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xLaw: Legal Tech tool for Lawyers

Master's thesis

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xLaw: õigustehnoloogia tööriist juristidele

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Author's declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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Abstract

Lawyers must navigate through a vast amount of information to do their work. In this thesis, a software as a service (SaaS) xLaw is developed to help lawyers find, manage and use legal information (legislation, court decisions, explanatory memorandums, etc.) more easily. The technical solution consists of browser extension, portal, Office Add-in, and from the backend system. Browser extension adds extra information and crosslinks on top of Estonian state gazette Riigi Teataja, Supreme Court website, and official website of European Union, EUR-Lex. xLaw Legal portal was built, so Lawyers would have one website to find different sources. It also considers grammatical cases of the Estonian language. Office add-in helps Lawyers in the document writing phase – standard wordings, clauses, templates. Add-in also integration with the Estonian business registry to simplify legal entity information collection.

This thesis is written in English and is 49 pages long, including 12 chapters and 32 figures.

Annotatsioon

xLaw: õigustehnoloogia tööriist juristidele

Juristid peavad töötlema suures koguses informatsiooni, et teha oma tööd. Käesolevas magistritöös arendatakse tarkvarateenust nimega xLaw. Selle eesmärgiks on aidata juristidel leida, hallata ja kasutada õigusinfot (õigusaktid, kohtulahendid, seletuskirjad jpm) kergmalt. Tehniline lahendus koosneb veebilehitseja laiendusest, portaalist, Office lisandmoodulist ja seda toetavast backend-süsteemist. Veebilehitseja laiendus lisab informatsiooni ja ristviiteid Riigi Teataja, Riigikohtu ja ametliku Euroopa Liidu väljaande, Eur-Lexi, leheküljele. xLaw Legal portaal ehitati, et erinevaid õigusallikaid ühte kohta tuua. Portaal arvestab ka Eesti keele käänetest tulenevate eripäradega. Office lisandmoodul aitab juristide dokumentide koostamisel – standardsõnastused, klauslid, dokumendipõhjad. Lisandmoodul integreerub ka äriregistriga, et lihtsustada osapoolte kohta info kogumist.

Lõputöö on kirjutatud Inglise keeles ning sisaldab teksti 49 leheküljel, 12 peatükki, 32 joonist.

List of abbreviations and terms

B2B	Business to business
CSS	Cascading Style Sheets
CRUD	Create, read, update and delete
DOM	Document Object Model
HTML	HyperText Markup Language
JPA	Java Persistence API
JWT	JSON Web Token
NPS	Net Promoter Score
REST-API	Representational state transfer – application programming interface
RT	Riigi Teataja (state gazette of Estonia)
SaaS	Software as a service
SQL	Standard Query Language
URL	Uniform Resource Locator
XML	Extensible Markup Language

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Introduction

There are two main types of legal systems in the world – civil law and common law systems. The fundamental difference between those two systems is that in civil law countries, including Estonia, legislation constitutes the primary source of law and courts are predominately tasked with interpreting the legal acts. In common law countries, courts are tasked with both interpreting the law, and where needed, deciding cases based on principles of law derived from centuries of case law. By doing so, they create authoritative precedents that act as sources of law similar to legislation. While case law plays a significant role in both legal systems, it has a much more influential role in common law. In civil law countries, the backbone of its law are legal acts passed by the Parliament.

Law is one of the building blocks of modern society, and its implementation helps to keep society functioning. While clarity and necessity are some of the guiding principles in Estonian legislation, the complexity of the legal system has grown. This has partially been due to the accumulation of time since the beginning of re-building the legal system in the 1990s and partially due to integration with the European Union. With evolving complexity [1] and increasing amount of legislation its harder and harder to find relevant and applicable norms and interpretations.

For serving their clients, acting in administrative capacity, analysing and interpreting law, or implementing it, lawyers must navigate through a vast amount of information. First, they must find norms applicable to the factual circumstances, in conjunction with other norms regulating the relevant legal field in general. For understanding the scope of particular rules and their possible interpretations, they usually search for explanatory memorandums of the draft legal acts, which will hopefully show what this specific clause is meant to regulate. The next step involves going through court decisions, especially Supreme Court which put forward authoritative interpretations of legal provisions. It is not uncommon to encounter a mismatch between the interpretation that the legislative branch gave to a particular rule, and the interpretation that this has acquired subsequently in the judicial or executive branch of the legal system. Additionally, Supreme Court may change its opinion from time to time, this means lawyers must be especially cautious about finding and applying the latest interpretation from Supreme Court. If specific

regulation is based on a prior EU regulation, directive or other EU or international legal source, this makes it necessary to consult the wording of the particular source as well as its interpretations on European or international scale. Among many legal sources, the authoritative opinions expressed by colleagues and law professors' qualitative judgment may not only provide useful insights regarding law, but also help to foresee how different branches of a legal system might handle a particular legal problem in the given social context.

With this mind, lawyers who are able to find their way in the jungle of legal detail have a significant advantage in exercising their role in a private or public office. This motivates the first research question explored in this thesis: how to link data together in a way that lawyers could be more efficient in working through the legal information that is relevant to them in particular circumstances.

Lawyers search information also based on keywords and legal concepts. Currently, they have to use different government websites, which all have the same downsides – search results aren't considering grammatical cases of Estonian language (Estonian language has 14 noun cases), and search results don't show the context where the search phrase is located.

This brings us to our second research question – how to collect different data sources and provide a search, which considers grammatical cases of the Estonian language.

Lawyers themselves also create a vast number of documents themselves – contracts, memos, analyses, claims etc. Their interpretations about specific topics are scattered around hundreds of documents. Larger law firms mean more data, which leads to the need for tools to find other colleagues' work. Collaboration leads to high-quality work and at the same time reduces costs [2].

This brings us to our third research question – how to effectively organize and share legal information.

The objective of this thesis is to build a tool for lawyers, which addresses those issues. This work has been done in four parts. First step would be creating a browser extension, which will add relevant cross-links and sources to state gazette Riigi Teataja, Supreme Court website and EU gazette EUR-LEX. The next step would be adding a capability to add information to legal acts. The third step would involve building a legal information search engine to offer a better search experience like cases independent search and showing search results with context. The fourth step would involve building Microsoft Office add-in to help Lawyers in the document writing phase.

This thesis contains introduction, 12 chapters, summary and 4 appendixes. In the first chapter general background information is presented. Chapter 2 gives an overview of legal acts, their structure, and ways to improve the navigation in acts. Chapter 3 section gives an overview about acts by municipalities. Chapter 4 describes the Estonian court system, shortcomings related to searching and navigating through court decisions and solutions to those shortcomings. Chapter 5 gives an overview of different dispute committees, their legal implications, hurdles in current ways of searching those decisions, with a solution of unified searching experience. Chapter 6 gives an overview of how extra information is added to the state gazette Riigi Teataja with xLaw extension. Chapter 7 gives an overview of the functionalities of the xLaw Word add-in. Chapter 8 is intermediate chapter about reflecting on the functionality built and its correspondence to the research questions. Chapter 9 gives an overview of architectural choices of building xLaw solution. Chapter 10 gives an overview of distribution methods. Chapter 11 gives an overview of testing methods of xLaw extension, xLaw Legal and xLaw Word, followed by usage information and user satisfaction analysis. Chapter 12 discusses future work possibilities. Appendixes include use cases, client testimonials, testing plan for xLaw Word and license for reproduction and publication of a graduation thesis. As a result, the thesis explains how the legal technology tool presented here approaches legal complexity and increases the efficiency of finding and analysing legal sources on a national basis.

1 Background and related work

This section gives a brief overview of Legal Tech, followed by analysis of lawyers' work processes by conducting interviews. Last part of this section deals with legal grounds of using different data sources.

1.1 Legal Tech

According to Micha Bues "Legal Tech describes the use of modern, computer-assisted digital technologies to automate, simplify and, hopefully, improve the process of finding, applying, accessing and managing justice through innovation" [3, p. 5]. CodeX Techindex, a database curated by the Stanford CodeX Center of Legal Informatics states that there are more than 1700 companies in the legal tech field as of May 2021 [4]. From those, more than half have been founded in the past 5 years. Legal Tech solutions can be divided into three categories – software that support lawyers, marketplaces, legal service providers. Those categories themselves can be divided into many different subcategories. For example, the first category can include legal analytics, legal research, e-discovery, document automation, practice management [3] [4]. xLaw product built in this thesis falls into legal research category. This category is very jurisdiction dependent as legislation is different in each country.

Predominately old publishers who have built web portals are dominating legal research market. Their competitive advantage is commentaries by authoritative authors, as those works are protected by copyright. In the US largest players are Lexis Nexis and Westlaw, both old publishers. In Finland Alma Talent and Edita Publishing both have web portals. The first has portal named Suomen Laki and the second has EdiLex. In Germany, the publisher named Beck has Beck-online. However, despite their dominance, most innovative solutions seem to come out from smaller startups. Some examples include Lex Machina, legal analytics firm, focusing on intellectual property litigation research and Ravel Law, which focuses on visualizing different aspects of the law.

1.2 Conducting in-depth interviews

The thesis author conducted in-depth interviews from June to August 2015 with 13 lawyers to understand their research process and problems to determine if a tool could be

built to help in their work. In-depth interviewing is "a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation" [5]. Interviews were structured in a loose manner, so there would be a possibility to dig deeper and understand their techniques and challenges more deeply.

The author had some guiding questions like "what are repetitive and manual tasks in your work", "how do you find your past work". Those broader questions were followed by probing questions like "could you provide an example", "could you elaborate on that", etc.

For example, 10 out of 13 mentioned that if they find an interesting article about their field, then they have a personal folder on their computer where they save this file. However, none of those ten remembered when the last time was, they searched from that folder. So, it is inefficient as lawyers from the same law firm might gather the same materials. If they don't use that, then it doesn't provide any business value, except maybe emotional value as they think they are gathering something for their future.

All interviewees mentioned they are searching with the same search query from different databases. They said that typically first they'll try to find applicable law and section from state gazette Riigi Teataja and then use the same law and section number to search from Supreme Court decisions, lower-level court decisions and from journals like Juridica to interpret the meaning of the specified section and how it is applied in practice.

From those interviews following work process related to solving a client's problem was identified:

1) Searching for a legal act(s) and identifying relevant section(s)
2) Searching court decisions
3) Searching extra information – explanatory memorandums, journals, etc
4) Writing a document – memo, claim, etc

All these different sources are on separate websites and therefore need manual work to go through one by one. Based on the interviews the author has identified current state scenarios and proposed desired state scenarios, which are included in Appendix I.

1.3 Open data

This section explains legal grounds of using different data source. Large part of this thesis involves pulling various sources together, linking them, and making them searchable. Therefore, understanding the legal implications is important.

According to section 3.1 of Public Information Act all public information, which is not restricted by Law is open data. This information can be used "for commercial or non-commercial purposes other than the initial purpose within the public duties for which the information was obtained or produced" [6].

EU directive 2019/1024 also regulates open data [7]. In recital 8, it is stated that "Documents produced by public sector bodies of the executive, legislature or judiciary constitute a vast, diverse and valuable pool of resources that can benefit society". The aim is to stimulate innovation in products and services.

According to clause 28 (1) 29) of Public Information Act, the court decisions are public information, and there is an obligation for this information to be disclosed. According to the same section, draft regulations and explanatory memorandums are public information. Also, clauses 5(1) 3) and 4) of Copyright Act say that Act doesn't apply to court decisions, legislation, administrative documents (acts, decrees, regulations, statutes, instructions, directives), and their official translations [8].

All the information sources used in this thesis can be considered open data, except articles of journal Juridica, protected by the Copyright Act and therefore only links to the official website are used.

2 Legal acts

This section gives an overview of legal acts, their structure, and ways to improve the navigation in acts. The section includes a brief history of the official state gazette, the portal, on top of which the author builds a browser extension to simplify the lawyers' work process.

2.1 History of State Gazette in Estonia

First State Gazette Riigi Teataja version was published on 27. November 1918 and Riigi Teataja was published till the 1940s and then again starting from 1991. At first, Riigi Teataja was published in paper, and only the paper version was legally binding. Beginning from 1997 Riigi Teataja is also published on the Internet [9]. The last official Riigi Teataja in paper version was published on 31.05.2010 [10], and starting from 01.06.2010 new Riigi Teataja Act [11] entered into force, which made the online version of Riigi Teataja officially legally binding [12]. Starting from 2010, all the legal acts are also available in PDF, TEXT, and XML format [13]. From 2011 Ministry of Justice ordered sworn translators to start translating legal acts to English, and from the end of 2014, all the legal acts are also available in English [9]. Those English translations are kept up to date, however, those translations aren't legally binding as the official language of Estonia is Estonian.

2.2 Structure of legal acts

"Rules of Good Legislative Practice and Legislative Drafting" [14] regulation was passed by the Government on 22.11.2011 with the aim of harmonization of the drafting process as well as the structure of the legal acts. The main building blocks of legal acts is sections. Sections themselves can be divided into subsections and clauses. Besides sections, there can be other structural parts of an Act like a part, a chapter etc. Regulation goes into deep detail on how exactly an act should look like. For example, clauses are presented "*in Arabic numbers by using the right parenthesis after it*" [14]. Also, it is listed when and how the citations should be made and how they should look like. As a general rule, references aren't reproduced but referred to. This makes the reading of the act inconvenient. However, from the legal standpoint, it reduces the ambiguity as each

concept should be defined clearly from one place. It increases efficiency, clarity and stability in organizing a society. From a technical standpoint, this makes it easier to amend definitions as the change is needed to be done once.

2.3 References in Riigiteataja.ee

Sections in different acts typically have two types of references.

Firstly, they link to the same act but to a different section. For example, section 21 subsection 3 of Law of Obligations [15] references to section 40. But as there is no hyperlink, you should manually scroll to the right place or use Ctrl + F to search.

Secondly, sections in acts are referencing different acts. For example, Police and Border Guard Act [16], section 7^{49} references section 126^2 of the Code of Criminal Procedure. It too doesn't have a hyperlink which means you have to open up a new tab, go to Riigiteataja.ee search for Code of Criminal Procedure and then from there scroll or Ctrl + F to section 126^2.

If those references would have links, it would speed up getting a quicker overview of the section in question as you always need to check which other sentences it is referencing to get the whole picture.

2.3.1 Linking outgoing references

To add links to sections, then we need to (a) know where sections could link to, (b) identify act names and (c) identify references to section numbers, (d) construct links, and (e) find a way to add those links back to Riigiteataja.ee.

Sections of acts could link to government decrees and, in some cases, to other documents as well, but here, we are concentrating on two types of links mentioned above (links to acts). Riigiteataja.ee has a page where all the Acts are in the form of a table, with names, links, and abbreviations [17]. It will help us construct a dictionary of different acts, and fortunately, there is a way of building links if you know the abbreviation of an act. Namely, you can create a link that looks like https://www.riigiteataja.ee/akt/Abbreviation#paraSectionNumber, where the abbreviation is the corresponding abbreviation and SectionNumber is the corresponding section with subsection if needed.

Regular expressions were used to identify references to sections. Regular expression is a way of searching for pieces from text with a search pattern. As references have a specific

pattern, which consists of act name, section number, and subsection number, regular expression is a good way to identify those.

