Complexity of Virtual Worlds' Terms of Service

Holger M. Kienle[1], Andreas Lober[2], Crina A. Vasiliu[3], and Hausi A. Müller[1]

[1] University of Victoria, Victoria, BC, Canada,
kienle|hausi@cs.uvic.ca
[2] RAe Schulte Riesenkampff, Frankfurt am Main, Germany,
alober@schulte-lawyers.de
[3] University of Victoria MBA Alumni, Victoria, BC, Canada,
crina.vasiliu@alumni.uvic.ca

Abstract. This paper explores Terms of Service agreements of virtual worlds from the perspective of user complexity. We argue that these terms are too complicated for the average user to fully understand and manage because they exhibit a high technical or legal complexity. We also point out complexity problems that are grounded in size and readability of the texts, keeping track of changes when the terms evolve, and the scope of the terms. Based on these observations we identify approaches to reduce the complexity of Terms of Service agreements.

Key words: virtual worlds, terms of service, legal statements, readability scores

1 Introduction

This paper explores the complexity of Terms of Service (ToS) and other related legal statements that the ToS refers to. Operators of virtual worlds post the ToS on their web sites; it can be seen as a contract between the operator of the virtual world and its users. The goal of this paper is to explore and understand the complexity of the ToS, but not to analyze it from a legal perspective. Thus, we here take the content of the ToS at face value.

The ToS is important from the users' perspective because the operators use the ToS to put restrictions on users' rights and conduct. Thus, users have to read and understand the ToS in order to assess their rights and obligations. Generally, the complexity of these rights and obligations increases with the complexity of the virtual world. For example, if the virtual world has a virtual economy with an in-world currency that can be converted into real currency, then the ToS may have to address issues such as taxation and gambling. If the world offers user-generated content, the ToS has to deal with the IP rights of the content creator as well as in-world copyright and trademark infringements. Furthermore, the more users are investing in a virtual world (e.g., in terms of spent time, depth of social immersion, creation of (privacy-sensitive) content, or accumulation of virtual assets), the more important it becomes for them to understand the ToS. Not understanding or following the ToS can result in the unwanted exposure of private data, loss of virtual assets, or termination of the access by the operator.

For the following discussion, we analyze the ToS of five virtual worlds: Habbo Hotel (`www.habbo.com`), Kaneva (`www.kaneva.com`), moove (`www.moove.com`), Second Life (`secondlife.com`), and There.com (`www.there.com`). All analyzed virtual worlds have in common the fact that they can be characterized as metaverses that have no explicit (game-related) goals for the user and thus are in contrast to massive multiplayer online games (MMOGs) that are emphasizing game-related activities such as leveling, fighting, or winning.

The paper is organized as follows. In Section 2 we first summarize the kinds of legal topics that can be found in the five virtual worlds' ToS and structure the topics based on two criteria, relevance and complexity. We then assess in Section 3 the complexity of the ToS with the help of size and readability metrics, and point out other sources of complexity. In Section 4 we discuss how operators try to alleviate ToS complexity and propose other possible approaches. Section 5 concludes the paper with recommendations and observations.

2 Legal Topics of Terms of Service

Operators expect users to read the entire ToS. They presumably also expect users to understand what they read. Indeed, Habbo Hotel explicitly says that "if you do not understand ... these Terms of Use, do not use the Services". However, it is not realistic to expect users to understand all aspects of the ToS. To illustrate this point, here is a sentence from Habbo Hotel's ToS in the section Your Content:[1]

> "Sulake has no obligation to monitor or enforce your intellectual property rights to your User Content but has the right to protect and enforce its and its licensees' licensed rights to your User Content, including, without limitation, by bringing and controlling actions in your name and on your behalf (at Sulake's cost and expense, to which you hereby consent and irrevocably appoint Sulake as your attorney-in-fact, with the power of substitution and delegations, which appointment is coupled with an interest)."

The above sentence exhibits a high complexity in terms of legal terminology, addressing such diverse issues as intellectual property, licensing, and power of attorney.

