and girls in grades 7 and 8, two in five boys and one in five girls indicated that they liked to "mod" games, but this also included downloading new characters, weapons, clothing, or storylines from the internet (Olson et al., 2007). A study among boys and girls in grades 5–9 showed that 38% of the participants had modified a computer game by developing new levels or scenarios, characters, clothing, items, interfaces, or the use of cheatcodes (Hayes, 2008). Given that it is technically much easier to use a cheatcode than to create a modification, we assume that the relatively high proportion of participants who indicated that they had modified a game is, to a large extent, due to those who had used a cheatcode before. To the best of our knowledge, no newer studies have

investigated this topic, but it is most likely that the numbers have dropped since 2007/2008. This may be especially true as computer games have lost market shares to mobile games and apps (Entertainment Software Association, 2014). However, core communities of mod makers are still very active, as the lively discussions on dedicated online forums such as *The Mod Data Base* demonstrate.

If players miss something in a computer game, they are not facing a purely algorithmic task. Players who develop mods must first perceive a problem (e.g., the game does not allow for customizing a character as desired) and then devise a technical solution that resolves the perceived problem. This is a heuristic task with no single, obvious solution. Such open-ended tasks are a prerequisite for creativity (Amabile, 2012), and we argue that developing game modifications can certainly be considered a creative activity (see also Cook, Chapter 11). According to the componential theory of creativity (Amabile, 1996, 2012), creativity is influenced by domain-relevant skills, creativity-relevant processes, task motivation, and by a surrounding environment with factors that might serve as obstacles or stimulants to intrinsic motivation and creativity. To the best of our knowledge, no study has yet investigated creativity-relevant processes such as the ability to use wide, flexible categories for synthesizing information, and the development of game modifications.

Research on game modifications has primarily focused on skills, motivation, and the social environment. Domain-relevant skills like expertise, knowledge, technical skills, and talent are clearly important for developing modifications. Creating a mod requires a wide range of skills from graphic design, physics, mathematics, and computer programming to project management (Laukkanen, 2005; Sotamaa, 2004). As video game technologies increase in power and complexity, so have the skills required for developing modifications (Steinkuehler & Johnson, 2009). While some modifications are developed by individuals or small groups other modification projects are developed by teams, some of which have 25 or more members who specialize in different tasks such as writing code or drawing and animating characters and objects (Postigo, 2007).

People are most creative when they are intrinsically motivated by the interest, enjoyment, satisfaction, and challenge of the work itself, compared to being motivated by extrinsic factors like surveillance, competition, evaluation, or requirements to complete tasks in a predefined way (Amabile, 2012). For most users, developing game modifications is a hobby, but not a job. Most publishers allow modifications of their games only if the results are not commercialized (Kushner, 2003; Sotamaa, 2003). Some modders see their hobby as a chance to promote their skills, to attract the attention of professional game developers, and eventually find a job in the games industry (Behr, 2007; Postigo, 2007; Theodorsen, 2008).

While this seems to be considered a possibility, it is generally viewed as a highly unlikely career path among modders (Behr, 2010).

Instead, typical intrinsic motivations are more important. Qualitative surveys among modders identified eight different motivational dimensions: (1) Playing—improving and personalizing the gaming experience through modding; (2) hacking—acquiring knowledge about computer and games technology; (3) researching gathering information about selected topics of modifications like historical weapons; (4) creative endeavors/artistic work—using modifications as a medium of expressing one's creativity; (5) cooperation—working in teams with others and being a member of a community; (6) facing challenges in the process of modding; (7) receiving appreciation for their work as important motivations for modders; and (8) the experience of fun and entertainment (Behr, 2007; Postigo, 2003, 2007; Sotamaa, 2004; Theodorsen, 2008). In a quantitative online survey among 194 computer game players who had worked on a modification before, engaging in creative activities was the most important motivator (Behr, 2008, 2010): Modders wanted to develop something based on their own ideas and enjoyed the creative activity in and of itself. Modders also worked on their projects because they wanted to improve the original games, because they enjoyed mastering the challenges that came with these projects, and simply because they liked the games and enjoyed spending time adjusting them to their individual preferences. Improving one's computer skills, being a member of a team and receiving positive feedback from the community, and entertainment were less important motivators.

As noted previously, the social environment is an important contributor to creativity. Computer game players who develop and use modifications use online communities as their main communication medium for creative expression (Morris, 2003). They develop and maintain forums, chat services, and websites revolving around their favorite games and modifications. Unlike open-source software communities who often compete with manufacturers of proprietary software (Bonaccorsi & Rossi, 2003; Sen, 2007), game modders and the game industry enjoy a more cooperative relationship. Game manufacturers allow the modification of their games as long as mods can only be used in combination with original copies of the game, are not commercialized, and as long as no copyrights are infringed (Kushner, 2003; Sotamaa, 2003). It has been criticized that game manufacturers exploit the "free labor" (Terranova, 2003, June 20) provided by game players as game developers claim copyrights for all modifications (Baldrica, 2007; Grimes, 2006; Kuecklich, 2005; Postigo, 2003) and use the mod communities as free resources for market research and marketing (Grimes, 2006). But as Sotamaa (2005, p. 10) notes: "first of all mod makers are certainly not entirely vulnerable and secondly one of the reasons why modding remains fascinating for hobbyists is exactly the close co-operation with industry." Taken together, we argue that modifying games is a particularly creative form of VGI.

# CONCLUSION

In this chapter, we have considered how two aspects of interactivity, customization and co-creation of game content, allow players to express a wide range of creative outlets in video game environments. These creative activities are not necessarily play behaviors, per se. Instead, they are activities often done in an effort to improve, augment, or otherwise alter the game before actual play occurs.

Customization and co-creation represent just one of the many ways in which video game users might choose to express creative behavior. There are several other ways to examine creative play behaviors that result from interactive game features. For instance, players focused on exploration might use video games as means for developing complex, alternative narratives. Such behavior might take several forms. For instance, in role-playing (e.g., *World of Warcraft*) or sandbox-style games (e.g., *Minecraft*) players might choose to create novel stories in an attempt to express a particular creative vision for their character, the game, or both. Players may even choose to record these narratives in a new form of artistic expression known as machinima (a portmanteau of machine, animation, and cinema) (for a discussion, see Jenkins, 2006).

Broader still, players may combine components of VGI such as controller responsiveness and artificial intelligence to develop individualized play styles. For instance, some FPS players adopt play strategies that are more brash and aggressive whereas others prefer a finesse strategy (e.g., Weber et al., 2009). The point is that VGI affords players considerable opportunity to express their creativity while providing academics a useful framework for investigating creative player behaviors.

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