To tie it all together then the author of this thesis wrote a browser extension xLaw [18], which will perform all those operations on the fly and changes those references to hyperlinks. To simplify the process even more, popovers were added, which open with mouse hover action. As seen in Figure 1, reference is seen immediately, without opening a new browser tab. The content in the popover is queried from the xLaw server.
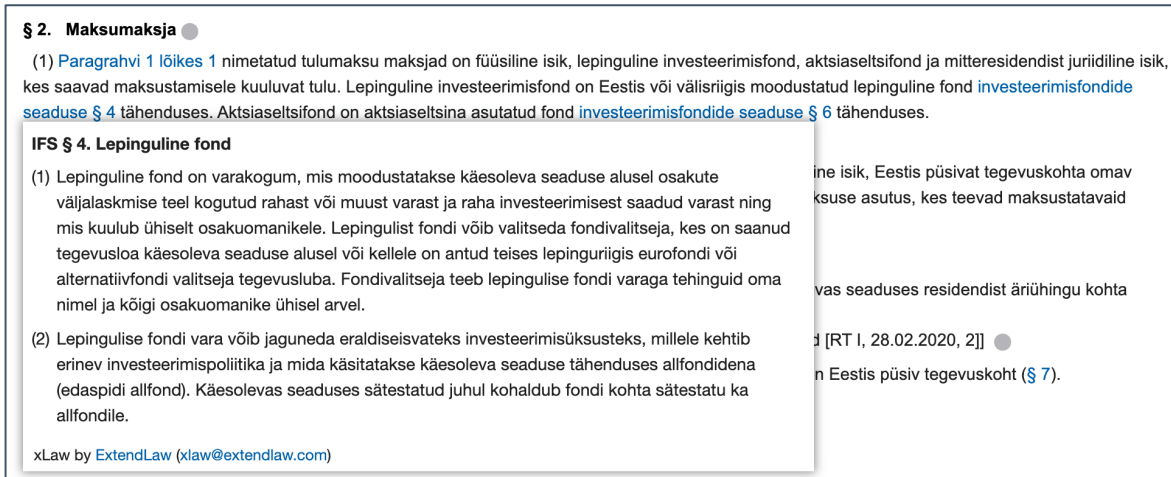

§ 2. Maksumaksja ●

 (1) Paragrahvi 1 lõikes 1 nimetatud tulumaksu maksjad on füüsiline isik, lepinguline investeerimisfond, aktsiaseltsifond ja mitteresidendist juriidiline isik, kes saavad maksustamisele kuuluvat tulu. Lepinguline investeerimisfond on Eestis või välisriigis moodustatud lepinguline fond investeerimisfondide seaduse § 4 tähenduses. Aktsiaseltsifond on aktsiaseltsina asutatud fond investeerimisfondide seaduse § 6 tähenduses.

IFS § 4. Lepinguline fond

(1) Lepinguline fond on varakogum, mis moodustatakse käesoleva seaduse alusel osakute väljalaskmise teel kogutud rahast või muust varast ja raha investeerimisest saadud varast ning mis kuulub ühiselt osakuomanikele. Lepingulist fondi võib valitseda fondivalitseja, kes on saanud tegevusloa käesoleva seaduse alusel või kellele on antud teises lepinguriigis eurofondi või alternatiivfondi valitseja tegevusluba. Fondivalitseja teeb lepingulise fondi varaga tehinguid oma nimel ja kõigi osakuomanike ühisel arvel.

(2) Lepingulise fondi vara võib jaguneda eraldiseisvateks investeerimisüksusteks, millele kehtib erinev investeerimispoliitika ja mida käsitatakse käesoleva seaduse tähenduses allfondidena (edaspidi allfond). Käesolevas seaduses sätestatud juhul kohaldub fondi kohta sätestatu ka allfondile.

xLaw by ExtendLaw (xlaw@extendlaw.com)

Figure 1. xLaw RT - references

2.4 Machine-readable acts

Starting from 2010, Acts are also in XML (*Extensible Markup Language*) format. XML is markup language standard defined by The World Wide Web Consortium (W3C) and which should be both human-legible, machine-readable, and with the goal of being easy to create [19]. In Estonia Acts are constructed to XML with VexPro Visual Editor [20]. XML is constructed in a way that each section, subsection, clause is marked with tags. Also, a higher-level structure (e.q part, division) is marked with tags. However, references, definitions, numerical values don't have tags and are part of the text.

Figure 2. shows XML example of Employment Act, where section, subsection, and clause structure are present. Those XML files can be found from Riigi Teataja, as each act has a download PDF, TEXT, XML button. All XML files are also in the Estonian open data portal [21].

```xml
<paragrahv id="para19">
    <paragrahvNr>19</paragrahvNr>
    <kuvatavNr><![CDATA[§ 19.]]></kuvatavNr>
    <paragrahvPealkiri>Töötaja õigus keelduda töö tegemisest</paragrahvPealkiri>
    <loige id="para19lg1">
        <sisuTekst>
            <tavatekst>Töötajal on õigus keelduda töö tegemisest eelkõige juhul, kui:</tavatekst>
        </sisuTekst>
        <alampunkt id="para19lg1p1">
            <alampunktNr>1</alampunktNr>
            <kuvatavNr><![CDATA[1)]]></kuvatavNr>
            <sisuTekst>
                <tavatekst>ta kasutab puhkust;</tavatekst>
            </sisuTekst>
        </alampunkt>
    </loige>
</paragrahv>
```

Figure 2. XML example of Employment Act

2.5 xLaw Legal – search engine

xLaw web extension solved the issue of turning references into links, but it didn't solve how to find relevant acts and sections themselves. The author decided to build a separate website, xLaw Legal, from where the lawyers would be able to search for legal acts and other sources. For that reason, the crawler mentioned in chapter 9.1.6 was built. Crawler is a program, which automates repetitive actions to navigate the website and download the materials. As all the legal acts are also in the form of XML files, then those were downloaded and parsed. The parser is a program, which reads the file and helps to break it into smaller pieces. From the XML files of legal acts, sections were identified, and the text content was added to the database. Azure Cognitive Search was used to index and offer full-text search to users. As seen from Figure 3. search term is highlighted, and results could also be filtered by clicking on the act abbreviation.

Figure 3. xLaw Legal - example search from legal acts

3 The Local Government acts

This section gives an overview about acts by municipalities. Also, technical issues arisen from the administrative reform is discussed, with the solution built by the author. According to the Constitution of the Republic of Estonia, all local issues are decided by municipalities, which shall act independently on the basis of laws [22, p. 154]. Local government bodies are the municipal council and the municipal administration. The local people elect the first and the second is formed by municipal council and is executive body. Both have the right to issue regulations [23, p. 7].
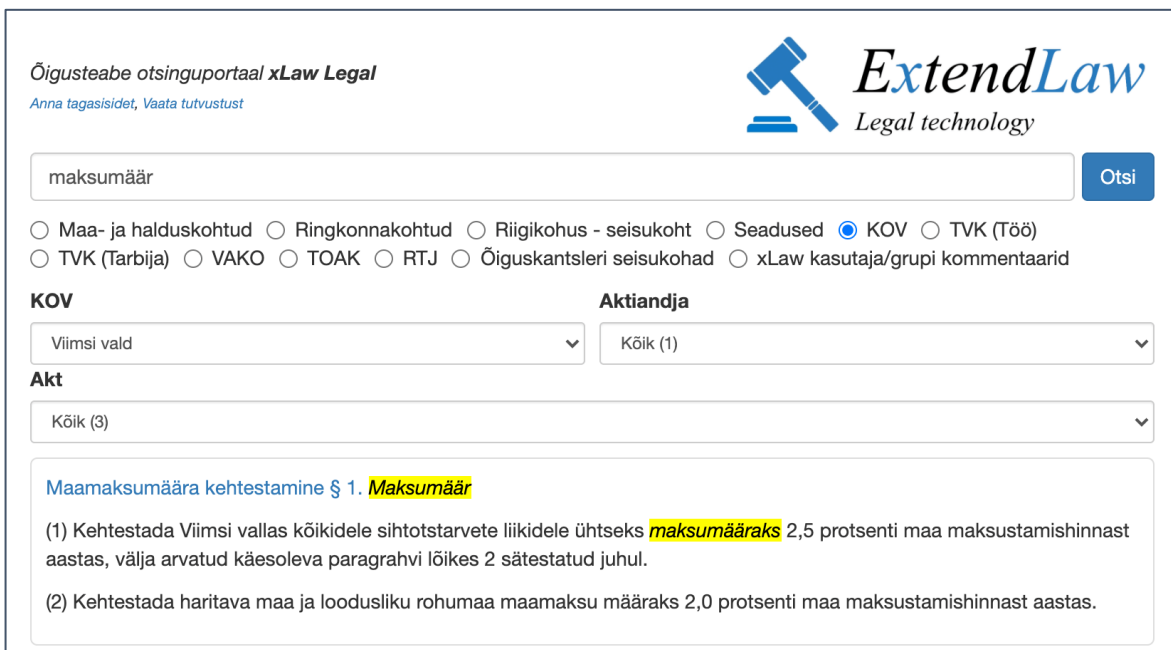
3.1 Administrative reform

In 2016 the Parliament of Estonia passed Administrative Reform Act, with the purpose to "support the increase of the capacity of local governments in case of offering high-quality public services, using regional prerequisites for development, increasing competitiveness, and ensuring a more consistent regional development [24, p. 1(2)]". Reform stated that local governments should have at least 5000 residents, with the recommended size of more than 11 000 residents. This meant that local governments had to merge with one another. Before 01.01.2017, there were 213 local governments. After the reform 01.01.2017, there were 79 local governments [25]. After merging into bigger local governments, the acts passed before were still valid and many are valid today. It imposes a problem of finding all the acts in force in the same local government territory. Namely, in the official state gazette Riigi Teataja there is an option to search by the issuer. As stated above then each local government has two issuers – council and administration. This means depending on the number of local governments merged into one, the more problematic it is to search for relevant legislation. For example, Saaremaa municipality was formed by merging 12 local governments - Kuressaare town, Lääne-Saare municipality, Orissaare municipality, Pihtla municipality, Valjala municipality, Salme municipality, Kihelkonna municipality, Laimjala municipality, Mustjala municipality, Torgu municipality, Leisi municipality, and Põide municipality. This means you would have to make 26 different searches in official State Gazette, to include all the previous local governments and the newly formed one. To make the matters worse, then in 2014 Lääne-Saare municipality was formed by merging with Kaarma, Kärla, and Lümanda

municipalities [26]. So actually, to be sure, then 26 + 6 issuers, meaning 32 different searches.

3.2 xLaw Legal – search engine

As mentioned above, in some cases, lawyers would have to make up to 32 different searches in official State Gazette to get all the municipality acts. Therefore, the author of this thesis decided to add those acts to separate search engine, xLaw Legal, to simplify the searching experience. All the local government acts were crawled and parsed. Similarly, to acts issued by the Parliament, those are in XML format. XML parser was built to capture all the sections, subsections, and clauses and added to the database. To solve the issue of having multiple issuers, new column was formed, and all the issuers were tied together with the relevant municipality, so instead of doing up to 32 searches, lawyers would get the results with one search. Also, all the acts were saved by section, so instead of getting a result by acts, the results would be displayed as sections were the search term was. This cuts down the need for opening every act and doing Ctrl+F search inside it again.

In Figure 4. an example search is done with "tax rate" and the results are shown by relevant sections, search term is highlighted in the results. Also, there is an option to filter the results with the issuer and act name.

Figure 4. Local Government acts search in xLaw Legal

4 Courts

This section describes the Estonian court system, shortcomings related to searching and navigating through court decisions and solutions to those shortcomings.

Estonia has a three-level court system. The first instance is county courts and administrative courts. The circuit court is the court of appeal which reviews first instance decisions in appeal proceedings. The Supreme Court is the highest court and reviews decisions in cassation proceedings, Supreme Court also does constitutional review in Estonia.

4.1 Numbering of court decisions

Starting from July 2017, all the courts have the same numbering system. It consists of 4 numbers. The first three make up the court case number and the fourth indicates the document number [27].

The first position indicates the type of case (e.g. **2**-17-13391/43):

1 – criminal case

2 – civil case

3 – administrative case

4 – misdemeanour case

5 – matter of constitutional review

The second position (e.g., 2-**17**-13391/43) marks the year of the case in the first court level.

The third position (e.g., 2-17-**13391**/43) marks the order number of the case.

The fourth position (e.g., 2-17-13391/**43**) marks the document number.

All three positions are the same in all the court levels. And therefore, it is easy to link all the decisions in the same case together. However, this is only true for the Supreme Court cases starting from July 2017. Before that, they had a different numbering system.

1996 till 2006 Supreme Court of Estonia had a five-position numbering system (e.q. 3-2-1-25-16).

The first position indicated court level (**3**-2-1-25-16):

1 – I level courts (county and administrative courts)

2 – II level courts (circuit courts)

3 – III level court (Supreme Court)

The second position indicated the type of case (3-**2**-1-25-16):

1 – criminal case and misdemeanour case

2 – civil case

3 – administrative case

4 – matter of constitutional review

The third position indicates procedure type, the fourth position order number of the case, and the fifth position registration year. 1993 till 1995 Supreme Court numbers were the same as 1996 – 2006, however, their presentation varied a bit. Namely, the first number was written with Roman numerals, and instead of four hyphen characters, there were two slashes (e.q., III-2/1-123/93) [27].

As Supreme Court cases had a different numbering before July 2017, the author had to find a way to link together decisions from lower courts with Supreme Court decisions. Namely, lawyers in some cases want to read all the decisions from the same case, especially when Supreme Court sends the case back to lower courts to make the final decision.

4.2 Linking decisions together

As stated above, decisions made before July 2017 can't be linked together with the numbers as the numbering of Supreme Court decisions is unique. Therefore, the author had to find a way to find the relevant decision numbers from the decision itself. Decisions typically start with the metadata table, where they have information about procedure type, court decision date, parties, etc and, also contested court ruling section. In most cases, in the contested court ruling section, there is also a number. The author used regular expression to find those numbers from the decision and, therefore, could link old Supreme Court decisions with decisions from the lower courts.

4.3 Categorization of court decisions
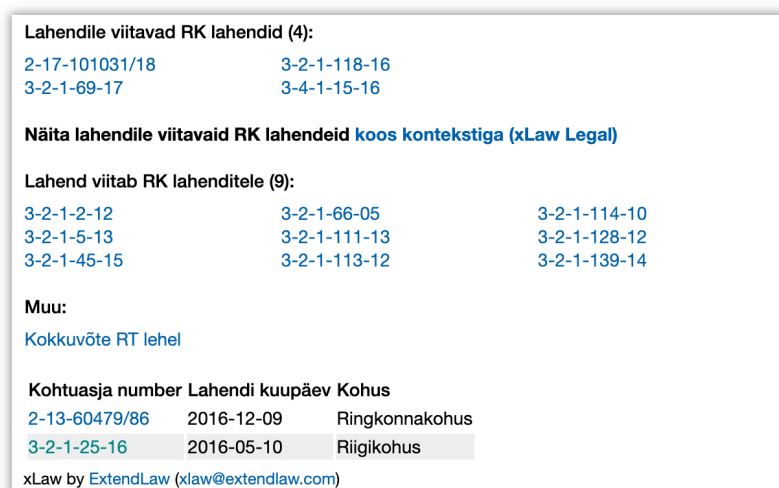
Extra column was created in the database to categorize court decisions. Thanks to linking decisions together and having a unified numbering system, it was relatively easy as the first number indicates the type - criminal case, civil case, administrative case, misdemeanour case, a matter of constitutional review. However, this solution didn't work for all the decisions, more than 300 didn't have the unified number. Having a closer look

revealed that those are matter of constitutional review decisions as constitutional review is only done by Supreme Court. Therefore, all the decisions with the old numbering system, where the second position number was 4, had to be categorized into the constitutional review category.

4.4 Identifying citations

Supreme Court decisions are the most important aspect on interpreting the Law as they have the final say on how specific Law should be applied. For example, in the Code of Criminal Procedure, it's stated that sources of the Law include "decisions of the Supreme Court on issues which are not regulated by other sources of the Law of criminal procedure yet which have arisen in the application of the relevant legislation [28, p. 2(4)]". Supreme Court opinions on specific topics can change over time, it could be because the underlying act itself is changed or that they have changed their interpretation. When reading a decision, it would be beneficial to see if and how Supreme Court has cited this decision later on. Therefore, the author used regular expression to identify all the citations in all the Supreme Court cases. It enabled to build functionality where users could see which decisions are referencing to it.

Figure 5. shows part of xLaw RK module, which is added on top of the Supreme Court website with xLaw extension. It enables users to see incoming and outgoing citations and also related decisions in the same case.

