

# The Catcher in the CAT.

## Playfulness and Self-Determination in the Use of CAT Tools by Professional Translators

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### Abstract

This contribution draws on the different models developed to assess and predict technology acceptance (particularly the Unified Theory, UTAUT) and discusses the factors considered and their applicability to CAT tools and professional translators. It further draws on translator studies to discuss how the current research on the translators' habitus can support and enhance the existing models. The model suggested comprises five categories (performance and effort expectancy, social norms, perceived playfulness and self-determination), whose relevance is tested empirically with a cohort of professional translators. The survey is carried out through a questionnaire where translators working in different language combinations and different institutions and companies, with different status (free-lancers and permanent in-house professionals), report their adherence to specific statements pertaining to the five constructs analyzed. The analysis highlights the importance of one of the two innovative factors contained in this proposal, self-determination, across the professional characteristics of the participants.

## 1 Introduction

In the last ten years, computer-assisted translation tools (CAT tools) have evolved significantly to face changing marketplaces and an increased need for productivity (see Dunne, 2012: 151). Cloud computing (Software as Service), machine translation and crowdsourcing translation are altering the scenario of professional translation and are leading to new ways in the access and use of technology.

These changes, however, are sometimes imposed on translators by companies, institutions, agencies or the market's command. Among other factors, this may explain why CAT tools are unevenly used and appreciated by professionals. The acceptance of technology in general has been shown to depend on a number of factors. Models have been developed to determine the influence of computer anxiety, peer pressure and vertical imposition, job-related relevance, output quality and productivity, among many other parameters.

In this contribution, we examine studies specifically developed to assess the use of technology in general and CAT tools in particular by professional translators. We then focus on some of the factors included in existing models for predicting technology acceptance, especially the Unified Theory of Acceptance and Use of Technology model (UTAUT) (Venkatesh *et al.*, 2003). We discuss the issues considered across the different proposals and their empirical testing. Based on contributions to Interpreting and Translation Studies (TS) that seek to describe the translators' *habiti*, we argue that (1) performance and (2) effort expectancy, (3) social norms, (4) perceived playfulness and the space for (5) self-determination allowed for by the tools have an impact on how likely translators are to initiate and continue the use of

CAT tools. The relevance of these five issues is then tested surveying professional translators working in different language combinations and different institutions and companies, both free-lancers and permanent in-house professionals.

## 2 The Use of Computer-Assisted Translation Tools

Machine translation (MT) can be traced back to the 17th century (Hutchins, 2006) and it entered a golden age in the Cold War period. Governmental purposes and the advances in linguistics led to a major public investment and confidence in the possibilities of fast and non-human translation. Development of MT has slowed down significantly, and the attention has turned to tools that can assist human translators and speed up their translation process (see Bowker and Fischer, 2010: 60). Private funding has joined the race to find fast, reliable and cost-effective solutions for an ever-increasing market that enables communication among the planet's over 7,000 languages. In a more modest attempt, international and supranational organizations develop their own solutions, turn to commercial tools or have these adapted to their own needs. Also translation companies, large and small, embrace their use and promote their acceptance among language professionals to gain a relative advantage in a competitive environment.

Computer-assisted or computer-aided translation (CAT) tools comprises a wide range of technology that supports translators in their daily work, from translation to communication technology, also including text alignment, terminology extraction, project management, etc. In this study, CAT tools will be used to refer to any technology or set of technological tools that include at least one translation-specific facility, such as translation memory use or terminology management. We disregard systems that individuals can find or may use in other non-translation-specific settings, such as communication tools. To argue the relevance of the constructs included in the study we will use cases of the top market leaders: SDL Trados Studio<sup>®</sup> 2015 (SDL, 2015a), MemoQ Translator Pro<sup>®</sup> 2015 (Kilgray, 2015a) and WordFast Anywhere<sup>®</sup> (Wordfast LLC, 2015b). MemoQ Translator Pro 2015 and SDL Trados Studio 2015 are both desktop tools while Wordfast Anywhere is a web-based tool.

Previous research on the acceptance of CAT systems among professional translators seems to offer a coherent picture where lack of awareness (Fulford and Granell-Zafra, 2005; Gough, 2011) and difficulties in mastering the tools (Benis, 2005) hamper the use of CAT tools. Familiarity with CAT tools has also proven to have a positive impact on perception and indeed a positive assessment of one's own competence has been found to be determinant in the acceptance of machine translation (Dillon and Fraser, 2006: 76).