To better understand the content covered by the ToS of a virtual world, Table 1 lists the legal topics that are typically addressed based on the five virtual worlds under discussion.[2] To better understand the sources of content complexity for the user, we roughly structure the topics that are addressed by a ToS along two dimensions: *relevance* and *complexity*. Relevance expresses how important

[1] `http://www.habbo.com/papers/termsAndConditions`

[2] Table 1 is not comprehensive; for instance, it omits age constraints and refund policies. On the other hand, one might argue that privacy policy and behavioral guidelines are not part of the ToS proper.

Complexity	Relevance		
	low	medium	high
low	external linking, advertising	ToS changes, registration information	behavior guidelines, password conduct
medium	impersonation, jurisdiction	dispute resolution, DMCA process	privacy policy, account closure
high	reverse engineering, spyware	warranty and liability, indemnity	copyright, virtual currency

Table 1. Complexity/relevance matrix of topics covered by ToS

it is for a "typical user" to understand a certain topic covered by the ToS. Complexity addresses the required legal or technical background of the reader to fully understand the topic.[3] It may be helpful for operators to think in terms of relevance and complexity when drafting and structuring their ToS.

Topics with low relevance are unlikely to affect users with normal usage patterns. This is obvious for activities that go beyond the normal use of the software such as reverse engineering and the attempt to introduce spyware. We also assign low relevance to topics that users presumably already are aware of or expect. For example, users presumably understand that pretending to be a representative of the operator is not acceptable behavior, and that links that point to other web sites are outside the control of the operator. We assign the issue of jurisdiction a low relevance based on the expectation that users rarely initiate legal proceedings against the operator.

Topics with medium relevance may affect users with normal usage patterns, but this is seldom the case. For example, users may get involved in legal issues (e.g., a false DMCA notification) without any wrong-doings. Also, it appears to be rarely the case that a change in the ToS directly affects the average user. It is unlikely—rather sadly—that a user expects the software to operate flawlessly and thus would try to pursue claims of warranty and liability; however, this scenario becomes more likely for content loss of valuable virtual assets.

Topics with high relevance can affect the user during normal usage. For example, monitoring of user behavior is pervasive because in most virtual worlds users can complain about other users if they object to their conduct. Repeated misconduct by a user can lead to account closure with or without refund depending on the operator's policy. Privacy is a concern because operators may constantly accumulate personal data that from then on remains indefinitely in the system. If the virtual world allows user-generated content, copyright issues are becoming more relevant and more complex for users.

Topics with low complexity can be understood by users without expert knowledge. For example, behavior guidelines are written in straightforward prose and use terminology that can be readily understood. Medium-complexity topics require some basic knowledge of legal or technical issues. For example, to under-

[3] Note that a legal statement can be relatively easy to understand, but that its legal interpretation may be highly complex.

Virtual World	Version	Words	Reading Time	Sentences	SMOG	FRES
Habbo Hotel[5]	6/13/08	7388	29:33	243	14.6	46.4
Kaneva[6]	5/20/08	4439	17:45	140	13.8	52.5
moove[7]	–	1120	4:29	58	12.9	49.8
Second Life[8]	–	7286	29:08	219	14.6	42.0
There.com[9]	–	5257	21:01	185	14.3	47.5
average		5088	20:21	169	14.0	47.6

Table 2. Summary of the complexity metrics of virtual worlds' ToS

stand privacy one needs to know about technical concepts such as cookie and IP address. The DMCA process requires a basic understanding of the concept of copyright. Topics with high complexity require expert knowledge. For example, there are a number of legal issues that relate to licensing. The average user does not know the difference between license and sale, and what is meant by an "unrestricted, unconditional, unlimited, worldwide, irrevocable, perpetual fully-paid and royalty-free right and license" (Habbo Hotel). In Kaneva, the world's virtual currency "is a limited license right available for purchase or free distribution at Kaneva's discretion." As a result, a virtual currency is quite different from real currency even though to the user it may seem the same.

3 Complexity of Terms of Service

In order to gain a better understanding of the structural complexity of ToS, we have analyzed the five ToS with the help of a number of metrics (cf. Table 2). The metrics have been computed with the GNU `style` tool, Version 1.11.[4] All ToS have been accessed in February 2009.

