

Transforming Contracts from Legal Rules to User-centered Communication Tools: a Human-Information Interaction Challenge

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ABSTRACT

In this paper, we illustrate how merging contract design with information design, especially visualization, can help to transform contracts (and people's perceptions about contracts) from legal rules to communication tools. We argue that improved human-contract interaction can maximize the value of commercial relationships, minimize risk, and prevent workplace frustration. Viewing contracts as boundary objects and changing their design to overcome the current challenges offer unexplored opportunities for both research and practice.

Categories and Subject Descriptors

H.0 Information Systems: General

General Terms

Design, Documentation, Human Factors, Legal Aspects

Keywords

Contract Visualization, Information Design, Knowledge Visualization, Human-Contract Interaction, Boundary Objects

1. INTRODUCTION

Working through contracts has become central to virtually all modern organizations, a trend that will only intensify as supply networks broaden and globalize. No one can dispute the importance of contracts, but many could object to their language and format. In our careers we have never met anyone without a legal background who enjoys working with contracts. For non-lawyers, contracts are too long, confusing, and boring. However, commercial contracts belong to managers and to business at least as much as they belong to legal departments. Contracts can work as the foundation and framework for successful deals and relationships with suppliers, customers, and partners. Managers need to be able to understand contracts, and the association "contracts = stuff for lawyers" is unwarranted and counterproductive. We suggest that merging contract design with information design, especially visualization, can help to transform

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contracts (and people's perceptions about contracts) from legal rules to communication tools.

In this paper we create a link between information design and human-information interaction in the context of commercial contracts. We develop this link through the concept of boundary object [1] – an object that serves as a focal point in collaboration enabling parties to represent, transform and share knowledge. We argue that contracts can work as valuable boundary objects inside and between organizations, provided that contract design takes into account how different groups of users interact and work with contracts. In today's business, these aspects of contracts are not addressed properly, and user-centered contracts continue to be the norm. Communication and understanding are hindered, and so is collaboration. In this paper we introduce four dimensions (context, needs, information display, and content) that should be considered in the design of user-centered contracts that work well as boundary objects and enhance human-contract interaction.

2. CONTRACTS AS "IMPERFECT" BOUNDARY OBJECTS

Contracts are complex artifacts, reflecting the intricacies of the businesses they seek to describe. They are produced and used in varying social contexts, often at the boundaries between different communities of experts. Complex business processes and several professional groups are involved in the production, negotiation and implementation of contracts, both on the buy-side and on the sell-side of the relationship.

In addition to legal professionals, a number of domain experts participate in writing and reading contracts. At the writing stage, these often include technical experts who contribute to scope, specifications, requirements documents, testing and approval processes, as well as output and performance definitions. In addition to legal and technical terms, contracts often contain sophisticated financial terms and project-related timelines and procedures: hence finance and HR departments might also be involved. Contracts consist of layered information, each layer being relevant for different users. Additionally, information relevance changes over time, depending on what is required in different stages of the business relationship. The backbone of a contract is hardly ever made from scratch but compiled using forms, templates, or clause libraries. While these are typically designed by lawyers, deal-specific information is required from other professionals, mostly business managers and engineers [2]. During negotiations, meetings are arranged and changes made to

the contract, again activating lawyers, business managers, technical experts, and engineers on both sides. Once made and signed, contracts need to be implemented, and project managers and operational teams take over. The contents of the contract need to be translated into action. In order for businesses to reach their goals, contract-related communication must be effective. Merely translating “legalese” into plain language cannot help if the implementation teams do not read the contract or if they inherit misunderstandings from the previous phases.

Existing both as artifacts that memorialize consensus and as the outcome of a communicative process of interest matching, contracts can be seen as boundary objects [1], focal points in collaboration reconciling the diverse worlds of the many groups involved. Boundary objects are flexible enough to be interpreted, contextualized and used in different ways, as well as robust enough to maintain shared meanings and bridge the cognitive gap across communities [1; 3; 4]. Contracts have a different role and mean different things across professional communities, but at the same time contracts allow the communities to coordinate their efforts around the specific deal at hand, by helping them to “translate, negotiate, debate, triangulate and simplify in order to work together.”[1].