## 3 Measuring Technology Acceptance

Our concern in this paper is variance-oriented, that is, finding what factors impact whether and to what extent users adopt new practices involving technology. Several attempts have been made to identify and determine the relevance of the reasons why individuals initiate and maintain the use of new technology. One remarkable such attempt is the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.*, 2003), which was developed as a synthesis of the most widely-used existing models. UTAUT establishes a set of four constructs that are considered to be determinant for user acceptance and usage behavior: *performance expectancy*, *effort expectancy*, *social influence* and *facilitating conditions*. The latter, however, was determined to have no influence on behavioral intention to use technology. The predictive powers of the theory have been tested across different applications and populations, and empirical testing has given evidence of its relevance.

### 3.1 Performance Expectancy

In the UTAUT, *performance expectancy* refers to the degree to which individuals believe that using the system will help them attain gains in job performance (Venkatesh *et al.*, 2003: 447) (in our survey, PE1), including productivity and effectiveness (PE3). The theory relates performance to external factors that can engender motivation (Davis, Bagozzi and Warshaw, 1992), although it establishes no distinction as to the relevance of the different extrinsic motivators. More specifically, the proposed model includes motivators such as higher pay or promotions (PE4). The theory also relates performance to the concept of *relative advantage* (PE2), which refers to the idea that using an innovation will allow the individual to obtain better results than when using other solutions (Moore and Benbasat, 1991).

CAT tool providers focus their marketing campaigns on the benefits of using their software for performance purposes (see Kilgray, 2015b; SDL, 2015b). Translation memories, for instance, help detect inconsistent translations, quickly find concordances and contexts or speed up processes such as starting a new project or translating itself. Equally, terminology management systems can ensure consistency across projects and reduce time costs. Management tools can improve reliability of analysis reports and even complete them automatically. Also billing and other organization tasks can be automated thereby reducing the time translators spend in non-translating tasks.

Based on the concept of performance expectancy within the framework of the UTAUT, and on the advantages highlighted in CAT tools advertising material, we derive that CAT tools are mainly directed at improving performance and that great efforts are invested in increasing awareness in that respect. In this study we will test the underlying assumption.

Hypothesis 1 (H1): Translators who expect an improved performance through the use of CAT tools will show a stronger intention to use these tools.

### 3.2 Effort Expectancy

Effort expectancy (EE) is defined under the UTAUT as the degree of ease associated with the use of the system (Venkatesh *et al.*, 2003: 450). EE is related to complexity, which in some studies has shown a negative impact on utilization (Thompson, Higgins and Howell, 1991: 128) (EE1). Others have found no such relation but have empirically proven a positive impact of ease of use on technology acceptance in a population of teachers (Hu, Clark and Ma, 2003: 234-235) (EE4). Effort is also related to learning how to operate the system (Thompson, Higgins and Howell, 1991: 132) (EE2) or how to increase one's knowledge and become skillful at using it (Venkatesh *et al.*, 2003: 460) (EE3).

In the use of CAT tools, effort expectancy constitutes a problem, and providers seem to be aware of this being a major Achille's heel. A variety of support resources, including seminars and video seminars, free webinars, guides, case studies, certifications and Youtube channels (SDL, 2009) are offered in an attempt to alleviate inconveniences and facilitate easier access to CAT technology (SDL, 2000-2013). Wordfast LLC (2015a) actually focuses on its software ease of use in its advertising material as its strongest asset.

To test the impact of effort expectancy in a cohort of translators, we formulate the following hypotheses:

H2: The expected effort to use CAT tools has a positive impact on the behavioral intention to use the technology.

H3: The expected effort to use CAT tools has a positive impact on performance expectancy.

### 3.3 Social Influence

Social influence (SI) in the UTAUT refers to the importance awarded to others' perception of one's embracing technology (Venkatesh *et al.*, 2003). The influences covered are manifold. SI is related to status, as individuals may perceive their use of technology can improve their personal image and enhance their consideration in the social system (SI1 and SI2) (Moore and Benbasat, 1991), especially by subjects with a higher status (Thompson, Higgins and Howell, 1991: 130) (SI3). Furthermore, studies suggest that social factors can have an impact on behavioral intention only when the use of the system is mandatory (SI4). In other settings, social influence has no significance (Venkatesh and Davis, 2000).