Figure 5. xLaw RK module

4.5 Structure of Supreme Court decisions

Supreme Court decisions are typically structured in a way where each block has a title in bold and written in uppercase letters. Most typical structure: metadata table, resolution, facts and procedure, grounds of the parties, and position of the chamber. From the Supreme Court website, you can also find annotations for decisions, which are mostly written by the Legal Information and Judicial Training Department of the Supreme Court. From the Supreme Court search engine [29] anyone can search with different options. Those options include searching with the case number, year, decision date, case type, type of procedure, annotation, decision text. As the text search includes the entire decision, the author decided to build a new search engine, which would enable searching from the position of the chamber part as this is the part where the interpretations of the legal acts can be found. This would narrow the search results and help lawyers to find relevant decisions more quickly. All the Supreme Court decisions were crawled into the database, and in the crawling phase, decisions were split with regex to separate the position of the chamber part. When splitting the decisions, the author found that besides "position of the chamber", some decisions need splitting the case from "position of the general assembly", "position of the special assembly" and some more variations. Also, decisions from the 1990s didn't have a clear structure, and in this case entire decision was added. Results were added to a database column, which could be indexed and offered full-text search. Azure Cognitive Search was used to offer full-text search capabilities.

4.6 xLaw Legal – search engine

Searching from the court decisions was offered through xLaw Legal portal. From Figure 6. xLaw Legal portal with Supreme Court search can be seen. It enables filtering with categories mentioned in p 4.4, shows some context near the search term, considers grammatical cases of Estonian language and searches only from the position of the chamber part.

Õigusteabe otsinguportaal **xLaw Legal**
Anna tagasisidet, Vaata tutvustust

ExtendLaw
Legal technology

"majanduslik tõlgendamine" [Otsi]

○ Maa- ja halduskohtud ○ Ringkonnakohtud ◉ Riigikohus - seisukoht ○ Seadused ○ KOV ○ TVK (Töö)
○ TVK (Tarbija) ○ VAKO ○ TOAK ○ RTJ ○ Õiguskantsleri seisukohad ○ xLaw kasutaja/grupi kommentaarid

Asja liik

✓ Kõik (6)
Tsiviilasi (0)
Haldusasi (6)
Kuriteo- ja väärteoasi (0)
 - Kriminaalasi (0)
 - Väärteoasi (0)
Põhiseaduslikkuse järelevalve asi (0)

3-3-1-78   2017-06-09
MTA on ... ndamise põhimõttele tuginedes väitnud, et kinnistud on näilikult
äriühingu ... tele. /.../ MKS § 83 lg 4 ja § 84 väljendatud *majandusliku*
tõlgenda ... uid maksustada nende majandusliku sisu järgi, sõltumata nende
tsiviilõigu ... maksuhaldurile õigust hinnata ümber omandisuhteid. /.../

3-3-1-68-16   2017-04-05
MKS § 83 lg 4 ja § 84 väljendatud *majandusliku tõlgendamise* põhimõte võimaldab maksuhalduril tehinguid maksustada
nende majandusliku sisu järgi, sõltumata nende tsiviilõiguslikust vormist. /.../

3-3-1-23-11   2011-05-26
Haldusasja nr 3-3-1-67-09 p 18 leidis kolleegium, et *majandusliku tõlgendamise* põhimõttest lähtuvalt võib maksuhaldur
maksukohustuslase tehingutele anda teistsuguse, majanduslikule sisule vastava hinnangu ning määrata tasumisele
kuuluva maksusumma, lähtudes tehingu majanduslikest tagajärgedest. /.../ Samas märkis kolleegium, et *majandusliku*
tõlgendamise meetodit saab rakendada ka sellisel juhul, kui tehingutel on ka muid eesmärke maksudest kõrvalehoidumise
kõrval, kuid maksueelise saamine on peamine eesmärk. /.../

Figure 6. xLaw Legal - Supreme Court decision search

5 Extrajudicial decisions

In some fields of Law, there are voluntary or required dispute committees, where you can turn before going to court. There are at least four of them – labour dispute committee, Consumer Protection Commission, public procurement dispute commission, Industrial Property Board of Appeal.

This section gives an overview of different dispute committees, their legal implications, hurdles in current ways of searching those decisions, with a solution of unified searching experience.

5.1 Categories of dispute committees

5.2 Labour dispute committee

A labour dispute committee is an extrajudicial authority within the Labour Inspectorate that adjudicates labour disputes and is regulated by Labour Dispute Resolution Act [30]. Both employee and employer can file a petition with the labour dispute committee [30, p. 25]. If the parties disagree with the decision, they may have a recourse to a court. If they don't, then a decision from the committee is enforceable [30, pp. 59,64].

Searching from labour dispute committee decisions helps lawyers better grasp how the committee rules and interprets the Law. Decisions are available from the Labour Inspectorate document registry [31].

5.3 Consumer Disputes Committee

The Consumer Disputes Committee is an extrajudicial authority under Consumer Protection and Technical Regulatory Authority. If the parties disagree with the decision, they may have recourse to a court or ignore the decision, as those decisions are not enforceable. However, a list of traders who have failed to comply with the decisions can be published on the Consumer Protection and Technical Authority website, so called "blacklist" [32, p. 60].

According to the Consumer Dispute Committee 2019 report 73% complied with the decision within 6 months of making the decision [33, p. 9]. So, it seems that the fear of public shaming has quite a good impact, and unenforceable decisions are honoured.

5.3.1 Public Procurement Review Committee

Public Procurement Review Committee is an extrajudicial authority whose management is organized by the Ministry of Finance [34]. A tenderer, candidate, or economic operator interested in participating in public procurement may file a complaint with the Public Procurement Review Committee if it finds an infringement of Public Procurement Act [35, p. 185]. The Review Committee decisions enters into force if none of the parties file a recourse in the court.

5.3.2 Industrial Property Board of Appeal

Industrial Property Board of Appeal is an extrajudicial independent body, which is formed at Patent Office. The Board of Appeal resolves appeals filed to contest decisions, register acts etc by Patent Office. It also resolves disputes and other requests [36]. Processing at the Board of Appeal is mandatory pre-trial procedure, and its decisions are enforceable unless parties file a recourse in the court.
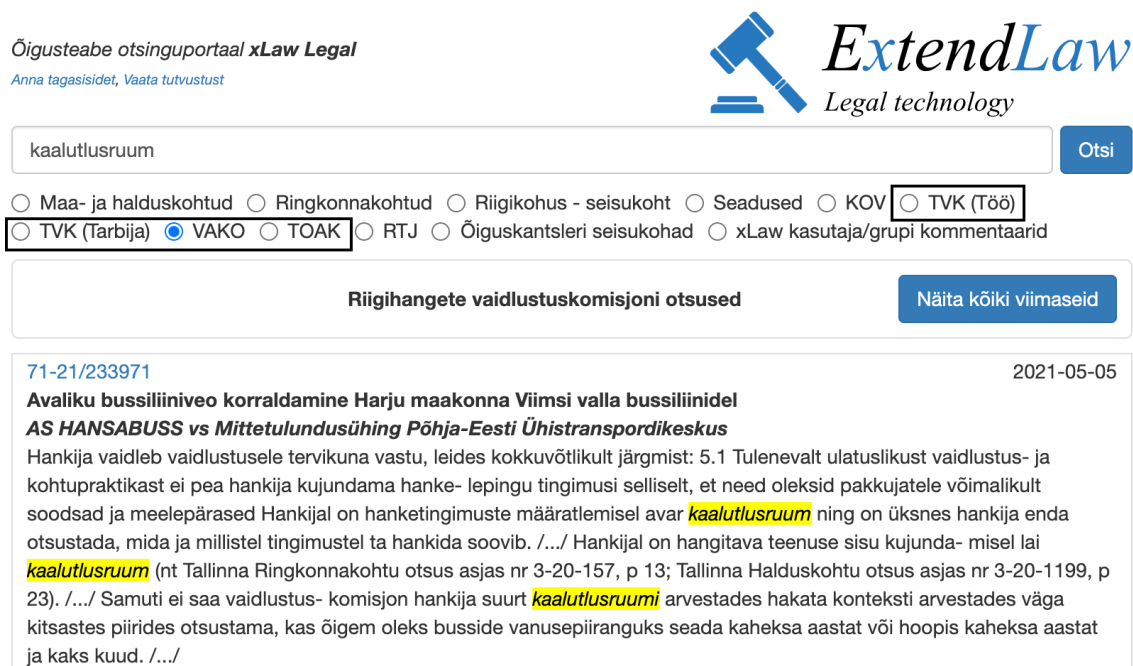
5.4 Problems in accessing dispute committee decisions

Above mentioned decisions are scattered around different websites and search functions, if any, are very different from each other. Labour dispute committee decisions are in the document registry [31] of Labour Inspectorate in where the navigation is rather slow and text search doesn't seem to function. Consumer Disputes Committee decisions can be found in special register [37]. However, there is no full-text search. Public Procurement Review Committee decisions can be found in Procurement Registry [38]. There is a full-text search; however, results consist of procurements not decisions, so if there are many disputes under one procurement, then it's quite hard to find the one, which has the search term in it. Industrial Property Board of Appeal decisions [39] have no search functionality at all. In addition to those shortcomings, all of the decisions are in PDF format, and none of those websites considers grammatical cases of Estonian language nor gives a brief context on which surrounds the search term.

5.5 xLaw Legal – search engine

Web crawlers were built which captured all those extrajudicial decisions from different websites with all the relevant metadata - date, parties etc. As each website was different

then depending on the complexity of the websites, the crawlers took a different amount of time to be built. For example, in case of Industrial Property Board of Appeal all the decisions were listed in one subpage. However, Labour Dispute Committee document registry meant more work as different subpages were needed to be crawled. In case of this website also correct cookies needed to be present, for requests to work. With the first request the author got set-cookie header, which included XSRF token. XSRF is abbreviation of Cross-site request forgery. This is meant to prevent authorized users to submit a request they didn't intend to submit. After adding XSRF token to following requests, the author was able to navigate in document registry and download decisions. All those decisions from each committee were added to the database and served customers through xLaw Legal portal (Figure 7). Crawler service mentioned in chapter 9.1.6 goes through all those committee websites daily to gather new decisions.

Figure 7. xLaw Legal - extrajudicial decisions search

6 Extra information on top of Legal Acts

This section gives an overview of how extra information is added to the state gazette Riigi Teataja with xLaw extension.

Besides court decisions and extrajudicial decisions there are more sources, which help lawyers to interpret the meaning of the law. Those can be explanatory memorandums, journal articles, internal know-how, and much more. Also, when searching for court decisions or extrajudicial decisions, it takes time to type in the section number and act name to the xLaw Legal search bar. Search links and other materials could be next to the sections of the acts themselves. In chapter 2.3.1 it was mentioned that xLaw browser extension was developed, which turns legal act references into links. The same extension could be extended to add popovers next to the sections and subsections of acts.

6.1 Popovers

On Riigi Teataja website, all the acts have HTML anchors for each section, subsection and clause. A browser extension was developed further to add buttons next to those anchors. By clicking a button, a popover is opened, which requests information from the backend via API calls.

Figure 8. shows xLaw popover next to section 1 of Employment Law. Depending on the amount of information collected about the specific section, there can be more or less different categories of information inside the popover. Search links to xLaw Legal are automatically constructed with section number and name. All other information comes through API from the backend service.

§ 1. Töölepingu mõiste

(1) Töölepingu alusel te...   ...andja maksab töötajale töö eest tasu.

(2) Kui isik teeb teisele ...   ...emist on töölepinguga.

(3) Töölepingule kohald...   ...estatud teisiti.

(4) Töölepingu kohta sä...   ...i, aja ja koha valikul olulisel määral iseseisev.

(5) Töölepingu kohta sä...   ...ule.

§ 2. Sätete kohustuslik...

Käesolevas seaduses ja...   ...kahjuks kõrvalekalduv kokkulepe on tühine, välj...   ...nähtud.

§ 3. Võrdse kohtlemise...

Tööandja peab tagama...   ...õiguslikkust vastavalt võrdse kohtlemise seadusele ja...

§ 3¹. Töösuhtest tulen...

Töösuhetest tulenevate...   ...või kohtusse pöördumiseks on neli kuud arvates ajast, k...

[RT I, 04.07.2017, 3 - jõu...

§ 4. Töölepingu sõlmin...

(1) Töölepingu sõlmimis...

(2) Tööleping sõlmitaks...   ...jib vastavalt asjaoludele eeldada üksnes tasu eest.

[RT I 2009, 36, 234 - jõus...

(3) Kokkulepe töötajat k...   ...ib või ei saabu (äramuutev tingimus), on tühine.

[RT I 2009, 36, 234 - jõust. 01.07.2009]

TLS § 1

Otsi Maa- ja Halduskohtu lahendeid
Otsi Ringkonnakohtu lahendeid
Otsi Riigikohtu lahendeid:
    kogu otsusest
    kolleegiumi seisukohast
    annotatsioonist
Otsi Riigiteataja.ee'st (I - III astme lahendid)
Otsi töövaidluskomisjoni otsuseid
Riigikohtu märksõnastik: töösuhe
Riigikohtu märksõnastik: töölepingu üldküsimused
Kohtulahendite kokkuvõtted

> EL õigus
> Seletuskiri
> Kommenteeritud väljaanne
> Juridica
> RMP
> xLaw viited & kommentaarid
> Tõlge inglise keelde (Riigi Teataja)
> Tõlge vene keelde
> Võrdle sätte redaktsioone (al. 2012)
> Lisa kommentaar, mis on ainult Sulle/Sinu büroole nähtav

xLaw by ExtendLaw (xlaw@extendlaw.com)

Figure 8. xLaw RT - information about the first section of Employment Law

6.1.1 Explanatory memorandum

One of the essential sources are explanatory memorandums. According to Section 39 of Rules for Good Legislative Practice and Legislative Drafting the purpose of the explanatory memorandum is to state the reasons of passing the act and to give an overview of the impact of the act [14]. The initiator of the draft act signs it or it's representative. Explanatory memorandum can help interpret the law; however, it isn't legislation [40, p. 11].

Draft acts with explanatory memorandums can be found on the website of the Parliament of Estonia [41]. Before passing a bill, the process has three readings in the Parliament, and in those stages, the draft can be altered and voted on. However, the explanatory memorandum isn't updated. Therefore, it's hard to automatically tie sections of the explanatory memorandum with the sections of the act. Sometimes the explanatory note is structured with draft act sections, not with the act sections, therefore manual work is needed to identify which section of the draft changes which section of the act. Also, in case of passing a new act (instead of amending the existing one), sometimes sections are

removed from the draft act. Therefore, the numbering of the explanatory memorandum and the act can be shifted. To still offer this to the users, the author has employed employees to identify relevant sections from explanatory memorandums and add them to xLaw. As of April 2021, there are more than 40 000 separate explanatory memorandum insertions made to xLaw (Figure 9).

Figure 9. xLaw RT - explanatory memorandum

6.1.2 European Union directives

As of 2004, Estonia is part of the European Union (EU) and tied with its legislation. The most important part of EU legislation is directives and regulations. Regulations are automatically applied to each member state. However, directives are needed to be taken into our national legislation. EU sets the aim, but member states have some autonomy on the implementation methods. Those references on which section of an EU directive corresponds to national legislation can be found from the draft legislation appendixes. Usually, they are Microsoft Word files or Microsoft Excel files. As those references sometimes reference the draft sections, not the final act sections, then manual verification is needed. Also, as they are in multiple different formats, then employed employees manually transform them into correct Excel format. Parser was built, which takes Excel file as an input and adds those references into the database. As of April 2021, there are more than 20 000 links from national legislation to EU directives.