Brown and Duguid [5] point out how contracts are a classic example of boundary objects; they “develop as different groups converge, through negotiation, on an agreed meaning that has significance for both.” However, Brown and Duguid seem overly optimistic regarding the outcomes of negotiations. They describe the best outcome possible, but often contracts do not live up to such expectations. Levina and Vaast [6] show how merely *designating* a boundary object does not mean that it will acquire a common boundary-spanning identity as well as satisfying local needs. Instead, true boundary objects need to be embedded in the situated practices of the actors who use them. While contracts are symbolically relevant for an organization, they often lack a deeper adaptation to non-legal and non-administrative contexts: for many, they remain “lawyers’ stuff”. This is exemplified by a sentence which we often heard from our interviewees with a business background in different firms: “first is the deal, then comes the contract.” In other words, contracts are just an official (lawyerly) seal of approval on the deal: contracts are not conceived as significant in achieving understanding and synchronization between the parties in the first place.

We thus need to ask ourselves what can be done to fully develop the potential of a tool which is currently underdeveloped. Following Levina and Vaast’s [6] pointer, we believe that contracts should be looked at from a new, more concrete and practical perspective. As regards their style and language, contracts constitute a very recognizable *genre*, where written text is the unchallenged ruler. Lawyers and non-lawyers alike tend to see contract drafting as a subset of legal writing. Most contracts actually resemble laws, with all their dense text, paragraphs, and internal references.

A characteristic of boundary objects recurrent in several studies is their capability of visualizing and clarifying insights and implicit knowledge. Sometimes such visualization is more a mental phenomenon, but often it corresponds to real visual representations in 2D (e.g. knowledge maps [7], scenarios [6]), 3D (e.g. physical models [8]) and even 4D (e.g. actors enacting through gestures the process they want to explicate [8]). Where is this visualization element in contracts? Neither their form nor their style provide visible structures which users can utilize to better explore, navigate and internalize the content [30]. Users are

left alone to create the causal or argument structures that are needed to make sense of complex and interrelated content. This certainly affects individual users who are not provided with visible patterns that can support analytical thinking. It also neglects groups of individuals trying to align their goals and understanding: they lack shareable, externalized objects for thought, as well as a way to articulate tacit assumptions and expectations in a more explicit, easier to understand format [9].

We argue that, in most cases, contracts are “imperfect” boundary objects: ideally, their role is extremely relevant, yet their implementation is suboptimal. As long as contracts are seen only from a legal perspective, their design and communication issues will not be noticed, and thus their full potential as boundary objects will not be harnessed. In order to overcome this management challenge, the perspective of legal writing must widen into the domains of design, and borrow the lessons learnt in the fields of information design and user-centered design about users, content and information display.

3. USER-UNCENTEREDNESS AND DESIGN ILLITERACY

The drafters of contracts seldom view themselves as working in the field of communication. While they produce documents with the intent of capturing and transferring information – work with text for an audience – they do not define their role in terms of communication. For lawyers, the focus is on producing legally sound and predictable content, rather than communicating messages effectively to the key persons in charge of implementation. Instead of focusing on the needs of implementation teams, they optimize contracts to be used in court, an event that marks a failure of the project and the relationship. So contracts are structured in a peculiar way and use language that non-experts often find overly complicated and hard to understand. Contracts seem to be written *by lawyers for lawyers* [10]. While they may help to win a battle in court, they do not help those who want to avoid such conflict. Current contracts do not engage their readers, nor are they easy to read, comprehend, or implement. If implementation fails, business and legal problems will follow.

Contract interpretation remains the largest single source of contract litigation between business firms [11], bringing us back to the issue of communication. Contracts do not normally fail for a lack of legal, technical or business expertise, but for a lack of communication. It is not considered to be part of the job of a contract drafter to think about contract users who lack legal background and try to achieve a specific task in a given context. So the focus remains on legal rules, with no attention to the access structures of the document [12] or to providing salience [13] to the information that non-lawyers are going to search for and use in day-to-day business. Considering that the majority of contract users in business-as-usual situations do not have a law degree and that their knowledge needs are mostly not taken into consideration makes us realize how user-*uncentered* contracts currently are [14].