CAT tools are usually embraced by institutions and organizations in an attempt to reduce costs (see Drugan, 2007: 127), and mandatory contexts are far from rare (see Lagoudaki, 2006a; Gouadec, 2007: 152). A fair amount of free-lancing opportunities advertised in social media, such as Proz (2015) require CAT-specific certifications. The UN translation division has recently adopted their own mandatory CAT system, and many other institutions promote the use of CAT tools, which have sometimes been specifically tailored to their own needs (such as the CAT system used by the Institutions of the European Union, see SDL, 2013). Peer pressure is also fostered by software providers, which promote membership in user communities, thereby showing their assumption that social influence has a say in the acceptance of CAT systems.

The following hypotheses are formulated to test that assumption:

H4: The degree of social influence perceived by translators has a positive impact on their behavioral intention to use CAT tools in mandatory contexts.

H5: Social influence has no impact on the acceptance of CAT systems in voluntary contexts.

### 3.4 Perceived Playfulness

Play in Western thought has been explored in connection to child development but poorly documented in adulthood. Plato, Rousseau, Kant, Schiller, Dewey, Freud or Piaget all argued for the benefits of childhood play in adulthood, but neglected its presence in adult life. The UN Convention on the Rights of the Child enshrines the right of all children "to engage in play and recreational activities" (UN, 1989) and sets the obligation for States Parties to provide suitable opportunities for children to play. These opportunities are not protected in adulthood but studies underscore their importance, especially since the publication of the groundbreaking book *Homo Ludens* (Huizinga, [1944]1980).

Among the benefits of playfulness in adulthood, biological adaptation is by and large the most frequently suggested (Pellegrini and Smith, 2005) mostly in connection with work settings (Rasmussen, 2014). Play allows organisms to adapt rapidly to changes in the environment, and to find better solutions even though there may already be satisfactory methods. Play has also been attributed therapeutic value by allowing individuals to develop new psychological resources (Lang-Étienne, 1982; Schaefer and Drewes, 2013) and facing everyday life (Solnit, 1998). It has also a major role in creativity development (Spencer, 1872; Vygotsky, 1967; Lieberman, 1977), a link supported by empirical evidence (Tegano, 1990; Tan and McWilliam, 2008; Chang, 2013; Bateson, 2015). In these studies, some scholars adopt a wide definition of creativity, which also encompasses innovation. We understand the distinction is vital to studying two different processes: one by which novel ideas are developed, and one by which novelty is embraced (Bateson and Martin, 2013). We will focus on how playfulness

impacts the acceptance and use of new technology, thereby disregarding whether the subjects generate new methods themselves.<sup>1</sup>

The relevance of playfulness for CAT tools acceptance is based on CAT tools being a novel solution for an old problem, thereby requiring innovative skills on the part of the user. Bateson and Martin (2013) argue that playfulness is an ally for both humans and organizations to foster innovation, and several studies suggest the potential of “rational” (Amabile, 1996) or “serious” (Rasmussen, 2014) playfulness in enhancing adults’ ability to perform work-related tasks, by alleviating boredom (Bowman, 1987), improving performance (Glynn and Webster, 1992), or decreasing anxiety toward new technologies (Bozionelos and Bozionelos, 1999). Playfulness has an effect on how adults perceive, interpret and approach situations and it enables them to distance themselves from conventions, and to find balance in stressing situations (Lang-Étienne, 1982). By doing so they show an increased willingness to confront difficulties and accept failure while keeping an open mind towards novel solutions. In this vein, we argue that playfulness is a useful tool in embracing CAT tools as a novel solution and overcoming the frustration typically associated with their operation (see, for instance, Hyde *et al.*, 2009; Grégoire, 2015).

To be able to test this hypothesis, we must operationalize playfulness in a way that is congruent to its definition. In his seminal book, Huizinga ([1944]1980: 13) assigns several variables to playfulness. According to this author, a playful activity is a) free and outside of the ordinary life, defined by its own rules in a sort of illusion; b) fully absorbing; c) free of any interest, as no profit is expected and the play is motivating per se; d) a desire to obtain an uncertain outcome; and e) an element of distinction around which social groups form.