We are not the first ones to analyze legal documents published on the Internet with the help of text analysis techniques. For example, Antón et al. have analyzed 40 privacy policies from nine web sites in the financial sector, including readability scores [1]. Antón et al. also conducted an analysis of privacy statements in the health care domain to find out whether the Health Information and Portability Accountability Act[10] (HIPAA) had an impact on these statements [2]. They compare readability scores of two snapshots (Summer 2000 and September 2003) of nine web sites corresponding to points in time before and after HIPAA went into effect, and found that HIPAA's introduction has made statements more difficult to read. Kienle and Vasiliu have studied the evolution

[4] `www.gnu.org/software/diction/diction.html`
[5] `http://www.habbo.com/papers/termsAndConditions`
[6] `http://www.kaneva.com/overview/TermsAndConditions.aspx`
[7] `http://www.moove.com/agreement_rn.htm`
[8] `http://secondlife.com/corporate/tos.php`
[9] `http://webapps.prod.there.com/help/74.xml`
[10] `http://www.hhs.gov/ocr/hipaa/`

of legal statements of different kinds of web sites by tracking five snapshots between 1998 and 2006 [3]. They found that the length of legal texts increased significantly over the years (presumably following a logarithmic trend). For example, over the years the average word count for legal texts of e-business sites increased from 1,249 words in 1998 to 5,195 in 2006.

In the following, we first discuss two complexity metrics (size and readability scores) and then address concerns regarding the evolution and scope of the ToS.

3.1 Size

A simple metric is the size of the ToS with respect to the number of words and sentences. Both metrics are given in Table 2 at the "Words" and "Sentences" columns, respectively. Except for moove, all worlds' ToS have well over 100 sentences and several thousand words.

The length of a ToS directly translates to the time that it takes the user to read through it. Assuming an average speed of 250 words per minute (which is typical for a completed secondary education) [4], reading a ToS takes between 4:29 and 29:33 minutes (cf. Table 2, "Reading Time"). Since an average reading speed of 250 assumes non-technical content, it can be seen as the lower bound of the time that it takes to read a ToS. In practice, reading and comprehending a ToS may take significantly longer depending on the individual user [4].

3.2 Readability

There are several well-known readability tests that determine how easy it is to read and comprehend a text. The advantage of readability scores is that they can be automatically computed. However, they cannot assess the difficulty of the subject area of the text for a reader [5].

The SMOG formula assesses the educational level needed to understand a text [6]. It is computed with $\sqrt{p\frac{30}{s}} + 3$, where p denotes the number of polysyllables (i.e., three or more syllables) and s denotes the number of sentences. The average SMOG readability score is 14.0 for the five ToS (cf. Table 2, "SMOG"), which according to the SMOG Calculator[11] corresponds to the New York Times and requires a college education level (SMOG 13-15).

Another popular readability measure is the Flesch Reading Ease Score (FRES). With FRES, lower numbers mean increasing difficulty. It is computed as $206.835 - 84.6\frac{y}{w} - 1.015\frac{w}{s}$, where y, w, and s denote the total number of syllables, words and sentences, respectively. Scores in the ranges of 0–30 and 30–50 are rated as "very difficult" (scientific journals, reading grade 17+) and "difficult" (academic journals, reading grade 13–16), respectively [5]. The average FRES of the five ToS is 47.6 (cf. Table 2, "FRES"), while Second Life is the most difficult (42.0) and Kaneva is the least difficult (52.5). According to Wikipedia, Kaneva's ToS roughly compares to the Times magazine.[12]

[11] `http://www.wordscount.info/hw/smog.jsp`

[12] `http://en.wikipedia.org/wiki/Flesch-Kincaid_Readability_Test`

In order to judge the complexity of legal texts for virtual worlds it is instructive to compare them to the complexity of other legal texts on the Internet. Kienle and Vasiliu have reported SMOG and FRES values for legal texts found on web sites. For legal texts in the year 2006 they report average scores of 13.51 (SMOG) and 49.25 (FRES).[13] Thus, the readability of legal texts for virtual worlds seems similar to other legal texts found on web sites.