The challenge of “user-*uncentered* contracts” resembles the issues raised by Human-Information Interaction (HII): the source of communication failures is not to be found in the specific technologies, repositories and interfaces utilized, but deeper in a lack of understanding of how information should be communicated, and how people interact and interpret information [15]. HII directs attention to the information itself rather than to a specific medium or technology [16]. In the case of contracts, the medium is typically a piece of paper or a digital document, but despite this apparent simplicity, contract writers are still unable to

get right the communicative dimension of contracts. One of the biggest issues is thus what Waller [17] calls “design illiteracy on the part of the writer”: a lack of models and grammar to obey when designing contract documents; a lack of understanding of affordance and gestalt; and a lack of empathy with the user.

The concept of affordance as used by Norman [18, p. 9] is particularly relevant to contracts. Affordance refers to the perceived properties of objects that cue how they should be used. When affordances are expressed through design, users know what to do just by looking at the object, because the actions it allows become intuitive and self-evident. Affordances are badly neglected in contract design: every contract looks the same as any other contract, even if their content and meaning are different. So, if, as Levina and Vaast [6], Bechky [8] and Brown and Duguid [19] point out, practice is the only site where knowledge transfer and learning truly happen, shouldn't contract drafters care more about the affordances of their documents that could be revealed through design? The interaction of people with content and, through such content, with others, is not something that can be left to chance. After all, contracts do not make things happen – *people* do. The ability to understand, share knowledge, align expectations, and ultimately do the right thing, should be strongly facilitated.

Contracts offer an interesting case to explore the different dimensions that need to be considered in the design of user-centered communication tools and to focus on the basics of human-information interaction without extra complexity from technology. Researching HII in this context is of great practical interest for both private and public organizations, since improved human-contract interaction can maximize the value of commercial relationships, minimize risk, and prevent frustrating working practices for employees.

In the next paragraph we present a framework that identifies essential dimensions for the design of user-centered contracts. These dimensions have emerged from our qualitative interviews and focus groups. Together, they provide a look into the complexity of contracts and negotiations as perceived by different professionals and ways to overcome that complexity.

4. DIMENSIONS FOR DESIGNING USER-CENTERED CONTRACTS

When designing truly user-centered contracts it is not enough to consider the “cognitive hardwiring” that each user is provided. Other constraints and factors at play might facilitate or hinder users trying to achieve their goals. Previous works like Albers' Model of Complex Situations [20] and the Cognitive Work Analysis framework utilized by Fidel and colleagues [21] highlight how the context, the social organization and division of work, the goals of the users and their information needs all play a role in determining the outcomes of interaction between humans and information. Users are influenced by many factors affecting their behavior, their motivation and their reactions, so the designers (or authors) of the information system need to get a richer understanding of the situation in order to produce useful and engaging information systems.

Such is the case with contracts, at least intuitively, if we wish to design them in a user-centered way. However, where a contract is a written document, it is not as dynamic as an information system. Furthermore, producing tailor-made information for different groups seems unlikely. To some degree, information for different users will coexist in the same document. This gives particular importance on how we organize and give an intuitive structure to

the content, how we express the linkages between different parts of the text, and how we give salience to key clauses through typography and visualizations. So the question remains: despite their differences, can we apply to contracts those frameworks initially developed in the HCI/HII field? Are the dimensions of the frameworks valid in this specific case?

4.1 Sampling and data collection

To answer this question, we looked at the qualitative data collected during three ongoing case studies. Two of the cases are carried out in cooperation with companies in the metal and engineering industry – one looking at the sourcing interface and the other at the sales interface – while the third case explores a research consortium jointly created by research institutes, universities and companies. The data source presented in this paper is comprised of eight individual, in-depth, semi-structured interviews, which aimed at getting a rich picture of the contracting process, its bottlenecks, and the different needs of different groups. Additionally, five focus groups (a total of 26 participants) were conducted after an experimental evaluation of visualized versus traditional contracts (described in [22]). Their purpose was to gain more information about the needs and challenges experienced by the participants, as well as discovering more about their mindset and their work environment. The sample was chosen purposefully rather than statistically [23], and the interviewees were chosen according to their professional background and experience, in order to collect perspectives from different points of view.