The features have been discussed and nuances and boundaries have been established and then again displaced. Scales have been suggested and tested but none has reached consensus. The following is an attempt to summarize existing proposals. Playfulness is characterized by:

1. A sense of absorption. Disconnecting from time boundaries and focusing on the task at hand is included in different conceptualizations, even though it is not always assigned an independent category and overlaps with notions such as unpredictability (Henriot, 1969). (PP1)
2. Freedom to suspend reality. Boundaries with reality are set so as to allocate a specific space to the playful activity where it is dissociated from social norms. Illusion (Henriot, 1969), freedom (Bishop and Chace, 1971; Bundy, 1993), imagination (Knox, 1996), spontaneity (Guitard, Ferland and Dutil, 2005), framing (Bundy, 1993), or “protected environment” (Bateson and Martin, 2013) are used and described in similar terms. (PP2)
3. Joy, termed as such (Bishop and Chace, 1971; Lieberman, 1977; Knox, 1996) or also intrinsic motivation (Bundy, 1993; Bateson and Martin, 2013), arousal (Lyons, 1987), release (Lyons, 1987) or pleasure (Ferland, 2003; Guitard, Ferland and Dutil, 2005). (PP3)
4. Curiosity is mentioned in several models (Knox, 1996; Ferland, 2003; Guitard, Ferland and Dutil, 2005) and it refers to a desire to acquire task-specific knowledge. (PP4)
5. Exploration is also mentioned as such (Bishop and Chace, 1971) and intimately related to creativity. It refers to a craving for new experiences that leads to spontaneity, both social and cognitive (Lieberman, 1977). (PP5)

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<sup>1</sup>Lagoudaki (2006b: 20), however, reports that a high percentage of translation memory users state their willingness to participate in CAT-software development processes.

Studies also focus on the social bond established between the participants in the play. We consider this a consequence rather than part of the playful attributes and therefore exclude the social interaction from the analysis of playfulness.

In relation to technology, playfulness has been empirically related to anxiety (Hackbarth, Grover and Yi, 2003), quality perception (Ahn, Ryu and Han, 2007), expectation confirmation (Lin, Wu and Tsai, 2005), service satisfaction (Zhao and Lu, 2012), computer efficacy (Potosky, 2002) and acceptance of e-learning (Lee, Yoon and Lee, 2009), mobile learning (Wang, Wu and Wang, 2009) and embodied games (Lo *et al.*, 2012). Studies focusing on other technologies, however, have shown no significant influence on acceptance (Faqih and Jaradat, 2015). No studies have been found on the impact of playfulness on the acceptance of CAT tools.

To test that impact, we formulate the following hypothesis:

H6: The playfulness experienced by translators when using CAT tools has a positive impact on the behavioral intention to use those tools.

### 3.5 Perceived Self-Determination

The playfulness factor is highly linked to intrinsic motivation. External motivation, however, has been the inspiration for much research work in TS. Indeed, the subservient habitus hypothesis is one of the most widely tested in TS (Simeoni, 1998) and it suggests that translators respond keenly to external norms, going so far as to standardize texts even when source material departs from generally established norms (Toury, 1995: 268). We therefore consider essential to include a focus on external motivators in testing the acceptance of CAT tools and its reasons.

Self-determination theory attempts to explain human motivation by distinguishing motivation that is autonomous from that which is controlled. Autonomous motivation is the drive of the individual to do something whereas controlled motivation is regulated by external factors (a boss, a deadline, etc.) and imposed on the individual. Intrinsic motivation, such as the joy derived from a task, triggers autonomous action, but extrinsic factors can also result in autonomous behavior when individuals assume those factors as their own motives. External motivators which are not interiorized lead to controlled behavior whereas motivators which overlap with individuals' own values and goals can be integrated and engender autonomous action.