Figure 10. shows part of the popover where directive references are listed. Those links will open EUR-Lex [42], official gazette of EU acts, from particular act and scrolls to the specific section. The author of this thesis expanded xLaw extension capability to add anchors to each section and subsection of directives and regulations.
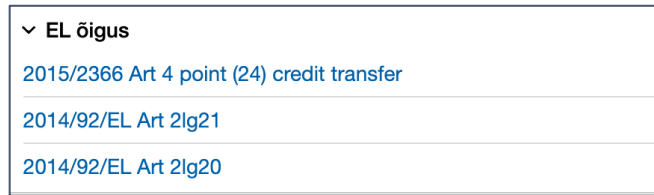
Figure 10. xLaw RT - EU directive references

Also, popovers (Figure 11) were added to EUR-Lex, which adds backlinks to transposed legislation in Riigi Teataja, and there is an option to search for court decisions with one click. Those are links to the search results of The Court of Justice of The European Union [43]. Links are composed by adding Act number, year, and article number into URL parameters.
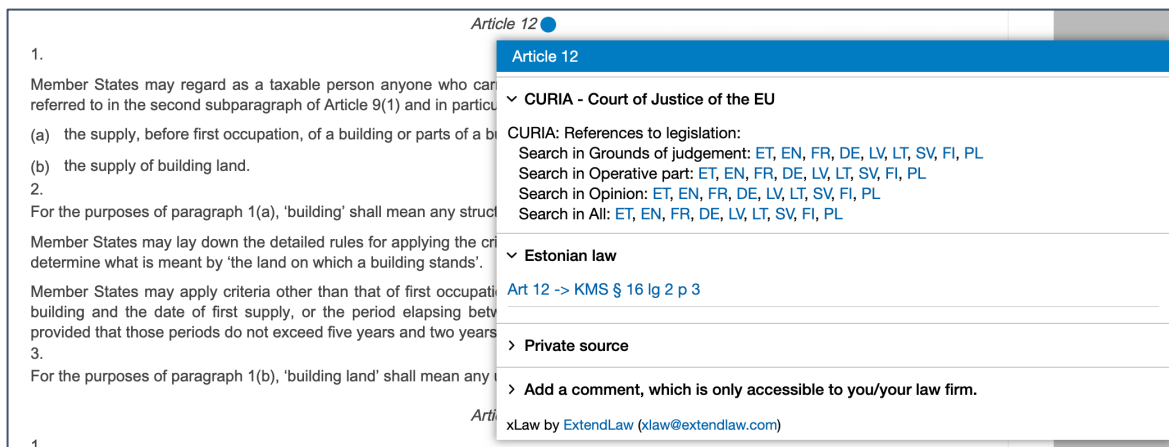
Figure 11. xLaw EU - popover

6.1.3 Translations

In Riigi Teataja all the legal acts are also translated into English, and they are also available in XML format. Those were crawled, parsed, and tied with the correct act and section.

There are more than 70 legal acts, which are translated into Russian. Unfortunately, those are not in XML format but PDF format. So those PDFs needed to be split into pieces with regular expressions and tied with the correct act and section.

Those translations are also showed inside popover (Figure 12) to make it more convenient to quickly see the translations without going to a separate webpage.

Figure 12. xLaw RT - Translations

6.1.4 Redaction comparison

Legal acts are amended over time and when reading a relevant section, it's essential to see if and how the particular section has changed. It's especially important when the circumstances took place a while ago. In Riigi Teataja, redaction comparison is built-in, however as seen from Figure 13. it's rather inconvenient to see which words have been deleted or added as the whole section is highlighted.

Figure 13. Riigi Teataja built-in redaction comparison

To overcome the need on to go to a separate subpage and attentively read both versions to understand the difference, the author added redaction comparison into popovers. Comparison is merged into one view to highlight which exact words have been deleted/added. It's now easier to grasp the difference (Figure 14). Red colour indicates which words have been deleted from the section, and green colour highlights new words.

Figure 14. xLaw RT - redaction comparison

6.1.5 Juridica

As also brought out in the introduction part of the thesis, lawyers turn to qualitative judgments by colleagues and law professors to make their case. One of the sources for this to Estonian lawyers is the Juridica journal. Juridica was established as a result of international scientific cooperation with the Faculty of Law and Financial Studies of Glasgow University in 1993 [44]. Starting from 1994 annual number of issues has been ten.

So, for example, if lawyers want to know if any Juridica journal article is mentioning section 208 of Law of Obligations, they need to http://www.juridica.ee and do a separate search for that.

If those journal articles would show up next to sections of acts, it would speed up the research process as it would provide an opportunity to see if any journal articles are discussing this topic.

The thesis author developed a web crawler, which goes through all Juridica articles and uses regular expression to find references to different mentions of legal acts. This crawler adds all those links to the database, the server serves those to browser extension via REST API to show it in the popover.

6.1.6 Private information

From the interviews, the author identified the following problem: Working through the vast amount of data, lawyers will find a lot of materials, but it is hard to organize this data and find it when they or their colleagues face a similar legal question.

As Riigiteataja.ee is the main starting point, where lawyers start their legal research, it would make sense to be able to add information there, so they would be able to find it next time they are reading the same section.

To make it easy as possible to add information, the author came to four different solutions to add information – (a) selecting text in court website (or from any other website), right clicking and then choosing an option from context menu called 'Save to xLaw', this would open up a popup where the link, title, comment is automatically filled and the lawyer only needs to add a name of an act and section number on where he/she would like to add this comment, (b) reading a specific section of an act and in the popover clicking Add Comment to add your own comment, (c) opening up a new window with a form, where lawyer could add its comments, (d) adding information directly from Microsoft Word by selecting clause and clicking Save in Office Add-in.

To implement this process backend server was developed with user management and group rights to add law firm employees to the same group. Information is surfaced through xLaw extension and in Microsoft Office Add-in.

Private information can be added into multiple sections if needed, and there is also an option to add keywords to comments. The idea is that similar concepts can be mentioned in multiple acts and in various sections and adding a keyword would tie those comments together.

Figure 15. shows how the private information section looks like inside the popover. Content, link, keywords, author, and insertion date are shown. If clicking on the keyword, then the keyword dashboard is shown (Figure 16). This shows internal comments about the same keyword. Comments can also be added to EU directives and regulations in EUR-Lex. As on comment can have to be tied with multiple acts and sections, the same comment can appear both in EUR-Lex and Riigi Teataja.

Figure 15. xLaw RT - private comments

Figure 16. xLaw - Keyword dashboard

Figure 17. shows the entity-relationship diagram for InfoPiece. It is a central component for storing comments, translations, explanatory memorandums, and other sources.
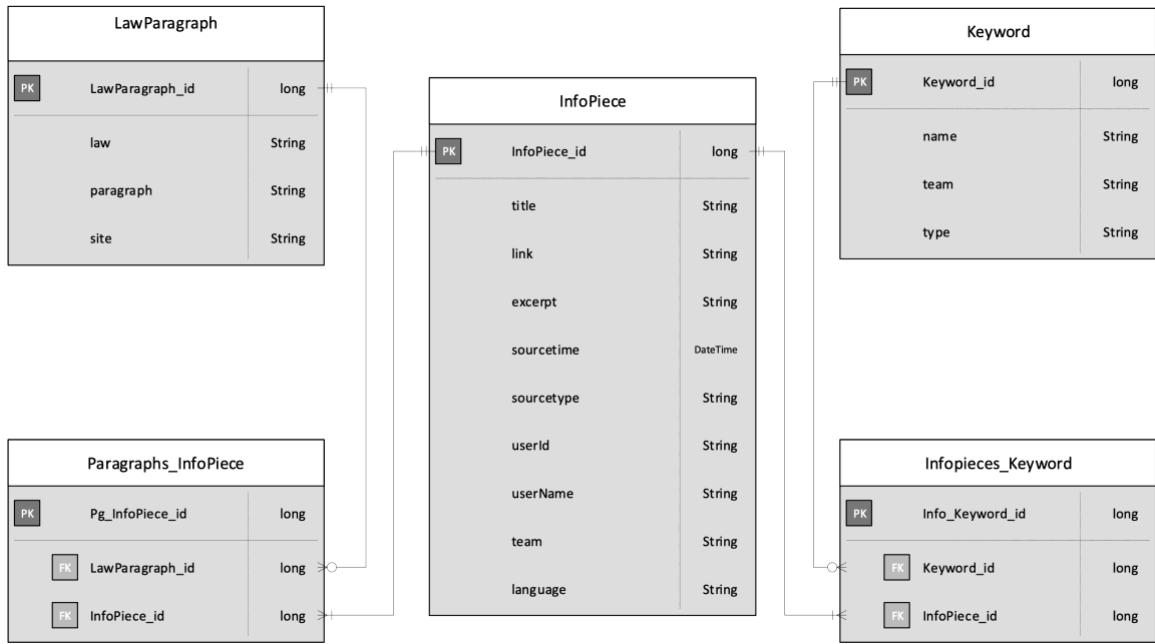
Figure 17. Entity Relationship Diagram for InfoPiece

7 Document writing

As identified in interviews with lawyers, then in many cases a large portion of their work is writing documents - contracts, memos, analyses, claims, etc. The author decided to find ways to help lawyers in the document writing phase. All the lawyers who were interviewed used Microsoft Office to write documents. Therefore, Microsoft Office add-in was built.

This section gives an overview of the functionalities of the xLaw Word add-in.

7.1 Comments

As clients already add information to xLaw, based on sections of legal acts and keywords, the author decided bring keyword search into Microsoft Word. Task pane, interface that appears on the right side of the document [45], was used, from where users can interact with the document and add comments to the document and save information back to xLaw.

From Figure 18. xLaw Word add-in can be seen next to a document. From there, lawyers can search with keywords and then add those comments to your document. Also, they can select text in their document and save it to xLaw with "Add comments" button.
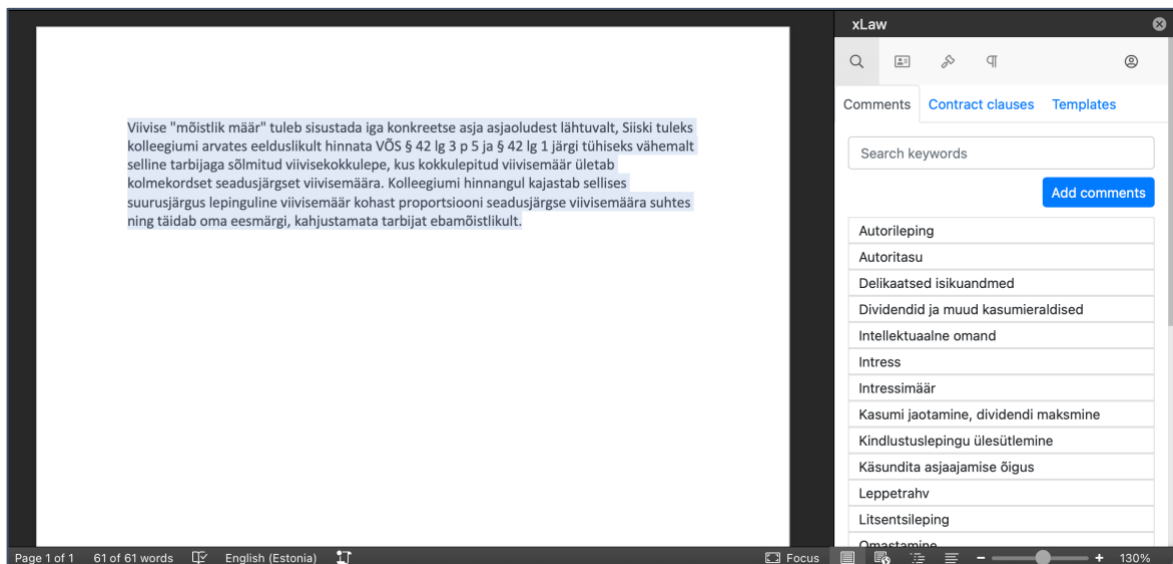
Figure 18. xLaw Word – Comments

7.2 Business registry

In many cases, law firm's client or another party is a business entity, and details of those are added to a document – like business name, address, registry number. Integration with Estonian business registry was built to fetch this information directly without going to a separate website and copy-paste.

From Figure 19. xLaw Word with business registry search can be seen. With one click, the information is added into the document. In official business registry website is written in a form where county and town are before the street, e.q. „Harju maakond, Tallinn, Kesklinna linnaosa, Liivamäe tn 8-10, 10113". However, lawyers prefer it when the address starts with the street name, for example "aadress Liivamäe tn 8-10, 10113 Kesklinna linnaosa, Tallinn, Harju maakond". xLaw Word will format it in a preferred way. Also, there are links to the official business registry, in case lawyers need more information like fiscal year reports.
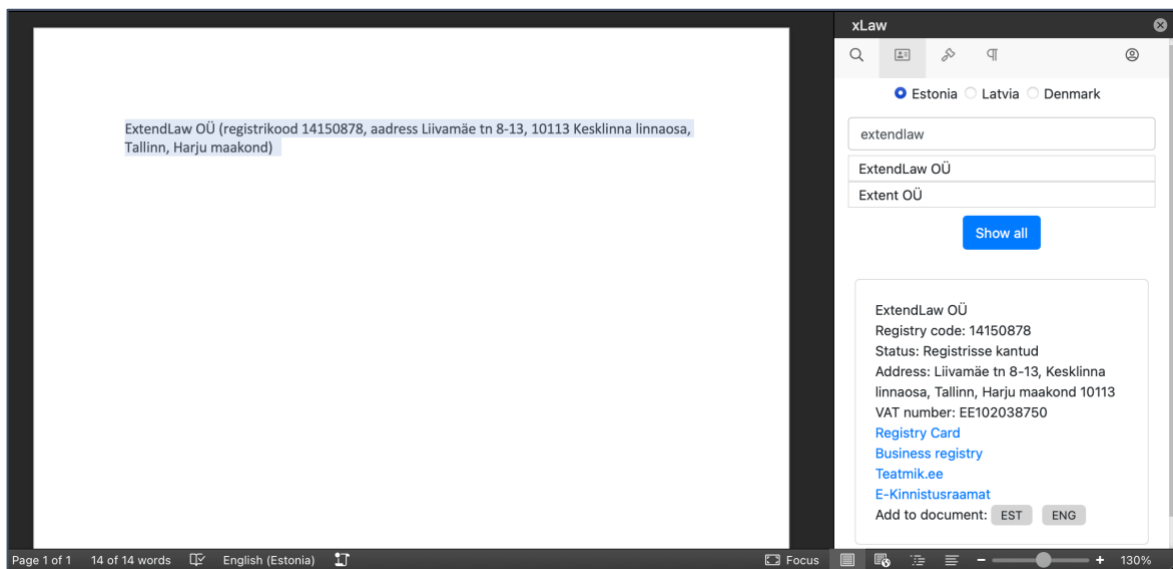
Figure 19. xLaw Word - Business registry

7.3 Clauses

To help lawyers specifically in the contract writing phase, Clauses functionality was built. Contracts can have multiple clauses, which are used depending on the situation. For example, regular employees can have a general intellectual property transfer clause in their employment agreement; however, it would be better to regulate more thoroughly for IT employees. Functionality for saving clauses and their alternative wordings with explanations was built.

In Figure 20. xLaw Word with clauses functionality is displayed. Clauses can be organized under contracts, and one clause can be tied with multiple contracts.
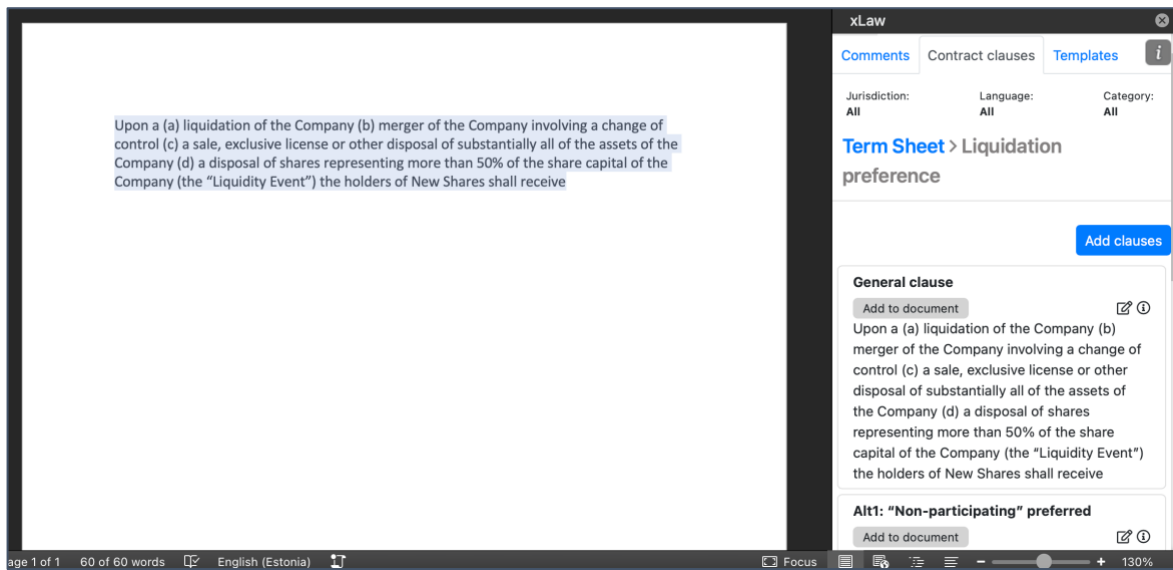
Figure 20. xLaw Word – Clauses

7.4 Templates

In interviews, lawyers told that in many cases, they ask colleagues if they have done similar contract or claim before and search those documents. From there an idea for having a central place for document templates was formed. Typically, the general structure and clauses are the same, so instead of building a contract by adding each clause separately, template library functionality was built.