4.2 Analysis

As we collected the data, we analyzed it by continuously comparing it between informants and with findings from previous literature, following the tradition of grounded theory [24]. This helped to delineate and isolate themes, and create aggregate dimensions. We especially compared whether the dimensions emerging from the descriptions of the contracting process “as is” by interviewees who have never seen a visualized contract also emerged from the interviews of those who had a chance to work with a prototype of a visualized contract and to compare and contrast it to a traditional one.

4.3 The dimensions of the framework

As also illustrated in Figure 1, we identified four aggregated dimensions to be considered in the design of user-centered contracts:

- 1) **The context of use and practices**, which determine the users' tasks, goals, knowledge needs, social interactions, and how the communicative artifact is produced. In the case of contracts, this dimension identifies the organizational and contextual constraints of the space of action of the users, as they do what they are required by their job, and search for the information that will make them successful in such task. Additionally, departmental interests, common identities, and power relationships may also act as contextual constraints.
- 2) **The user needs**, which can be divided into two different subgroups:
 - a. **The cognitive needs**, depending on the inescapable physical and cognitive hardwiring that each user possesses, and that thus cannot be ignored. Users are not constantly aware of their cognitive architecture and their continuous workings (e.g. sensory memory, working memory, long term memory, schemas and automation

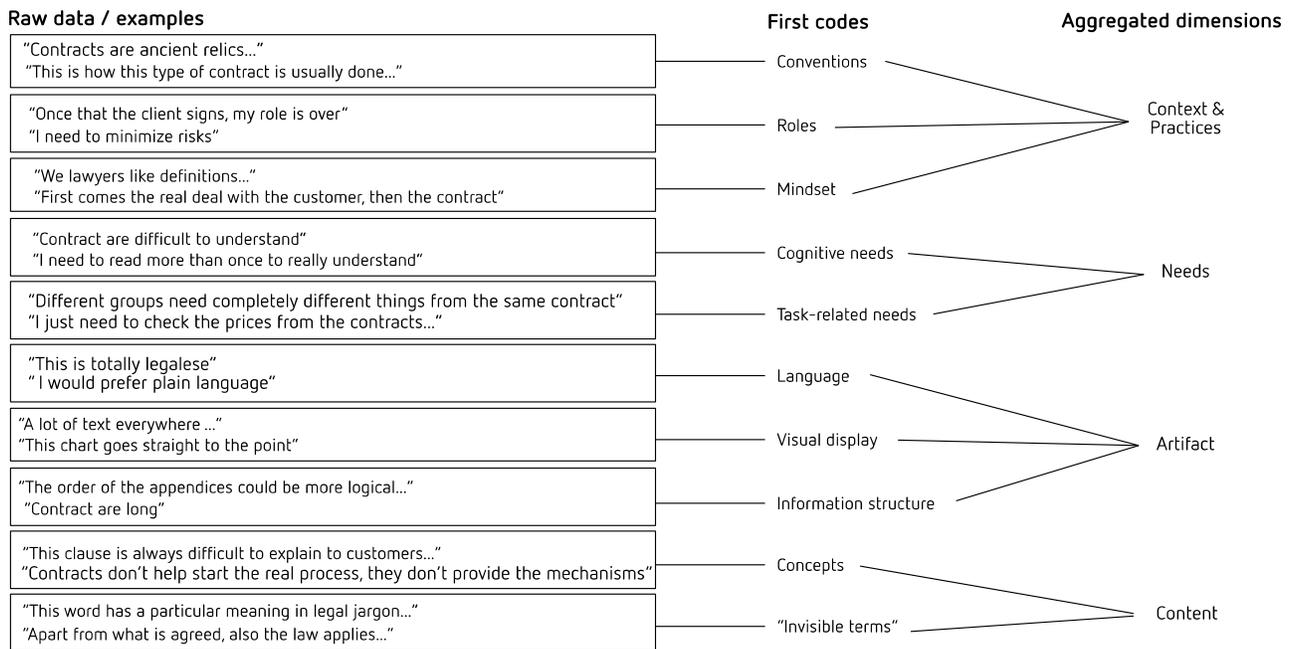


Figure 1. How the four dimensions affecting user-centeredness of documents were obtained from the case data.