The readability scores indicate that a ToS is advanced reading material that is not trivial to understand. According to the SMOG, comprehending a ToS typically requires a post-secondary education (e.g., college or university). This is a concern because virtual worlds are open to all kinds of users with diverse educational backgrounds. Interestingly, the states of Florida[14] and Connecticut[15] require that life insurance polices have a FRES of 45 or higher. There are also laws that require to use plain language in consumer contracts (e.g., the New York Plain English law) [7]. Thus, it is conceivable that courts will also look into readability issues when judging the enforceability of a ToS. Currently, the average complexity of virtual worlds' ToS is close to a FRES of 45 with Second Life's ToS overshooting this complexity mark.[16] Also, it may be already problematic if only parts of the ToS have a high readability score. For example, the sentence in Habbo Hotel's ToS quoted at the beginning of Section 2 scores a SMOG of 23.5 and a FRES of 0! This sentence also has a length of 80 words. For Connecticut consumer contracts the law states that a contract has to meet several plain language tests, among them: "No sentence in the contract exceeds fifty words".[17]

3.3 Evolution

Users are expected to constantly monitor the ToS for changes since operators reserve the right to change them at any time. For example, the following statement is typical: "Kaneva reserves the right, at its discretion, to change, modify, add, or remove portions of these Terms at any time". Habbo Hotel simply recommends in its ToS to "check back each visit as policies and rules may change" and mandates later on that "you agree to review these Terms of Use on at least a weekly basis to be aware of Changes".

Some operators promise a change notification when the user accesses the virtual world for the first time after a change (There.com). Others state that a notification may be "sent via e-mail" (Kaneva) or more general that the operator is "communicating these changes through any written contact method we have

[13] All scores have been computed using the same tool.

[14] Florida Insurance Code, Section 627.4145, `http://law.onecle.com/florida/insurance/627.4145.html`

[15] General Statues of Connecticut, Section 38a-297, `http://www.cga.ct.gov/2009/pub/Chap699a.htm`

[16] However, a word of caution is in order here since different tools have different algorithms to determine syllables, words and sentences, resulting in different SMOG and FRES scores [3].

[17] General Statues of Connecticut, Section 42-152, `http://www.cga.ct.gov/2009/pub/chap742.htm`

Virtual World	ToS	Referenced by ToS	Words	SMOG	FRES
Habbo Hotel	Terms of Use	The Privacy Policy, The Habbo Way, Terms and Conditions of Sale, Infringements Policy	12708	14.1	47.3
Kaneva	Member Guidelines	Terms & Conditions, Privacy Policy, Copyright Policy, Rules of Conduct	10015	13.1	51.3
moove	Terms of Service	Privacy Policy, child protection paragraph, Premium Package paragraph	1528	12.8	51.4
Second Life	Terms of Service	Privacy Policy, Community Standards, DMCA, Brand Center, Second Life Billing Policies	>12762	13.8	46.3
There.com	Member Agreement	Privacy Policy, Behavior Guidelines	8591	13.8	48.3

Table 3. Summary of virtual world's legal documents

established with you" (Second Life), but the ToS is worded such that the operator is not required to send out these notifications.

Given this situation, it is surprising that only a minority of the ToS are dated or have some kind of versioning information (cf. Table 2, "Version"). Habbo Hotel dates the ToS and all related policies. Kaneva dates the Terms & Conditions and the Privacy Policy, but not its other legal statements.

Since changes are often small (and the previous version of the ToS is no longer available) users are in a difficult or impossible situation to effectively monitor changes to the ToS. In contrast, when changing its German User Agreement on June 3, 2009, PayPal provided a marked up document in advance that clearly identified new text (blue color) and deleted text (red).[18]

From the users' perspective, it would be highly desirable to have advance notification of a change in the ToS along with a document that clearly identifies the changes along the lines that PayPal provides.

3.4 Scope

A ToS consists of the ToS proper and related (legal) policies and guidelines that the ToS refers to. As a result, it is not always obvious what constitutes the ToS as we will explain shortly.

Table 3 shows the name of the ToS proper (column "ToS") along with the documents that are mentioned in it. This means that in effect users are required to read and understand all of these documents, not just the ToS proper. For

[18] `https://www.paypal.com/de/cgi-bin/webscr?cmd=xpt/Marketing/general/PayPalPolicyChange-outside`

example all legal texts in Kaneva add up to 10015 words, which is more than twice the amount of the ToS proper. In Second Life, the actual word count is more than 12762 words because we did follow the Brand Center only two levels deep and the Billing Policies one level. Compared to Table 2, the reading complexity tends to be lower for the whole set of documents because some of them are less technical in nature.