Some scholars have suggested that, to fully integrate any external norm, this must satisfy the individual, that is, fulfill their psychological needs. These needs are sometimes treated as person-dependent (Hackman and Lawler, 1971; McClelland and Burnham, 1976) and sometimes proposed as universal. Psychologists such as Maslow ([1954]1987), Harlow (1958) or White (1959) have suggested some widely known and accepted models of basic human psychological needs. Organization studies (Reis *et al.*, 2000; Gagné, Ryan and Bargmann, 2003) have empirically tested how the fulfillment of the needs for autonomy, competence (social effectiveness), and relatedness influence job and life satisfaction. From such studies we can conclude that fulfilling these three basic psychological needs will promote full internalization of extrinsic motivation and result in autonomous behavior.

CAT tools can be seen as fulfilling basic psychological needs in satisfying the need to be:

- effective, by facilitating the control of tasks and deadlines (SD1), but also information pertaining to the different jobs (SD4);
- autonomous, by generating new useful resources that the translator can build, keep, and improve (SD3), and by easily using resources generated by others (SD5);
- connected to other human beings, by facilitating communication with colleagues and clients (SD2), as well as supervisors (SD6).

Following this operationalization, we hypothesize the significance of self-determination for translators as follows:

H7: The perception of possibilities for self-determination offered by CAT tools has a positive impact on the behavioral intention to use those tools.

#### 4 Research Design

We surveyed professional translators and language experts. Respondents were identified using a snowball approach. The questionnaire included 37 questions organized under the 5 multidimensional constructs and including 12 final items related to personal information. Questions regarding behavioral intention and personal data were mandatory whereas any other questions were established as optional. Items 1-25 (all but personal information) were measured using a five-point Likert scale (from “strongly disagree” to “strongly agree”). A summary of respondent’s characteristics is shown in Table 1.

Gender	Frequency	Percentage	Occupation(s)	Frequency	Percentage
Female (F)	55	68.75%	Translator	67	82.50%
Male (M)	25	31.25%	Reviser	26	32.50%
Total	80	100	Interpreter	10	12.50%
			CAT Specialist	12	15.00%
<b>Currently using a CAT tool</b>	<b>Frequency</b>	<b>Percentage</b>	Project Manager	7	8.75%
Yes (Y)	72	60.00%	Other (terminologist, professor, editor)	17	21.25%
No (N)	8	6.67%	<b>Employment status</b>	<b>Count</b>	<b>Percentage</b>
Not completed	40	33.33%	Free-lancer	47	65.28%
<b>Average age (years)</b>		36.86	Permanent	29	35.12%

Table 1: Summary of respondents’ characteristics

The internal consistency of the instrument was assessed using Cronbach’s alpha, resulting in 0.83.<sup>2</sup> Acceptance of CAT tools among translators and language specialists was measured using *behavioral intention* as a dependent variable (see also Thompson, Higgins and Howell, 1991; Venkatesh *et al.*, 2003; Dillon and Fraser, 2006). Correlations between other constructs and individual items were also checked for assessing their direct and indirect impact on translators’ behavior. Results were analyzed using the SPSS system. Hypotheses were tested by examining the corresponding causal paths in the model on the basis of Pearson’s correlation coefficients (see Kader and Franklin, 2008), as shown in Table 3. Correlation values above 0.70 are considered very strong, above 0.50 are considered strong and moderate above 0.30 (Weinberg and Abramowitz, 2008).

#### 5 Results

Results support the hypothesized effect of Performance Expectancy (PE) on the intention of language professionals to use CAT tools. Indeed, PE is the most significant construct for professionals to use CAT technology. It is worth noting that promotion expectancies have a much

<sup>2</sup> Results above 0.7 are considered valid for exploratory research (see also Duhachek, Coughlan and Iacobucci, 2005; Nunnally and Bernstein, [1967]1994: 265).

lower significance than the rest of items in the construct (0.524) and that subjective assessment (PE1) has a remarkably high impact on acceptance (0.835).

Also Effort Expectancy (EE) is significant when considering the intention to use CAT systems, although the impact is moderate. A stronger correlation can be found between EE and PE, confirming previous research on technology acceptance and suggesting that translators who consider CAT tools to be effortless also consider them more profitable.

Regarding Social Influence (SI), overall results show a moderate influence on Behavioral Intention (BI), and yet the situation is remarkably different when comparing freelance and permanent translators (Table 2).