[25]), but these ultimately result in whether they are able to correctly understand, learn and recall information.

- b. **The task-related information needs.** Each user, depending on her professional role, approaches information from a different perspective and with different goals and priorities in mind. In case of specialist information, the users' previous knowledge and skills will determine whether they can understand and purposefully utilize the information.
- 3) **The characteristics of the communicative artifact**, which has to be optimized both for cognitive processing and the achievement of contextual goals. The artifact works as a boundary object between different groups of individuals, and needs to bridge the culture, knowledge, and communication gap between them. In the case of contracts, the physical characteristics of the artifact include the contract's language, structure, and the visual display of the content.
- 4) **The content** at hand, which requires ad-hoc communicative solutions to better express its concepts and meaning. Some concepts or arguments might be inherently complex and difficult to understand. Additionally, the content can have a different importance, value and function for different users, affecting their perception of whether it is difficult or simple. In the case of contracts, content is impacted not only by what is expressed in the text, but also by what is left unsaid or implied as "invisible terms", determined by the default rules of the law and by legal interpretation [26, 27, 28].

If we compare these dimensions to those found in the models of Fidel et al. [21] and Albers [20], we can notice several similarities, but also some differences. Our dimensions appear more simplified and while several points still exist, they are aggregated under more general labels. These differences stem from our focus mainly on the contract as a boundary object and on what interventions can be done at the artifact level to improve its role. From this perspective, other factors can be seen either as characteristics of the users or as

contextual constraints that determine the space of action and reaction of the user. Additionally, the goal of our research is to enable contract drafters to become sensitized about their users. For this aim, the dimensions cannot be too complex – or they would not be used at all. We might not be able to overhaul completely what a contract is and how it is written, but we can start with the quick wins that can be gained through a better display of contract information. Figure 2 shows the relationships among the four dimensions and how they belong to the continuous interplay between context, users, and the artifacts.

4.4 How visualization can enhance user-centeredness

In this section of the paper we show how visualization can help users overcome much of the complexity inherent in contracts and gain better insights. We utilize the four design dimensions we introduced to compare visual contracts and traditional, text-only contracts, through the experiences and the perceptions of contract users. All the examples are taken from our interviews and focus groups.

Bob is a program manager of a large, long-term research project where private companies, research institutes, and universities – a total of over 20 organizations – are participating. Bob has had the responsibility to make the project operational and to establish the processes for collaboration among the participants, as well as making sure that the promised outcomes are achieved and all the reporting to the project funders is done in a timely and correct way. The participating organizations, before the project started, signed a Consortium Agreement, which provides rules about, for instance, how intellectual property, background information, and Bob feels that the agreement "has an importance as a hygiene factor, it puts some minds at rest through its existence", but it is not an effective "tool to start the real process". He does not feel that the contract helps him, as a program manager, to do his job, and wishes that contracts could "pay more attention to different people and different contexts and different needs. A frontline project person has completely different needs compared to a controller, compared to a work package leader, compared to a

programme manager. They all have different perspectives, and different stuff becomes important depending on the perspective". Additionally, Bob is not satisfied with the look and feel of the document. Even though he speaks English very fluently as a non-native speaker, he "would appreciate simpler, plain language. And I think everyone else would like that too, this is legalese on a high horse." He thinks that the document is "not inviting to read" and that "unless you really need to understand something, you would just have a look and put it away, because it doesn't invite you to explore the content." Bob also believes that the content could be changed, for example by "putting more energy on creating ways to enact the principles that these documents contain, rather than sticking to their formal aspects" or by reformulating them as "proactive statements about the work plan", rather than "negative statements" focusing on trouble, prohibitions, and what can go wrong.