Because legal documents for a virtual word are dispersed over several web pages, it is not always obvious what truly constitutes the ToS. In Second Life, the ToS includes the billing policies, but this policy is not listed in the overview of "Policies & Guidelines" that is displayed alongside the ToS. Furthermore, the ToS refers to the Brand Center which has a complex structure with links that go down several levels. Thus, the ToS's "extent" remains unclear or is difficult to establish. In Habbo Hotel's ToS, "you agree to abide by the ... Terms of Use, the Habbo Way and any Additional Terms". However, it is never elaborated upon what constitutes these additional terms or where they can be found. Thus, it is not clear if The Fansite Way[19] (which spells out rules for private home pages that use Habbo's IP) is part of the ToS or not since this policy is never explicitly mentioned. In moove, both privacy policy and security information are given on the same web page even though the ToS refers only to the privacy policy. Thus, it is not clear if the user can rely on information provided by the security information such as "all chat messages are transferred encrypted."

Given that the ToS is a legal contract that may end up in court, it is surprising that operators split them up into a set of documents that are not always denoted clearly.

4 Dealing with Terms of Service Complexity

The previous discussion suggests that most ToS are difficult to comprehend for most users. While most users happily visit a virtual world without every conflicting with the ToS, there is always the risk that users are surprised by actions of the operator that are grounded and justifiable by the ToS.

Operators have tried several approaches to explain the meaning of the ToS and to reduce the complexity of understanding the ToS:

Summarization: Some operators provide a summary that highlights the key elements of the ToS. There.com provides a highlights list before the actual ToS while clarifying that "it is, however, important that you read and understand the FULL Member Agreement". Kaneva's Member Guidelines give "good general rules to follow" in the form of "DO's" and "DON'Ts". Habbo Hotel starts its ToS with a Basic Summary followed by a Long Version.

Customer support: There.com says in its ToS that "if you should have any questions regarding the Member Agreement, you may reach Customer Support".

[19] `http://www.habbo.com/help/84`

FAQ: A list of Frequently Asked Questions (FAQ) can be used to address common problems. Second Life appends a FAQ after their DMCA policy. They also have a FAQ about the use of their trademarks. Habbo Hotel has a short FAQ following its behavioral guidelines, The Habbo Way.

Forum: Some operators have forums and mailing lists that allow users to post questions regarding the ToS. Second Life has forums and mailing lists where legal experts from Linden Lab may choose to answer questions.[20]

While the above approaches aim at reducing complexity and increasing understanding, they are not without potential pitfalls for both users and operators. It is not clear if summary statements are actually part of the ToS and thus legally binding or only there for information purposes. The highlights list in There.com features a bullet point that says "Are you not a minor? What are you waiting for? Come on in!" This gives the impression of reading an advertisement rather than of reading a legally binding document. If the summary statement contradicts other parts of the ToS, it is not clear which one will take precedence. Similarly, it is not clear if a FAQ is part of the ToS. If the FAQ is not contained in a separate web page apart from the ToS, users may get the impression that this is indeed the case. While giving users the opportunity to ask questions to customer service regarding the ToS is a good idea in principle, it seems unlikely that service personnel have the necessary expertise.

The matrix in Table 1 shows that not all topics are equally relevant for users. Thus, the ToS could be restructured to emphasize topics with high relevance and to de-emphasize other topics. Furthermore, operators can provide interactive tools that help the user to analyze the ToS. An example of such a tool is the EULA Analyzer,[21] which inspects End-User License Agreements (EULAs) with the goal to identify clauses that are of particular concern to users. Once the agreement is pasted into a text box, the analyzer provides metrics such as word count, number of sentences, and readability scores. Furthermore, selected sentences are highlighted and annotated to provide guidance for humans. Similarly, operators could provide an interactive tool that allows the users to quickly focus on the parts of the ToS that are most relevant for them, thus cutting down on users' reading time and improving cost-effectiveness. Such a tool could also operate based on user profiles or conduct.