Social Influence		BI
Freelance	Pearson Correlation	.388
	Number of cases	43
Permanent	Pearson Correlation	.678
	Number of cases	29

Table 2. Social influence impact on behavioral intention per type of employee

Results regarding the impact of Perceived Playfulness (PP) on the intention to use CAT systems showed no significant impact. In fact, suspension of reality (PP2) has a negative correlation with BI.

The impact of Self-Determination (SD) on BI is stronger and yet moderate. Considering the individual items, the perceived autonomy translators can gain when using the system is significant (0.713). Also significant is the low impact of items pertaining to relatedness on BI (0.368, for the item regarding colleagues, and 0.187, for the item regarding supervisors).

HYPOTHESIS	CAUSAL PATH	RESULTS	
H1	PE->BI	0.780	validated
H2	EE->BI	0.494	validated
H3	EE->PE	0.542	validated
H4	PERMANENT (SI->BI)	0.678	validated
H5	FREELANCE (SI->BI)	0.388	validated
H6	PP->BI	0.285	validated
H7	SD->BI	0.491	validated

Table 3. Causal paths representing our hypotheses (Pearson's correlation)

## 6 Discussion and Conclusions

Overall the most significant factor influencing the acceptance of CAT tools is the subjective assessment of their usefulness. When considering the construct as a whole, Performance Expectancy (PE) ranks highest among translators as a predictor of acceptance, which supports current marketing practices. Furthermore the mean value given in this construct is extremely high (4.18 out of 5), which contradicts results from previous research on CAT tools (Fulford and Granell-Zafra, 2005), where subjective acceptance was found to be low. A larger cohort would be needed to solve the discrepancy. Also significant in our sample is the correlation between PE and Effort Expectancy (EE) – particularly ease of use –, and the overall impact of EE on Behavioral Intention (BI), which seems to make a strong case for academic partnerships and training programs.

The third most significant construct in our study is Self-Determination (SD), which is an innovation of our model, based on advances in TS. Results show that extrinsic motivators are much more determinant when deciding whether to embrace CAT tools than intrinsic motivators (represented in our model by Perceived Playfulness). This seems to confirm that translators' *habiti* are keen on social norms and that these can be integrated and engender autonomous actions in accepting CAT tools. Especially significant in this construct were factors re-



lated to autonomy and competence. When translators believe that CAT tools help establish their competence socially or increase their autonomy at work, they also show a strong intention to use them. The authors found no promotional material highlighting either of these aspects, which can also be related to a lack of awareness among software developers. Less significant is the impact of dimensions pertaining to relatedness, although mean values (3 for SD2 and 3.6 for SD6) suggest a relative accord on the fact that CAT tools do improve relations with other agents. In this case, promotional material does underscore the communication capabilities of some systems. A possible explanation is that translators do not see the integration of those as a necessary feature of CAT tools, since they are already familiar with other communication systems, which they use for a variety of (also personal) purposes.

As a construct, SD has proven a more reliable predictor than Social Influence (SI), which is however significant when considering only permanent translators (0.678). This may be interpreted as confirming previous research where SI was significant in mandatory contexts, although further research would be needed. The most significant item, peer pressure (PE2), is also a significantly higher predictor for permanent translators (0.672) than it is for freelancers (0.383). Occupational status as a moderator does not seem to be relevant in other constructs.

Regarding Perceived Playfulness (PP), even though there is a positive correlation with BI, this is much weaker than the correlation found with other constructs. Mean values also suggest that translators do not consider CAT tools to inspire playfulness (2.99 out of 5). PP shows no correlation with EE, which means that the challenge posed by the system is not considered inadequate. It would be interesting to see whether tools offering an increased space for playfulness have an impact on these results. At any rate further studies are needed to determine whether the operationalization of PP does not work for translators or whether translators focus clearly on extrinsic (albeit integrated) rather than intrinsic motivators.

All in all, results open some interesting questions that can be taken upon by developers to move beyond productivity and ease of use and to better cater to the needs but also the wants of professional translators. Exploiting the potential of playfulness remains pending both in software development and research. However, maybe the most interesting result from our study is the significance of self-determination for translators. There is still a lot to be done in this field. Implications can be derived for project and team management. Research examining the responsiveness of translators to different managerial styles and techniques can bring about considerable improvements in motivation and autonomous behavior. The complexities of translators as an object of study are still to be disentangled.

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