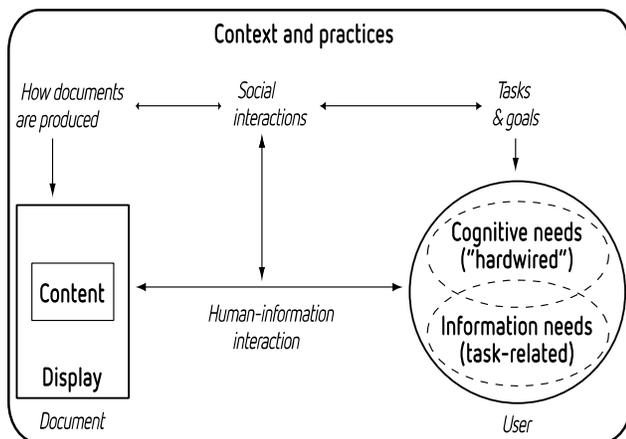


Figure 2. The four dimensions of the framework hold key positions in the relationship between user, document and context.

We can see how Bob addresses issues of content and information display, but he is also reflecting on the context he is working in, acknowledging the existence of different needs and perspectives and how, currently, they are not well taken care of. Bob is not alone in his opinions, as we noticed similar patterns in other interviews. Contextual constraints, for example, can be very strong for the drafters of the agreements, as the experience of this lawyer, Jane, who was appointed to draft a R&D Contract, reveals: "I was doubtful about these clauses, they felt funny, but it was said to me that this is a very normal type of clause in these kinds of agreements. That this is business as usual and so it should be included." Jane also provided a good explanation of why contract language is the way it is (even though she admits that it could be hard for non-lawyers) and how it is strongly related to lawyers' professional identity: "We like definitions so much. Everything should be defined - that's perhaps the handicap of lawyers in general. Everything should be defined and if it's not defined you ask yourself 'Why is it not defined? Is there something behind?' You should know what exactly is meant by the words that have been chosen [...] You can always take any viewpoint and you can argue about it. It's always possible. This way of thinking is what we learn in law school, and we all share it [...] That's why you need to try to be as defined as possible." In this case, language is both a characteristic of the artifact – the contract – but also an expression of professional identity, which signals a knowledge gap between the lawyers' community and the others. Such gaps characterize the context in which the contract users can act. Even though there is a motivation, from the lawyers'

perspective, for how contracts are currently designed, managers with a business or engineering background just perceive its format, and are frustrated by it. It was not uncommon to hear such comments as "they are long like hell", "it's such a pain when there are, like, 100 pages of appendices!" and "it's simply not inviting."

The same categories emerge from the descriptions provided by the focus group participants who had the possibility to utilize a visualized contract in an experimental, yet realistic, setting [22]. The most prominent aspect is how the participants, despite belonging to different departments and having different backgrounds (sales, sourcing, supply chain management and legal), all perceived cognitive and experiential benefits from the presence of visualization in the contract, highlighting how the display of information matters. It was not uncommon to hear that the visual contract "is inviting, and nicer to read", even though the textual content was exactly the same in both the visual and traditional version. They felt that is good "when you can understand at first sight where you can find what you're looking for" and "when you manage to get things quickly out of the contract". Two examples of the visualizations utilized in the experiment can be seen in Figure 3.

Visualization seems to have a positive impact on information finding ("if I use a text-only version [of the agreement], things don't pop up to my eyes as quickly as they pop up from this one"), understanding ("[Visualized contracts] are clearer than conventional contracts. There's a lot of texts, which is per se difficult to understand correctly, but when it's visualised it's more 'black on white', in some sense"; "Pictures help to understand the text a little better. First, I read the text, then I had a look at the picture, and then I got it. But if there's only the text, I need to read it carefully at least once more so that I can really understand what the text is about") and recalling ("Somehow I remember pictures better than text. It is like a screenshot"; "At first glance, I already noticed the pictures and what they were about, so, when I had to find something about those topics, I obviously remembered straight away where I saw it").

By comparing and contrasting the visualized and the traditional contracts, the participants also became sensitized to less immediately apparent aspects of the artifact, such as how the information was structured, and whether the proposed structure was good or not in aiding information retrieval and understanding. Referring to the traditional version of the contract, some lawyers pointed out how "the contract was quite long and the structure wasn't so good... it can be made clearer", and that "the order of the appendices was not very logical".