In Figure 21. xLaw Word with templates functionality is shown. Each document type can have multiple templates in it, which are identified with an explanation of how they differ from each other. The idea is that lawyers share those templates internally within the same law firm. When choosing specific template then amendments can be done and if needed a specific clause can be searched for from the Clauses functionality mentioned above.
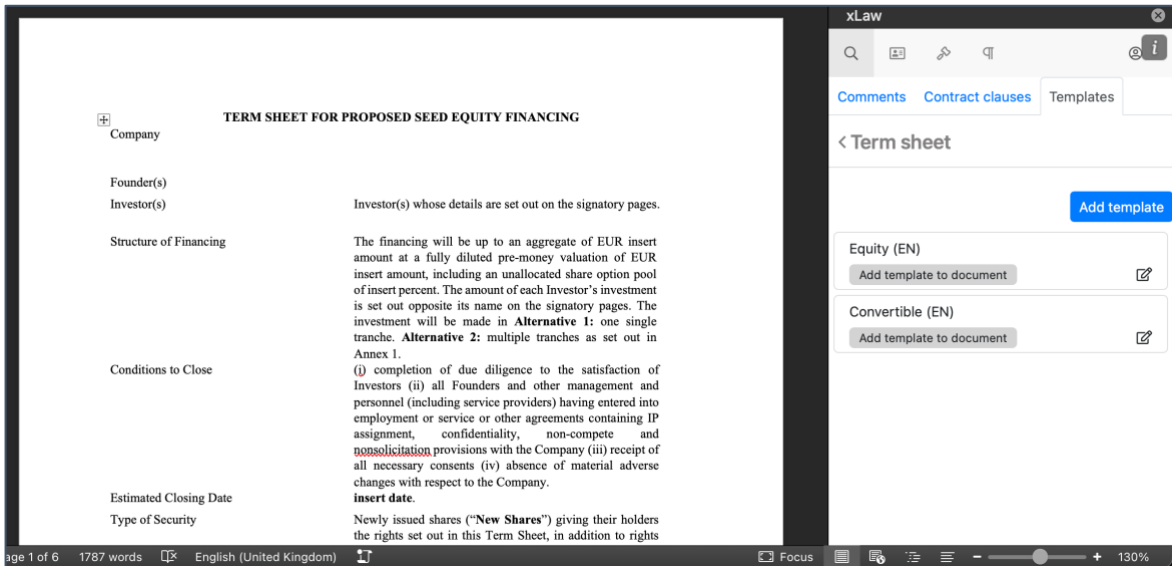
Figure 21. xLaw Word – Templates

7.5 Sections of legal acts

Documents composed and documents sent by other parties can also have references to legal acts. Legal acts search was built directly to xLaw Word so lawyers can search, read, and add relevant sections of legal acts directly to their document with one click as shown in Figure 22. This information is pulled from the server through REST API.
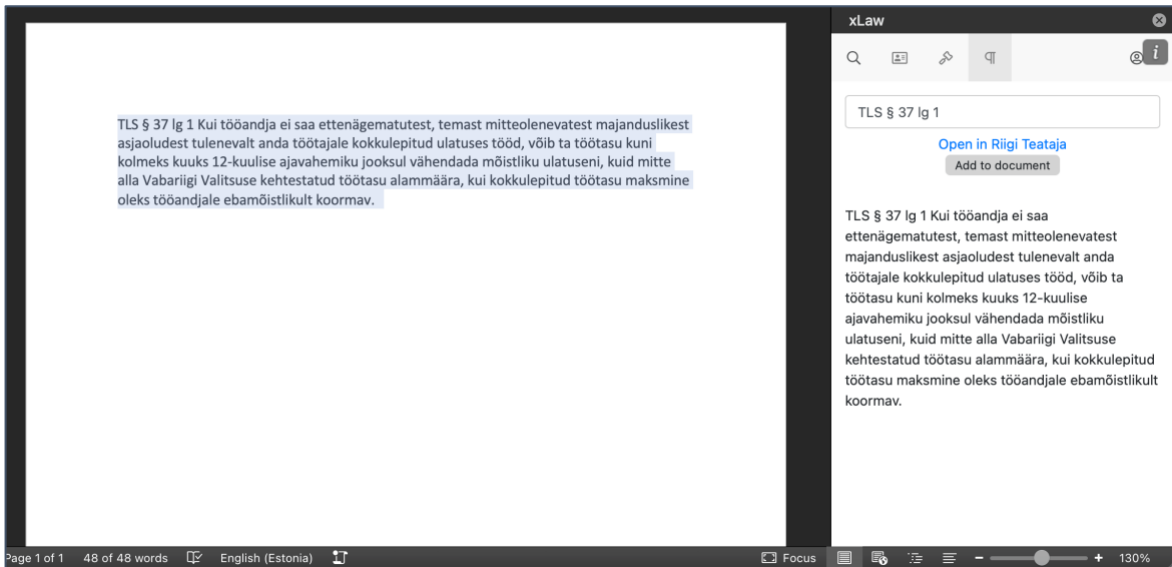
Figure 22. xLaw Word - Legal acts search

8 Business process summary

Chapters above conclude the functionality of the built xLaw tool. The following chapters will examine closely technical choices – architecture, distribution, testing. At the end of the thesis also usage information and customer satisfaction are discussed.

This intermediate chapter is about reflecting on the functionality built and its correspondence to the research questions.

The first research question was "how to link data together in a way that lawyers could be more efficient in working through the legal information that is relevant to them in particular circumstances?". xLaw extension turns mentioned references in acts into hyperlinks. Also, it adds extra information next to the section with a popup - explanatory memorandums, EU directives, translations, redaction comparison, scientific journal Juridica articles. This functionality covers well the first research question.

The second research question was "how to collect different data sources and provide a search, which considers grammatical cases of the Estonian language?". xLaw Legal web portal was built, which has pulled together legal acts, court decisions, and extrajudicial decisions. Thanks to the integration with Azure Cognitive Search, it also considers grammatical cases of the Estonian language and shows context of the search term. This functionality covers the most important data sources; however, there are always ways to improve and add even more data sources, for example, Domain Dispute Committee and Lease Dispute Committee decisions, to name a few.

The third research question was "how to effectively organize and share legal information?". xLaw extension enables to add private information to legal acts and their sections. Comments can also have keywords, which enable effective organizing of data. A separate xLaw Word add-in was built to enhance Microsoft Office. Add-in helps to save, share and manage contract clauses, comments and templates. This covers the posed research question.

9 Architectural choices

This section gives an overview of architectural choices of building xLaw solution. It provides a brief overview of each component, followed by architectural design, which shows how components interact with each other.

9.1 Components

9.1.1 Chrome Extension

Chrome extensions are small software programs that can modify and enhance the functionality of the Chrome browser [46]. Lawyers are used to visiting state gazette Riigi Teataja as it is the official source of truth and always up to date. It makes sense to enhance the capabilities of Riigi Teataja instead of building a new portal, where they must get used to going and trust that Acts are always up to date. Fortunately, extensions can use content scripts to modify websites.

Content script is some JavaScript that executes in the context of a page that's been loaded into the browser. Content script can read and modify the DOM for the displayed web page. As shown in Figure 23. Content scripts can communicate with extensions background pages, which can make external requests, and handle user management.
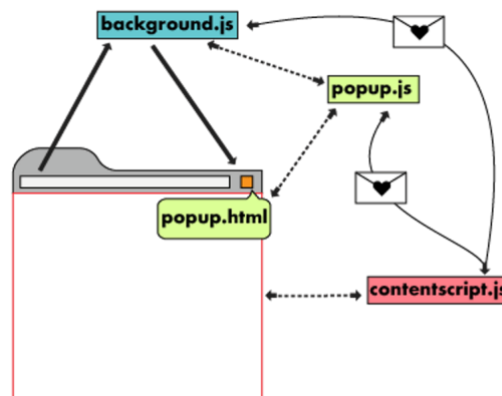
Figure 23. Chrome extension architecture [47]

As stated in chapter 2.3 and 4.4, extension is used to turn references into links and add popovers to Riigi Teataja, EUR-Lex and Supreme Court websites. Those are done through content scripts.

9.1.2 Office Add-in

Microsoft Office provides multiple ways, how to extend Office applications: a) Visual Basic for Applications (VBA) macro, b) COM and VSTO add-in c) Office Add-in (Javascript API)

According to Stack Overflow Developer Survey 2020 VBA is the most dreaded language [48]. The author of this thesis agrees that it's quite troublesome to develop VBA macros with built-in IDE, and some security issues might arise as it has access to the entire computer.

COM and VSTO add-ins can be developed with C# or Visual Basic. As VSTO add-ins can only be installed with an installer and it needs privileged rights, then this wasn't chosen.

Office Add-in can be developed with web technologies such as HTML, CSS, and Javascript. It is executed in the context of a browser then this brings along multiple benefits. In the security aspect, it is executed in a sandbox, and there is no need for privileged rights. Office Add-ins technology also has cross-platform support and easy deployment and distribution [49]. It's structured as a manifest XML file, which defines permissions for interacting with the document and has links to web resources where the actual add-in code is. Add-in code must have Office Javascript API library [50] included, as it enables interaction with the document with Javascript commands.

Office Add-in method was chosen as the author is familiar with web technologies and that there is potential to reuse the code with Chrome extension. Figure 24. shows the components of Office Add-in, user can interact with the task pane, which is inserted right side of the document.

Figure 24. Office add-in components

9.1.3 Server - Spring Boot application

The Spring Framework provides a comprehensive programming and configuration model for modern Java-based enterprise applications. A key element of Spring is infrastructural support at the application level: Spring focuses on abstracting away lower-level functions so that teams can focus on application-level business logic. Using it together with JPA (The Java Persistence), which is a Java specification for accessing, persisting, and managing data. It enables to build complex functionalities with dependency injection as it is abstracting away common functionality like database access, network traffic etc [51]. Data flow architecture can be seen in Figure 25.

Spring framework was used to build REST (Representational state transfer) API (application program interface) to interact with Chrome Extension to provide data like explanatory memorandums, translations and other information. Same server was also used for providing data to legal information portal xLaw Legal, Microsoft Word add-in, and mobile apps.
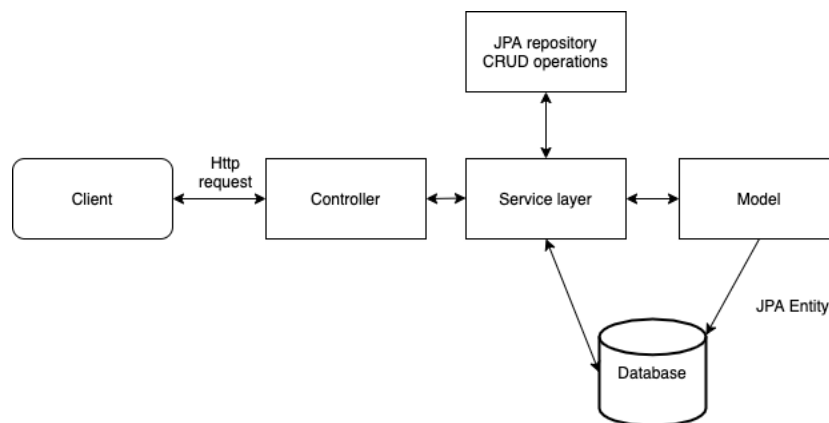
Figure 25. Spring Boot data flow architecture

9.1.4 Microsoft Azure Cloud

For hosting the server, Azure Cloud is used. Azure's pay-as-you-go services can quickly scale up or down to match demand, so you only pay for what you use. Azure supports the broad selection of operating systems, programming languages, frameworks, tools, databases, and devices. It enables Spring Boot application to be up and running with few clicks [52]. Azure Cloud was chosen because they offered free credits for startups for the first 3 years. For server and crawler deployment, Azure App Service [53] was used. It handles load balancing and traffic routing to multiple server instances (Figure 26). As the server is stateless, then each request can be independent of the previous one.
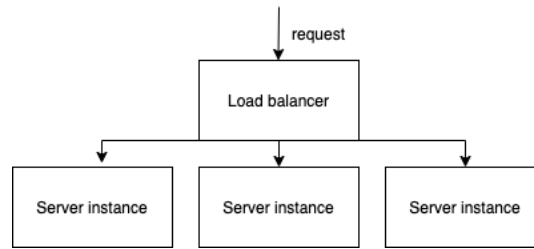
Figure 26. App Service architecture

9.1.5 Azure SQL Database

Azure SQL Database is a fully managed platform as a service, that handles upgrading, patching, backups and monitoring automatically with 99.99% availability [54]. Azure SQL was chosen as it does all the heavy lifting, letting author concentrate on the business logic. Azure SQL can be linked automatically with Azure Cognitive Search, which can update indexes without extra programming due to integration.

9.1.6 Crawler – Spring Boot application

In the server, there are many resources that need constant update. For example, legal acts, as new legislation can come into force. Also, new court and extrajudicial decisions come out almost daily. Therefore, update process was needed, and a separate crawler was built. Crawler checks all the relevant websites daily (Figure 27) using Scheduled annotation in Spring Boot framework, which takes cron schedule expression as input to run functions [55]. Resource id's are checked if they already exist in the database. If not, then new information is crawled, parsed if necessary and added to the database.
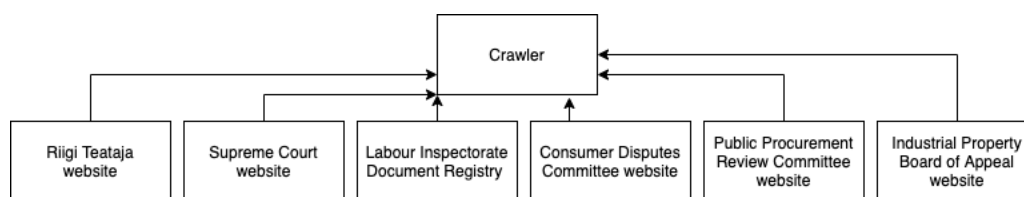
Figure 27. xLaw Crawler data sources

9.1.7 Azure Cognitive Search

Azure Cognitive Search is a full-text search engine, which is a fully managed search as a service. This will reduce complexity as the management and scaling is done automatically [56]. Azure Cognitive Search has many language analysers, including for the Estonian language. As this analyser also performs lemmatization, it can retrieve more relevant results compared to search engines provided by the government of Estonia. Cognitive Search provides two different types of analysers: Microsoft and Lucene. Currently,

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Cognitive Search only supports the Microsoft one for Estonian language. Another popular search engine Elastic Search was also considered; however, it didn't support analyser for Estonian language when building the software. This has since then changed as Estonian language analyser has been added to the underlying Lucene engine in 2019 [57] and also merged to Elasticsearch [58].

9.1.8 Firebase Authentication

Firebase Authentication [59] service was used to enable different login methods. Firebase offers backend service and ready-made UI libraries to make it easier to implement account creation, password reset, e-mail verification. It also enables integration with Oauth 2.0 providers like Google, Facebook, Microsoft, and many more. Users authenticate against the Firebase service from which they get a JWT (JSON Web Token), which can be verified in xLaw server. JWT tokens can be verified and are trusted because they are digitally signed [60]. Information about which user belongs to which group and if they are paid user is stored in xLaw server, not in Firebase service.