Currently the ToS is static and equally applies to all users regardless of their needs. Operators may want to think about customizable license schemes that are tailored to user characteristics and preferences. Examples of flexible licensing schemes are provided by Creative Commons[22] and the Adaptive Public License[23]. Straightforward customization of licenses can be based on data provided by the user such as account type, age, and residency. For example, if users are not creating content in the virtual world, corresponding parts in the ToS related to copyright and ownership issues can be omitted. On the other hand,

[20] `https://lists.secondlife.com/cgi-bin/mailman/listinfo`
[21] `http://www.spywareguide.com/analyze/`
[22] `http://creativecommons.org/`
[23] `http://www.opensource.org/licenses/apl1.0.php`

a customized ToS may pose additional uncertainty for the individual user because he or she can no longer assume that more sophisticated users or consumer protectors have analyzed the ToS for them and have intervened on their behalf. For example, when Adobe released a beta version of Photoshop Express (a web-based photo-editing application), sophisticated users quickly complained about unfavorable conditions in its license that essentially gave Adobe the right to use uploaded pictures from users in many ways.[24] These user complains prompted Adobe to revise the license.

Furthermore, there is the difficult of revising customizable licenses. If the operators wants to conduct a change in the ToS, all customizable licenses need to be suitably modified and communicated to the user. Also, the less sophisticated users would be at a disadvantage because they would not automatically profit from the revised ToS if they had entered into a customized license agreement. Generally, in case of contradictory terms, an individual agreement will have priority over general terms and conditions.

Sophisticated customizable licenses are only feasible if they can be negotiated (semi-)automatically. To enable this, users and operators could state their policy needs in machine-readable data for negotiation of a ToS that is acceptable for both sides. Research in this area is already being pursued in the context of privacy policies [8]. For example, a user may state that he or she does not want targeted advertising and the collection of personal data that may come with it. The operator may accept this under the condition that the user is willing to pay a monthly fee instead. If both sides reach an agreement on the amount (and related issues such payment method and cancellation policy) then the custom-tailored ToS could come into effect.

5 Conclusions

This paper has explored the complexity of ToS by analyzing the ToS of five virtual worlds (Habbo Hotel, Kaneva, moove, Second Life, and There.com). ToS are complex in terms of the text size (the average size is more than 5000 words, which takes an average reader more than 20 minutes to go through), and the ease of readability (the average ToS requires a post-secondary education). Furthermore, the user has to watch out for changes in the ToS, determine the body of documents that constitute the ToS, and deal with the legal and technical complexity of the ToS's topics.

It is an interesting question whether the complexity problems discussed in this paper could prompt a court to declare a ToS void. Even though declaring a ToS void would as a general rule require the ToS as a whole to be intransparent, it cannot be completely ruled out that in some cases a ToS's complexity could trigger such a court decision. However, since with regards to consumer sophistication the benchmark has increased from that of a swift observer to an attentive and diligent reader, it remains to be seen whether a court would take

[24] `http://www.theregister.co.uk/2008/03/28/adobe_photo_pimping/`

such an incisive decision, which could possibly lead to an unforeseeable flood of user claims and the collapse of whole business models.

In order to reduce legal uncertainty and ambiguity for both parties, we propose the following simple recommendations (that are surprisingly often violated by virtual worlds' ToS):

Legalese: A ToS should use as much straightforward prose as possible and as little legalese as necessary. More concrete requirements for plain English can be found in several state laws (e.g., New York, Connecticut, or Pennsylvania). Generally, it seems advisable for operators to check that the complexity of their own ToS is not much worse than that of their competitors or other related legal texts.

Versioning: A ToS should contain versioning information (e.g., a date or unique number) so that different versions can be readily identified by users.

Comparison of Versions: Operators should support the user in identifying changes that have been made for a new ToS version. This could be achieved with a marked-up document or a summary of the changes.

Ambiguity in Scope: It should be readily apparent which web pages—or parts thereof—constitute the ToS. Sources of ambiguity are hyperlinks to other parts of the web site, FAQs, and (informal) summaries.

It seems clear that an ordinary user cannot be expected to fully comprehend the ToS of a virtual world. It is surprising that courts have so far ignored indications that most users are not reading the ToS and that this reluctance can be mostly explained with the fact that the form of most current ToS is inadequate to succinctly convey relevant information to the user in a cost-effective manner. Given this situation, operators may want to look for novel approaches on how to represent and enforce the ToS, and how to negotiate and contract the ToS. Interactive tools that help users to analyze the ToS and to semi-automatically negotiate a customizable licenses may be able to alleviate some of the present complexity concerns.

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