Visualization proved also beneficial to putting the content of the contract in relation to the processes where it needs to be deployed. The focus group participants, unprompted, started thinking about what it would mean to utilize such contracts in the real context, and were able to express their contextual and goal-related needs through these examples. For instance, some sales representatives felt that visualizations "would decrease the work of the lawyers. Somehow I feel it is clearer, we would need less help from them" and were able to express their contextual and goal-related needs through these examples. For instance, some sales representatives felt that visualizations "would decrease the work of the lawyers. Somehow I feel it is clearer, we would need less help from them" and would help increase trust and transparency during negotiations with customers: "Let's say that I need to make a framework agreement with a big company. And I have two options. One is based on plain text. The other is a visualised

centeredness not only misses a potential improvement, but it actually amplifies the difficulty of communicating specialist knowledge and insights across occupational boundaries.

However, visualization is not completely unproblematic, if we consider our own suggested dimensions for user-centeredness. While the cognitive, experiential and communicative benefits seem clear, the interviewees pointed out some possible difficulties that visualization could bring into practice. The first fear is related to personal skills and processes. Many interviewees, despite liking the visualizations, did not feel that they were the right person to produce visualizations. They did not feel confident in drawing and would prefer a designer to take care of these things. However, if a designer were to be involved, the production time of contracts would increase, and the complexity of the process would increase, as the designer would need to be involved every time there is a change. We feel that involving a designer is not the way forward. Increasing the basic visual skills and the confidence of those already involved in contract making and negotiation would maximize the benefits instead, because the experts would be enabled in better communicating their knowledge and insights.

The second fear is about the legal validity of visualizations. What if the text and the pictures contradict or do not exactly mirror each other? What happens in this case if a dispute arises? Even though some companies are willing to adopt visualizations in their contracts, this is not yet a mainstream practice and obviously we cannot predict how this would work in court – even though our main goal is to avoid going to court completely, by cultivating more transparent relationships. An easy solution would be to assign priority, in case of inconsistencies, to the text of the agreement. This approach is already used when a contract in more than one language exists: the parties agree which language version prevails.

A third fear is that visualization might be even too transparent. Some respondents were worried that their know-how about services or technology would leak to competitors, if too many details were to be fully opened up and explained through visualizations. Even though most contracts are confidential and most images are protected by copyright, a customer might utilize a supplier's visualizations to better explain their needs in negotiations with other suppliers. The solution could reside in making strategic choices in what to visualize, on what media, and when to make the visualizations available during negotiations.

6. CONCLUSIONS

In this paper we present how contracts, despite being conceptualized as boundary objects, are falling short in that role. They are not conceived or designed from a communication perspective, only from a legal one. We argue that visualization and user-centered strategies identify user needs and contexts of use that could be highly beneficial in understanding contracts and improving collaboration. We take a perspective similar to human-information interaction: successful communication, task completion, learning and collaboration is found in how humans interact with information, and not in technology – or, in our case, legal thinking or legal writing.

By gathering qualitative data, we identified four dimensions that affect the user-centeredness of documents, and were able to notice the similarities between this framework and others developed in the field of HII. Moreover, the analysis of our data led us to develop two further propositions clarifying the impact of information design and user-centeredness on successful cross-disciplinary communication:

1. Visualizations help in bridging the knowledge gap across different occupational communities, acting as a boundary object. Their deployment in contracts can transform contracts from merely “nominated boundary objects” into truly effective “boundary objects in practice” [6].
2. Disregarding the aspects that can increase user-centeredness in documents does not simply lead to a missed improvement, but it becomes itself a source of complexity that hinders successful communication across the boundaries of professional communities.

These results, despite providing some interesting points for discussion and reflection, have to be considered limited and preliminary. All the cases we considered in our datasets are ongoing, and further interviews and focus groups might contradict these initial findings. However, since we believe that discussion and reflection with peers are a key factor in improving research quality, we took the liberty of presenting a work-in-progress, with the intent of collecting useful feedback and constructive criticism. Without doubt, further research is needed in order to confirm these findings and generalize them across domains, as well as developing further prototypes of visual contracts. Our ongoing research work aims to further the theory and practice of contract visualization, while at the same time raising general awareness about the importance of user-centeredness and effective communication in the field of contracting.

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