9.1.9 iOS and Android apps

From the interviews with Lawyers, it was identified that Riigi Teataja is not convenient to use with a mobile phone, but sometimes there is a need to check legal acts from the phone. From there, the author developed the idea to have iOS and Android app. The author offered the idea to Software Project 2016/17 course [61] in University of Tartu, where 2 teams were found, who built those applications. Both apps pull XML files from Riigi Teataja, parse them and offer navigation between the acts and sections. Also, both mobile apps pull extra information about the acts and sections from the xLaw backend with REST API, which was built and offered by the author of this thesis. As the author of this thesis didn't build those apps, then the details of those are out of the scope of this Master's thesis.

9.2 Architecture design

Figure 28. shows the architectural design of xLaw tool. As seen from the diagram, then xLaw has different client applications. All those client applications first connect with Firebase service to authenticate and get the JWT token, which is sent to xLaw back-end server. If the user is identified and the user is paid user or belongs to the student plan,

then the content is served through REST API calls. Server itself requests data from the Azure SQL Database. If users are saving information, then server stores it in the database. As mentioned in chapter 9.1.6, then as much of the data needs a frequent update, crawler service was built, which crawls different websites daily, sends them to the server, which stores it in the database. xLaw Legal portal offers full-text search from court decisions, legislation, and other sources through Azure Cognitive Search. Cognitive Search is directly connected with the database and uses the change tracking feature of SQL Server, through which it knows when to update indexes [62]. As xLaw Legal is offered only to paid users, all the requests go through xLaw server with REST API calls.
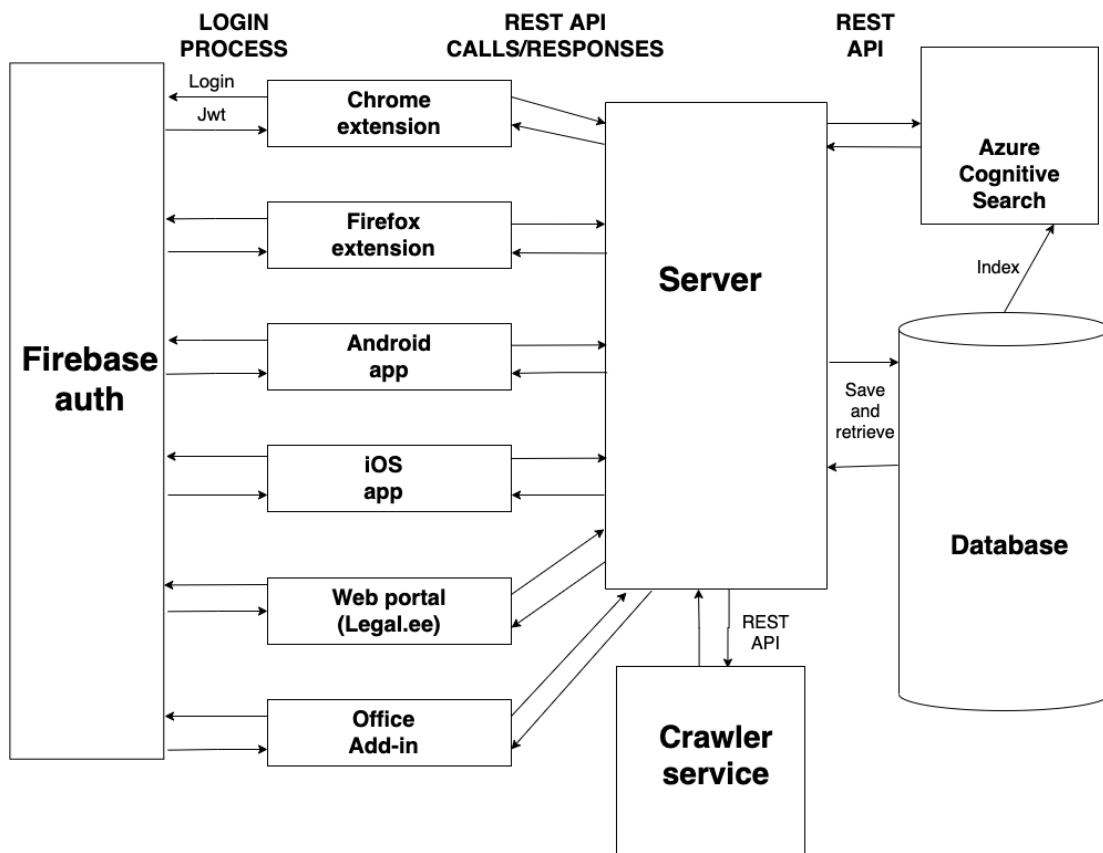
Figure 28. xLaw architecture design

10 Distribution

As mentioned in section 9.1.4 Microsoft Azure Cloud is used to host server. Azure is also used to host front-end code, which is served through https://legal.ee. However, Office Add-in, extensions and mobile apps need separate distribution methods. Those methods are discussed in the present section.

10.1 Office Add-in

There are multiple ways on how to distribute an Office add-in. Those ways include centralized deployment, SharePoint catalog, and Appsource. Centralized deployment assumes Microsoft 365 plan for clients, and it enables adding add-ins to all the users from Store or with XML-file, which points to add-in resources. SharePoint catalog enables distribution with an on-premises solution. Appsource is "app store" for add-ins and includes a public catalog from where users can choose an add-in [63]. Appsource method was used to reach the widest audience, as it doesn't need Microsoft 365 subscription from users and can also be installed to Microsoft Office 2013 and 2016. Add-ins submitted to Appsource can also be found directly from Microsoft Word, by clicking Insert tab and in there Get Add-ins. This is the most convenient way for users to get new add-ins. Appsource also has an approval process before the add-in is added to the "Store". It was rather straightforward; you needed to add screenshots and explain what your add-in does. After the first approval process, you can update your web resources as long as you don't need the changes in the manifest XML file. If you need to update the manifest XML file to get more permissions to interact with the document, then a new approval process is needed.

10.2 Chrome & Firefox extension

Extensions add extra information to existing websites, so a distribution method is needed. Google offers Chrome Web Store [64], which lets developers publish their extensions to the Store with a one-time only registration fee of $5. Updating add-ins is easy as developers only need to upload new versions and updates in user's machines are done automatically.

Mozilla Firefox also has an extension store, and with few modifications to the manifest file, the same Chrome extension can be submitted to Firefox Browser Add-ons [65]. The update process is similar to Chrome Web Store, where you only need to upload a new version, and distribution is done automatically.

10.3 Mobile apps

As mentioned in chapter 9.1.9, both iOS and Android apps were built by the teams from the Software Project course. Those apps are distributed correspondingly through Apple App Store [66] and Google Play Store [67].

11 Testing and Validation

This section gives an overview of testing methods of xLaw extension, xLaw Legal and xLaw Word. This is followed by usage information and user satisfaction analysis.

11.1 xLaw extension

xLaw extension has both unit tests and end-to-end tests. For unit testing Jest library [68] is used, and core functions like identifying references from the legal acts are covered with unit tests. For the end-to-end tests, Playwright is used. The Playwright is Node.js library to automate browser testing with API [69]. Fortunately, Playwright also enables adding an extension to the browser and therefore enables testing of extensions.

Playwright automates auto-waits (Figure 29), and there is no need to use timeouts, so it's relatively easy to automate user actions.

```
async openPopoverFor(para: string) {
  assert( value: (await page.$('.xlw-popover')) === null, message: 'Popover should be closed');
  const button = await page.waitForSelector(`#xlaw-para-${para}`);
  await button!.click();
  const pop = await page.$('.xlw-popover');
  assert( value: pop !== null, message: 'Popover should be open');
  return popover(page, pop);
},
```

Figure 29. Playwright auto-wait example.

Playwright library with Jest framework was used to test core interactions with the extension like adding information (Figure 30), updating, and deletion.

```
test( name: 'Add private comment', fn: async () => {
  await page.goto('https://www.riigiteataja.ee/akt/krts');
  const rt = riigiteataja(page);

  await performAddCommentFlow(rt, location: 'para2', comment: {
    title: 'My entry',
    excerpt: 'My comment with some **Markdown**.',
    link: 'http://www.example.com/',
    keywords: 'sample; test',
  });

  {
    const popover = await rt.openPopoverFor( para: 'para2');
    const comments = await (await popover.privateComments()).comments();
    expect(comments).toHaveLength( expected: 1);

    const comment = comments[0];
    await expect(comment.title()).resolves.toEqual( expected: 'My entry');
    await expect(comment.excerpt()).resolves.toEqual( expected: 'My comment with some Markdown.');
    await expect(comment.excerptHtml()).resolves.toMatch( expected: /<strong>Markdown<\/strong>/);
    await expect(comment.link()).resolves.toEqual( expected: 'http://www.example.com/');
    await expect(comment.keywords()).resolves.toEqual(expect.arrayContaining( arr: ['sample', 'test']));
  }
});
```

Figure 30. xLaw - testing adding the comment

For end-to-end tests, xLaw server was locally used, with the local SQL database and the Firebase Local Emulator [70] for the login process.

11.2 xLaw Legal

Currently, xLaw Legal doesn't have unit tests; however, end-to-end tests are used with a similar manner as detailed in chapter 11.1.

End-to-end tests cover the searching functionality, and example can be seen in Figure 31, which checks if the search result includes the correct act. The server is used locally for testing; however, it has an actual connection to Azure Cognitive Search as there is no emulator for Cognitive Search.

```
test( name: 'Estonian law search', fn: async () => {
  await page.goto(legal.url);

  const legalPage = createLegalEePage(page);
  await legalPage.signIn( email: 'test@test.xlaw.eu', password: 'hunter2');
  await legalPage.fillSearchInput( searchTerm: 'müra');
  await legalPage.searchInLaw();

  const acts = await legalPage.getMatchedLawActs();

  expect(acts).toContain( expected: 'KorS');
  expect(acts.slice(0, 3)).toMatchSnapshot();
});
```

Figure 31. xLaw Legal - search test

11.3 xLaw Word

Office Add-in has many different clients where it can run. xLaw Word supports Office 2013, Office 2016, Office 365, Office Online, and depending on the operating system of the computer, desktop Office can use Internet Explorer, Edge, Edge Chromium or Safari to run Office Add-in. Depending on the Office version, the API to interact with the documents can vary. For example, Template's functionality can't be offered in Office 2013, because of the API shortcomings. Unfortunately, Microsoft doesn't have a suitable testing environment for Office Add-ins and therefore, xLaw Word doesn't have automated tests. Manual testing is used to be sure that add-in works, and new developments don't break existing functionality. Test cases of testing xLaw Word can be found in Appendix IV. Testing involves going through test cases in multiple virtual machines as, unfortunately, there can be only one instance of Microsoft Office per operating system.

11.4 User training

The author has done 140 training sessions with customers and potential customers in the past 3.5 years (from January 2018 till May 2021). Those sessions have served the purposes of getting new customers, gathering feedback, and development ideas. Training lasts 1 hour, and there at first high-level overview is given, and a product walkthrough follows. Participants comment, ask questions during the walkthrough. The author has

received many ideas on both how to improve the usability and which features to add. In around 30 % of conducted sessions, participants have done the walkthrough along with their laptops. This method takes more time, and 1 hour isn't enough, so typically those have lasted around 1 hour and 20 minutes. However, in those cases, participants are more engaged, and questions are more thorough.

11.5 Usage

xLaw is offered as software as a service (SaaS) model with a monthly fee per user. As of April 2021, xLaw products are used by more than 1800 lawyers in Estonia. The author estimates that there are around 4000 lawyers in total in Estonia. The client's list includes attorneys, judges, prosecutors, notaries, bailiffs, trustees, government agencies, and local municipalities. Typically, the client is a legal entity, who buys access to multiple users. Some client testimonials can be read from Appendix II, those are one of the largest Law Firms in Estonia, and they are delighted with the use of xLaw. Testimonials include phrases – "greatest digital assistant", "simple and brilliant", "irreplaceable tool", "contributes to better quality", etc. Churn rate measures the percentage of clients leaving the service, xLaw's churn rate in 2020 was less than 0.5 %, and the reason for leaving was the budget constraints in two governmental agencies and not related to the product itself.

11.6 Net Promoter Score

Net Promorter Score (NPS) is a widely used metric to measure customer sentiment. According to the Fortune it is used by 2/3 of the Fortune 1000 companies [71]. In essence, it asks a simple question from the users: How likely is it you would recommend us to a friend? And the results are in 0 to 10. Number zero represents "Not at all likely" and number ten represents "Extremely likely". As xLaw is meant only as a professional tool for Lawyers, the question was modified to "How likely is it you would recommend us to your Lawyer colleagues?". The idea behind NPS is that results 9 to 10 represent promoters. Promoters are enthusiastic fans. Results 7 to 8 represent passives. According to the Bain & Company, passives have 50% lower repurchase and referral rates as promoters. Results 0 to 6 are called detractors – unhappy customers. NPS score is derived

by subtracting from the percentage of the promoters the percentage of the detractors, as seen in Figure 32 [72].
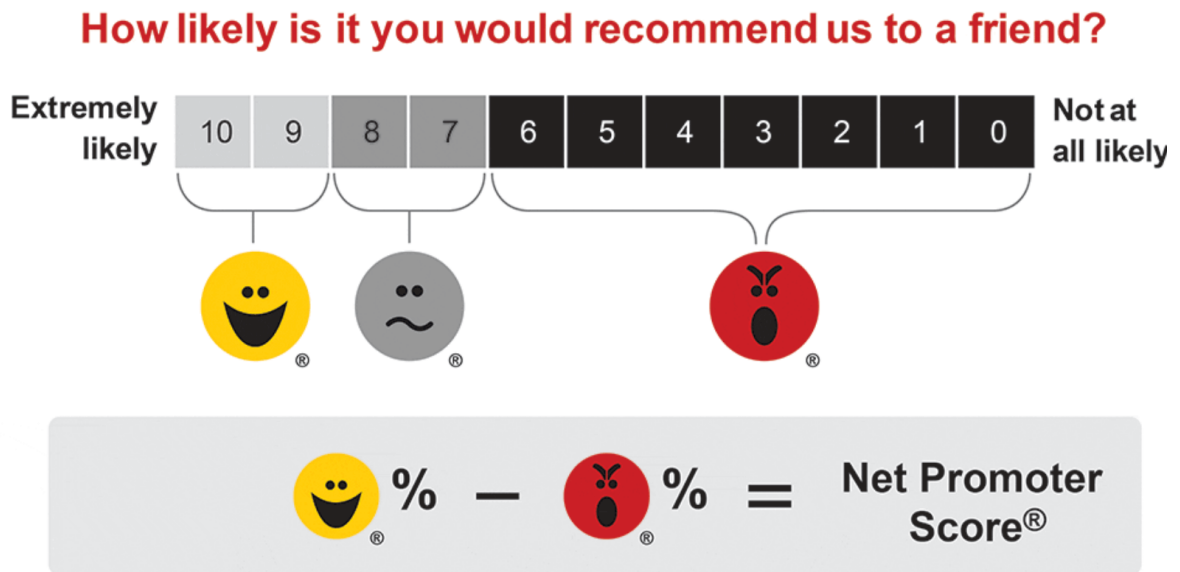
Figure 32. NPS score [72]

According to the Customer Experience Managament plafrom's Retently, the NPS score above 0 is considered good, 30 - 70 is considered great and 70 - 100 is considered excellent. Their survey found that the average NPS among business-to-business (B2B) and software as a Service (SaaS) is 30 [73].

xLaw NPS score as of May 2021 is 93, which is also supported by the almost non-existent churn rate and the fact that more than 70 % of new customers in 2020 joined through getting a recommendation from the existing users.

12 Future work

The same process can also be applied to other countries. Already prototype for Latvian market is built, and first Law Firm is piloting the initial version on top of Latvian State Gazette.

Also, many improvements can also be made in Estonian market. For example, Supreme Court citations mentioned in chapter 4.4 could be represented in visual citation network form. Also, xLaw Legal could have more sources, so Lawyers would find even more information from the one website.

Currently, all the sources are ordered by date; however, ranking algorithms could be used to help to display more relevant sources first.

As time progresses, link rot can appear. Hyperlinks tend to age as new websites are built. One solution for that is to build a cache layer, which serves the content from the cache when the original source isn't available anymore.

Currently, xLaw is a professional tool built for lawyers, with the feedback collected from lawyers. The needs of other professions (e.g., auditors, accountants), who have to work with legal acts often, could also be explored.

Summary

The author conducted interviews with lawyers to identify shortcomings in their work processes. As it was identified that lawyers need to go through a vast amount of legal information, then that lead the author to three research questions: "how to link data together in a way that lawyers could be more efficient in working through the legal information that is relevant to them in particular circumstances?", "how to collect different data sources and provide a search, which considers grammatical cases of the Estonian language?", "how to effectively organize and share legal information?". The author built the tool, xLaw, to answer those questions.

Lawyers work daily with official state gazette Riigi Teataja, Supreme Court website, EU gazette EUR-LEX, and Microsoft Word. xLaw enhances all those platforms. Also, a separate xLaw Legal portal (https://legal.ee) was built.

xLaw extension turns references in legal acts into links and helps to see extra information relevant to the specific section of a legal act– translations, explanatory memorandums, redactions, comments, articles, etc.

xLaw Legal portal helps to search for legislation, court cases, and extrajudicial decisions from one place and considers Estonian grammatical cases for enhancing search experience.

xLaw Microsoft Word add-in helps Lawyers in the document writing phase by providing a way to save, share and manage contract clauses, comments and templates.

xLaw is widely adopted among lawyers in Estonia (more than 1800 users), with a Net Promoter Score of 93 and churn rate less than 0.5 %.

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Appendix

I.   Use Cases

Use Case is a specification of sequences of actions, including variant sequences and error sequences, that a system, subsystem, or class can perform by interacting with outside objects to provide a service of value. A use case scenario is a valid sequence of interactions that result from the main, alternative, and exception scenarios defined for the use case that leads to a defined end of the use case.[1]

Before xLaw - State Scenarios

Before xLaw-State Scenarios are describing use cases as they were done before xLaw or currently by Lawyers who are not using xLaw.

Use Case: Searching information related to a specific section of a legal act
Primary actor:

A Lawyer

Goal:

Find relevant sources, which interpret a specific section of a legal act

Preconditions:

A lawyer is in state gazette Riigi Teataja and has found law and a specific section he/she needs an interpretation on.

Postconditions:

A lawyer has collected sources related to this specific section

Main scenario:

1. Lawyer goes to Supreme Court website (www.riigikohus.ee)
2. Lawyer types in a search bar the name of an Act and section
3. Opens search results
4. Repeats steps 1-3 with other websites:

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[1] Requirements Engineering: Fundamentals, Principles and Techniques. K.Pohl. 2010th Edition, pages 163-165.

www.riigiteataja.ee – for lower level court cases

www.juridica.ee -scientific journal

www.riigikogu.ee – explanatory memorandums

Depending on the topic: Consumer Disputes Committee, Labour

dispute committee, Public Procurement Review Committee,

Industrial Property Board of Appeal websites

5. Has now list of sources, with which he/she can work on

Alternative scenario:

1. Lawyer goes through all the websites in main scenario

2. Lawyer doesn't find any sources related to specific section.

Use Case: Saving information related to a specific a section of a legal act
Primary actor:

A Lawyer

Goal:

Save information about specific section of a legal act for future use

Preconditions:

Lawyer has found an article about specific topic from where he/she wants to

save relevant information

Postconditions:

Information is saved and findable

Main scenario:

1. Lawyer finds important information piece from journal article/court case

2. Lawyer saves the whole article as PDF to folder in his/her computer

Alternative scenario:

2a. Lawyer saves specific part of the document to Word file

Use Case: Finding saved information related to a specific section of a legal act
Primary actor:

A Lawyer

Goal:

Find saved information about specific section of legal act

Preconditions:

Lawyer has saved an article about specific topic as PDF to folder in his/her

computer

Postconditions:

Information has been found

Main scenario:

1. Lawyer opens document folder in his/her computer

2. Lawyer opens folder related to specific legal area

3. Lawyer finds article´s PDF

4. Lawyer opens PDF and searches for information about specific section of a legal act

5. Lawyer has now information that he/she needed

Alternative scenario:

2a. Lawyer searches for the article in his/her folders
3b. Lawyer does not find article as he/she does not remember the name of the article

Use Case: Preparation of a legal document
Primary actor:

A Lawyer

Goal:

Prepare a legal document with company data and reference to law, judgments,

etc

Preconditions:

Lawyer has opened Microsoft Word

Postconditions:

A Lawyer has prepared a legal document with necessary information

Main scenario:

1. Lawyer starts writing an appeal in Word

2. Lawyer goes to Business registry https://ariregister.rik.ee/

3. Lawyer searches the company by its name

4. Lawyers sees the search results and copies to Word

5. Lawyer removes unnecessary information about the company

6. Lawyer searches for an appeal that he/she could reuse in his/her folders

7. Lawyer opens the document and searches for parts that he/she wants to use and copies to new document

8. Lawyer has in his/her document references to court decisions and sections of legal acts

9. Lawyer opens riigiteataja.ee webpage and searches for legal act and sections in order to see and copy the text of the section

10. Lawyer opens riigikohus.ee webpage and searches for a court decision by its number, sees decisions´s text and copies text to his/her Word document

Alternative scenario:

6a. Lawyer does not find the appeal that he/she was searching for

xLaw-State Scenarios

xLaw-State scenarios describe more convenient and efficient use cases to satisfy the same goals as before xLaw-state scenarios are pursuing.

Use Case: Searching information related to a specific section of a legal act
Primary actor:

A Lawyer

Goal:

Find relevant sources, which interpret a specific section of a legal act

Preconditions:

A Lawyer is in state gazette Riigi Teataja and has found an Act and a specific section he/she needs an interpretation on.

Postconditions:

A Lawyer has collected sources related to this specific section or there are none

Main scenario:

1. Lawyer clicks a button next to a section af an Act and sees list of sources (explanatory memorandums, translations, related judgements, users' commentaries)
2. Lawyer clicks 'Search Supreme Court decisions'
3. User is redirected to Legal.ee webpage
4. User sees search results for Supreme Court decisions related to section
5. User clicks explanatory memorandums next to a section and sees explanatory memorandums related to that section with different dates and content
6. User clicks the date of the explanatory memorandum and is redirected to the relevant draft´s procedure on riigikogu.ee webpage

Alternative scenario:

1a. Lawyer clicks a button and there are no sources about this law article

4a. If there are no decisions related to that section, User sees message 'No search results' in Legal.ee

Use Case: Saving information related to a specific section of a legal act
Primary actor:

A Lawyer

Goal:

Save information about a specific section of a legal act for future use

Preconditions:

Lawyer has found an article about specific topic from where he/she wants to save relevant information

Postconditions:

Information is saved and findable

Main scenario:

1. Lawyers finds important information piece from journal article/court case
2. Lawyer selects a sentence or paragraph and clicks right mouse click
3. Lawyer chooses "Save to xLaw" from context menu
4. Lawyer adds name of an Act and section, next to which he/she wants to see it

Alternative scenario:

5a. Lawyer adds a keyword if the piece isn't related to specific article

Use Case: Finding saved information related to a specific section of a legal act
Primary actor:

A Lawyer

Goal:

Find saved information about a specific section of a legal act.

Preconditions:

Lawyer has saved important information to xLaw about the section of a legal act.

Postconditions:

Information has been found

Main scenario:

1. Lawyer opens an Act in Riigi Teataja
2. Lawyer clicks a button next to a section of a legal act and sees list of sources
3. Lawyer finds the exact information that he/she saved related to the section

Alternative scenario:

1a. Lawyer opens xLaw keywords in Riigi Teataja

2a. Lawyer finds keyword that he/she added when saving information

3a. Lawyer finds saved information

Use Case: Preparation of a legal document

Primary actor:

A Lawyer

Goal:

Prepare a legal document with company data and reference to a Law, decisions, etc.

Preconditions:

A lawyer has opened Word

Postconditions:

A Lawyer has prepared a legal document with necessary information

Main scenario:

1. Lawyer starts writing an appeal in Word
2. Lawyer opens Business registry tab in xLaw task pane and searches for a company
3. Lawyer chooses 'Add to document' and sees company´s information in his/her document in a suitable form
4. Lawyer opens template of an appeal that he/she wants to reuse from xLaw task pane´s Templates tab (has been saved previously)
5. Lawyer has in his/her document references to court decisions and sections of legal acts
6. Lawyer highlights Supreme Court decisions´s number and clicks tab 'Search court cases' in xLaw task pane
7. Court case is opened in riigikohus.ee as a separate window
8. Lawyer opens Riigi Teataja tab in xLaw task pane and searches for a section of a legal act (e.g. TLS § 25)
9. Lawyer sees section´s text and can add text to his/her Word document by clicking 'Add to document'
10. Lawyer saves new appeal as template (adding document name, explanation, category and language

Alternative scenario:

8a. Lawyer highlights section of a legal act in his/her Word document and clicks 'Open in Riigi Teataja'

II. Client testimonials

Law Firm SORAINEN
xLaw is the greatest digital assistant for a lawyer. It makes work quicker and increases quality, bringing court judgments and community wisdom from the depths of databases directly to the epicentre of an attorney's workflow. Lawyers used to work with bits and pieces of legislation, but now xLaw integrates all pieces of laws and relevant court practice into comprehensive knowledge. xLaw is great for any user – a beginner can immediately benefit from the wisdom of xLaw without a hassle, but a power user can unleash the true powers of the tool to transform work habits and significantly increase efficiency. Simple and brilliant!

Law Firm COBALT
xLaw has helped to make work more efficient and faster for the attorneys and lawyers in Law Firm COBALT. Quick search, explanatory memorandums, and court judgments next to the relevant sections in the "Riigi Teataja" ("Official Gazette"), and the possibility to include your notes to sections – these are just a few examples of its functionalities that we find indispensable to our work today.

Ellex Raidla Law Firm
xLaw is an everyday tool in Ellex Raidla law firm. It makes our work simpler. In a large office, it is important to ensure that information moves quickly. xLaw has created excellent conditions for working with clients, with the possibility to conveniently attach comments and explanations to sections of Acts. Quick search and the availability of additional sources linked to sections are also great functions

PwC Legal Estonia
As said, PwC Legal is a true fan of automation and efficiency tools and xLaw is a great example of that. It has become an indispensable solution used daily by all our attorneys and lawyers as it enables us to gather collective wisdom and share it internally with everyone. Therefore, xLaw contributes to better quality of legal analysis and saves time and therefore clients' money.

Law Firm WALLESS
WALLESS Law Firm was one of the first to use xLaw tool, and our attorneys are very happy with it. We are fascinated by how simple it is and how practical its developers are. Rather than adding "bells and whistles", they focus on what lawyers really need. xLaw helps save working hours. We recommend it.

Law Firm Triniti
An irreplaceable tool for every lawyer, whether you are a judge, lawyer or prosecutor. User convenience has been the development focus, and xLaw system is one of the few cases where the solution reveals that its author is both a lawyer and a world-class developer. xLaw allows us in TRINITI to work more efficiently and logically. First, because the solution is holistic and functions in the same way in the databases of legal acts and court decisions, and even in European Union databases. Second, because it provides added value by functioning in browsers as well as text processing programmes. Third, it "knows" Estonian. Every new xLaw module and functionality that is developed keeps in mind the needs of lawyers, be it data query from the Estonian Commercial Register or automation of document production.

NJROD Law Firm

Lawyers of NJORD Law Firm use the xLaw application daily and in their opinion, it provides a fast and effortless search for court decisions that are linked to legal provisions and interpret the provisions. It is excellent that the provisions, which have entered into force, are linked to the relevant explanatory memorandums, because it is often necessary to investigate the background of a provision to understand the essence and purpose of the provision. We find that the xLaw application is a practical tool in legal counselling.

Law Firm Hedman Partners & Co

Using xLaw has become a natural part of the daily work of our attorneys. We are particularly happy that xLaw is able to quickly and conveniently identify court judgments and legal literature related to specific provisions. This makes legal analysis significantly easier.

III. User interviews

Semi-structured user interview questions:

1) Which websites do you use in your work? How and for what are you using those?

2) If and which actions are similar and repetitive?

3) If and from which sources the information should/could be pulled together?

4) How do you find past work of your colleagues (and your own)?

IV. Test plan for xLaw Word

TC1
Heading: User can open xLaw task pane
Description: User can click on xLaw icon in Word´s upper right corner and task pane opens
Pre-conditions:
User has xLaw account activated
User has installed and opened Microsoft Word
User has signed in
Steps:
User can see xLaw icon
When moving mouse cursor on the icon, User can see tooltip xLaw Click to see xLaw
User clicks xLaw icon
xLaw task pane opens on the right side
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see xLaw icon
/Passes
User can see tooltip xLaw Click to see xLaw /Passes
User can click xLaw icon /Passes
User can see xLaw task pane on the right side /Passes
Status: Test passes
Comments: -

TC2
Heading: User can update xLaw Add-in
Description: If User does not see xLaw task pane´s content then User sees information that xLaw Add-in needs updating and User can update it
Pre-conditions:
User has opened xLaw task pane
Steps:
User can see xLaw task pane on the right side
User can see xLaw icon and text 'xLaw- knowledge management system An update is required for add-in. Features, terms of use, and other details may have changed.'
User can see and click blue button 'Update now'
After clicking 'Update now' task pane closes
xLaw icon is seen in the upper right corner
User can click the icon
xLaw task pane opens on the right side
User does not see requirement to update the Add-in
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see xLaw task pane on the right side /Passes
User can see task pane´s content: xLaw icon and text 'xLaw- knowledge management system An update is required fot his add-in. Features, terms of use, and other details may have changed.'/Passes
User can see and click blue button 'Update now' /Passes
After clicking 'Update now' task pane closes /Passes

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xLaw icon is seen in the upper right corner /Passes

User can click the icon /Passes

xLaw task pane opens on the right side /Passes

User does not see requirement to update the Add-in /Passes

Status: Test passes

Comments: This test case can be tested only if some features, terms of use or other details of xLaw Add-in have changed

TC3

Heading: User can see added comments

Description: User can see his/her and group´s added comments in xLaw task pane

Pre-conditions:

User has opened xLaw task pane

Steps:

User can see xLaw task pane on the right side

User can see and click Comments tab

User can see search field with placeholder 'Search keywords'

User can click on search field and search keyword 'mõistlik aeg'

As User has not added comment with keyword 'mõistlik aeg' User can not see any comments

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can see xLaw task pane on the right side /Passes

User can see and click Comments tab /Passes

User can see search field with placeholder 'Search keywords' /Passes

User can click on search field and search keyword 'mõistlik aeg' /Passes

As User has not added comment with keyword 'mõistlik aeg' User can not see any comments /Passes

Status: Test passes

Comments: -

TC4

Heading: User can add comment

Description: User can add comment in xLaw task pane´s Comments tab

Pre-conditions:

User has opened xLaw task pane and Comments tab

Steps:

User can see blue button 'Add comments'

User can click the button

User can see following fields: 'Keywords', 'Title', 'Comment', 'Language' and 'Jurisdiction'

User can see following placeholders:

'Keyword' – Separate keywords with ; symbol

'Title:' – e.g tilted toward client

'Comment:'- Add your citation, comment etc

User can see that Language and Jurisdiction fields have default values 'ET' and 'EE'

User can choose 'EN' as language

User can write on keyword field 'mõistlik'

User can see keyword option 'Mõistlik aeg' in a dropdown

User can choose keyword 'Mõistlik aeg' from dropdown and it appears on the keyword field

User can write 'Test' as title

User can write 'Testing comment adding' as comment

User can click blue button 'Save'

User can see added comment with keyword 'Mõistlik aeg' in Comments tab

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can see blue button 'Add comments' /Passes

User can click the button /Passes

User can see following fields: 'Keywords', 'Title', 'Comment', 'Language' and 'Jurisdiction' /Passes

User can see following placeholders:

'Keyword' – Separate keywords with ; symbol

'Title:' – e.g tilted toward client

'Comment:'- Add your citation, comment etc /Passes

User can see that Language and Jurisdiction fields have default values 'ET' and 'EE' /Passes

User can choose 'EN' as language /Passes

User can write on keyword field 'mõistlik' /Passes

User can see keyword option 'Mõistlik aeg' in a dropdown /Passes

User can choose keyword 'Mõistlik aeg' from dropdown and it appears on the keyword field /Passes

User can write 'Test' as title /Passes

User can write 'Testing comment adding' as comment /Passes

User can click blue button 'Save' /Passes

User can see added comment with keyword 'Mõistlik aeg' in Comments tab /Passes

Status: Test passes

Comments: -

TC5

Heading: User can change comment

Description: User can change comment in xLaw task pane´s Comments tab

Pre-conditions:

User has opened xLaw task pane and Comments tab

Steps:

User can see comment with keyword 'Mõistlik aeg'

User can click on the comment

User can see comment´s heading and conten

User can see paper and pencil icon for comment´s changing

User can click on the icon

User can see comment´s fields that are prefilled

User can change title 'Test' to 'Test 23.04.2021 ?=)(/&%¤#"!!*§' using different symbols and numbers

User can change comment 'Testing comments adding' to 'Testing comments adding and changing !"#¤%&/()=?§½`<> 11.01.2021' using different symbols and numbers

User can click blue button 'Save' in order to save changes

User can see that comment´s title and content have changed

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can see comment with keyword 'Mõistlik aeg' /Passes
User can click on the comment /Passes
User can see comment´s heading and content /Passes
User can see paper and pencil icon for comment´s changing /Passes
User can click on the icon /Passes
User can see comment´s fields that are prefilled /Passes
User can change title 'Test' to 'Test 2021' /Passes
User can change comment 'Testing comments adding' to 'Testing comments adding and changing' /Passes
User can click blue button 'Save' in order to save changes /Passes
User can see that comment´s title and content have changed /Passes
Status: Test passes
Comments: -

TC6
Heading: User can add comment to document
Description: User can add comment to documentin xLaw task pane´s Comments tab
Pre-conditions:
User has opened xLaw task pane and Comments tab
User has clicked on the comment
Steps:
User can see the comment´s title and content
User can see the button 'Add to document' under the Title of the comment
User can click on the button 'Add to document'
User can see comment´s content in his/her Word document
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see the comment´s title and content /Passes
User can see the button 'Add to document' under the Title of the comment /Passes
User can click on the button 'Add to document' /Passes
User can see comment´s content in his/her Word document /Passes

Status: Test passes
Comments: -

TC7
Heading: User can delete comment
Description: User can delete comment in xLaw task pane´s Comments tab
Pre-conditions:
User has opened xLaw task pane and Comments tab
User has clicked on the comment
Steps:
User can see the comment´s title and content
User can click on the paper and pencil icon for comment´s changing
User can see at the bottom of the task pane 'Delete this comment' in red color
User can click 'Delete this comment'
After clicking it, User can see a confirmation pop up with text 'Delete comment Are you sure want to delete this comment?'

User can see buttons 'Delete' and 'Cancel'

User can click on the button 'Delete'

After clicking the button, User can see Comments tab without deleted comment

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can see the comment´s title and content /Passes

User can click on the paper and pencil icon for comment´s changing /Passes

User can see at the bottom of the task pane 'Delete this comment' in red color /Passes

User can click 'Delete this comment' /Passes

After clicking it, User can see a confirmation pop up with text 'Delete comment Are you sure want to delete this comment?' /Passes

User can see buttons 'Delete' and 'Cancel' /Passes

User can click on the button 'Delete' /Passes

After clicking the button, User can see Comments tab without deleted comment /Passes

Status: Test passes

Comments: -

TC8

Heading: User can add contract clause

Description: User can add contract clause in xLaw task pane´s Contract clauses tab

Pre-conditions:

User has opened xLaw task pane

Steps:

User can click on 'Contract clauses' tab

User can see blue button 'Add clauses'

User can click the button

User can see following fields: 'Contract Name(s)', 'Contract Section(s)', 'Clause', 'Explanation' and 'Category (optional)'

User can choose 'ET' as language

User can write on 'Contract Name(s)' field 'Tööleping'

User can write on 'Contract Section(s)' field 'Konkurentsipiirang'

User can write on 'Clause' field 'Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.'

User can write on 'Explanation' field 'Töölepingu ajal'

User can write on 'Category (optional)' field 'Töölepingud'

User can click blue button 'Save'

User can see added clause with name 'Tööleping' in Contract clauses tab

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can click on 'Contract clauses' tab /Passes

User can see blue button 'Add clauses' /Passes

User can click the button /Passes

User can see following fields: 'Contract Name(s)', 'Contract Section(s)', 'Clause', 'Explanation' and 'Category (optional)' /Passes

User can choose 'ET' as language /Passes

User can write on 'Contract Name(s)' field 'Tööleping' /Passes

User can write on 'Contract Section(s)' field 'Konkurentsipiirang' /Passes

User can write on 'Clause' field 'Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.' /Passes

User can write on 'Explanation' field 'Töölepingu ajal' /Passes

User can write on 'Category (optional)' field 'Töölepingud' /Passes

User can click blue button 'Save' /Passes

User can see added clause with name 'Tööleping' in Contract clauses tab /Passes

Status: Test passes

Comments: -

TC9

Heading: User can change contract clause

Description: User can change clause in xLaw task pane´s Contract clauses tab

Pre-conditions:

User has opened xLaw task pane and Contract clauses tab

Steps:

User can see under contract clauses and click contract name 'Tööleping'

After clicking contract name User can see and click contract section 'Konkurentsipiirang'

User can see Explanation and Clause

User can click paper and pencil icon for contract clause´s changing

User can change Clause ' Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.' to '1234567890!"#¤%&/()=?§½ Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.' using different symbols and numbers

User can click blue button 'Save' in order to save changes

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can see under contract clauses and click contract name 'Tööleping' /Passes

After clicking contract name User can see and click contract section 'Konkurentsipiirang' /Passes

User can see Explanation and Clause /Passes

User can click paper and pencil icon for contract clause´s changing /Passes

User can change Clause ' Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.' to '1234567890!"#¤%&/()=?§½ Käesoleva Töölepingu kehtivuse ajal ei tohi Töötaja tegeleda Tööandjaga konkureeriva tegevusega, v.a kui Tööandja on kirjalikult nõustunud teisiti.' using different symbols and numbers /Passes

User can click blue button 'Save' in order to save changes /Passes

Status: Test passes

Comments: -

TC10

Heading: User can add contract clause to document

Description: User can add contract clause to document in xLaw task pane´s Contract clause tab

Pre-conditions:

User has opened xLaw task pane and Contract clause tab

User has clicked on the contract name

User has clicked on the contract section

Steps:
User can see the Explanation and Clause
User can see the button 'Add to document' under the Explanation
User can click on the button 'Add to document'
User can see contract clause in his/her Word document
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see the Explanation and Clause /Passes
User can see the button 'Add to document' under the Explanation /Passes
User can click on the button 'Add to document' /Passes
User can see contract clause in his/her Word document /Passes
Status: Test passes
Comments: -

TC11
Heading: User can delete contract clause
Description: User can delete contract clause in xLaw task pane´s Contract clause tab
Pre-conditions:
User has opened xLaw task pane and Contract clause tab
User has clicked on the contract name
User has clicked on the contract section
Steps:
User can see the Explanation and Clause
User can click on the paper and pencil icon for contract clause´s changing
User can see at the bottom of the task pane 'Delete this clause' in red color and click it
After clicking it, User can see a confirmation pop up with text 'Delete clause Are you sure want to delete this clause?'
User can see buttons 'Delete' and 'Cancel'
User can click on the button 'Delete'
After clicking the button, User can see Contract clauses tab without deleted clause
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see the Explanation and Clause /Passes
User can click on the paper and pencil icon for contract clause´s changing /Passes
User can see at the bottom of the task pane 'Delete this clause' in red color and click it /Passes
After clicking it, User can see a confirmation pop up with text 'Delete comment Are you sure want to delete this clause?' /Passes
User can see buttons 'Delete' and 'Cancel' /Passes
User can click on the button 'Delete' /Passes
After clicking the button, User can see Contract clauses tab without deleted clause /Passes
Status: Test passes
Comments: -

TC12
Heading: User can add template
Description: User can add template in xLaw task pane´s Templates tab
Pre-conditions:
User has opened an Employment contract in Word
User has opened xLaw task pane and Templates tab

Steps:
User can click on 'Templates' tab
User can see and click blue button 'Add templates'
User can see following fields: 'Document name', 'Explanation' and 'Category (optional)'
User can choose 'EN' as language
User can write on 'Document Name' field 'Employment contract'
User can write on 'Explanation' field 'IT specific'
User can write on 'Category (optional)' field 'HR documents'
User can click blue button 'Save this document as a template'
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can click on 'Templates' tab /Passes
User can see and click blue button 'Add templates' /Passes
User can see following fields: 'Document name', 'Explanation' and 'Category (optional)'
/Passes
User can choose 'EN' as language /Passes
User can write on 'Document Name' field 'Employment contract' /Passes
User can write on 'Explanation' field 'IT specific' /Passes
User can write on 'Category (optional)' field 'HR documents' /Passes
User can click blue button 'Save this document as a template' /Passes
Status: Test passes
Comments: -

TC13
Heading: User can add another template
Description: User can add another template in xLaw task pane´s Templates tab
Pre-conditions:
User has opened a Member of the Board contract in Word
User has opened xLaw task pane and Templates tab
Steps:
User can click on 'Templates' tab
User can see and click blue button 'Add templates'
User can see following fields: 'Document name', 'Explanation' and 'Category (optional)'
User can choose 'EN' as language
User can write on 'Document Name' field 'Member of the Board contract'
User can write on 'Explanation' field 'Management'
User can write on 'Category (optional)' field 'Management documents'
User can click blue button 'Save this document as a template'
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can click on 'Templates' tab /Passes
User can see and click blue button 'Add templates' /Passes
User can see following fields: 'Document name', 'Explanation' and 'Category (optional)'
/Passes
User can choose 'EN' as language /Passes
User can write on 'Document Name' field 'Member of the Board contract' /Passes
User can write on 'Explanation' field 'Management' /Passes
User can write on 'Category (optional)' field 'Management documents' /Passes
User can click blue button 'Save this document as a template' /Passes
Status: Test passes

Comments: -

TC14
Heading: User can filter templates
Description: User can filter templates by category in xLaw task pane´s Templates tab
Pre-conditions:
User has opened xLaw task pane and Templates tab
Steps:
User can see default value 'All' under Category
User can see in Templates tab two templates with names 'Employment contract' and 'Member of the Board contract'
User can click on Category field and dropdown opens
User can choose 'HR documents'
User can see in Templates tab a template with name 'Employment contract'
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see default value 'All' under Category /Passes
User can see in Templates tab two templates with names 'Employment contract' and 'Member of the Board contract' /Passes
User can click on Category field and dropdown opens /Passes
User can choose 'HR documents' /Passes
User can see in Templates tab a template with name 'Employment contract' /Passes
Status: Test passes
Comments: -

TC15
Heading: User can change template
Description: User can change template in xLaw task pane´s Templates tab
Pre-conditions:
User has opened xLaw task pane and Templates tab
Steps:
User can see under templates and click contract name 'Employment contract'
User can click paper and pencil icon for template´s changing
User can change Explanation 'IT specific' to 'IT specific contracts'
User can click blue button 'Save' in order to save changes
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can see under templates and click contract name 'Employment contract' /Passes
User can click paper and pencil icon for template´s changing /Passes
User can change Explanation 'IT specific' to 'IT specific contracts' /Passes
User can click blue button 'Save' in order to save changes /Passes
Status: Test passes
Comments: -

TC16
Heading: User can delete template
Description: User can delete template in xLaw task pane´s Templates tab
Pre-conditions:
User has opened xLaw task pane and Templates tab

User has clicked on the contract name

Steps:

User can click on the paper and pencil icon for template´s changing

User can see at the bottom of the task pane 'Delete this template' in red color and click it

After clicking it, User can see a confirmation pop up with text 'Delete template Are you sure want to delete this template?'

User can see buttons 'Delete' and 'Cancel'

User can click on the button 'Delete'

After clicking the button, User can see Templates tab without deleted template

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can click on the paper and pencil icon for template´s changing /Passes

User can see at the bottom of the task pane 'Delete this template' in red color and click it /Passes

After clicking it, User can see a confirmation pop up with text 'Delete template Are you sure want to delete this template?' /Passes

User can see buttons 'Delete' and 'Cancel' /Passes

User can click on the button 'Delete' /Passes

After clicking the button, User can see Templates tab without deleted template /Passes

Status: Test passes

Comments: -

TC17

Heading: User can add company details from business registry

Description: User can add company details from business registry to his/her Word document

Pre-conditions:

User has opened xLaw task pane

Steps:

User can click on 'Business registry' tab

User can see options 'Estonia' (chosen by default), 'Latvia' and 'Denmark'

User can see search field with placeholder 'Type business name'

User can write on field 'exte' and sees many results

User can also see and click blue button 'Show all'

After clicking the button User sees information about each result

User can scroll the list and find company with name 'ExtendLaw'

User can choose under the company´s details 'Add to document: EST ENG'

After clicking EST User can see company´s details in Estonian added to the Word document

Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)

Expected result/actual result:

User can click on 'Business registry' tab /Passes

User can see options 'Estonia' (chosen by default), 'Latvia' and 'Denmark' /Passes

User can see search field with placeholder 'Type business name'/Passes

User can write on field 'exte' and sees many results /Passes

User can also see and click blue button 'Show all' /Passes

After clicking the button User sees information about each result /Passes

User can scroll the list and find company with name 'ExtendLaw' /Passes

User can choose under the company´s details 'Add to document: EST ENG' /Passes

After clicking EST User can see company´s details in Estonian added to the Word document /Passes
Status: Test passes
Comments: -

TC18
Heading: User can open company´s registry card
Description: User can open company´s registry card from Word
Pre-conditions:
User has opened xLaw task pane
User has clicked on 'Business registry' tab
User has searched a company 'ExtendLaw' and sees company´s details
Steps:
User can choose under the company´s details 'Registry Card'
After clicking 'Registry Card' User can see ExtendLaw´s registry card in new window
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User can choose under the company´s details 'Registry Card' /Passes
After clicking 'Registry Card' User can see ExtendLaw´s registry card in new window /Passes
Status: Test passes
Comments: -

TC19
Heading: User can add legal act section
Description: User can search and add a legal act section to Word document
Pre-conditions:
User has opened xLaw task pane
Steps:
User highlights a legal act section 'TLS § 25' in his/her Word document
User clicks Riigi Teataja tab in xLaw task pane
User can see TLS § 25 full text in xLaw task pane
User can see options 'Open in Riigi Teataja' and 'Add to document'
User can click 'Add to document' and text of the section appears in his/her Word document
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User highlights a legal act section 'TLS § 25' in his/her Word document /Passes
User clicks Riigi Teataja tab in xLaw task pane /Passes
User can see TLS § 25 full text in xLaw task pane /Passes
User can see options 'Open in Riigi Teataja' and 'Add to document' /Passes
User can click 'Add to document' and text of a section appears in his/her Word document /Passes
Status: Test passes
Comments: -

TC20
Heading: User can search court case
Description: User can search court case by case number from Word

Pre-conditions:
User has opened xLaw task pane
Steps:
User highlights a court case number '3-2-1-15-10' in his/her Word document
User clicks 'Search court case' tab in xLaw task pane
User can see court case 3-2-1-15-10 opened on Supreme Court´s webpage in new window
Test data: user name (xlawuser08@gmail.com), parool (xLawPassw0rd8)
Expected result/actual result:
User highlights a court case number '3-2-1-15-10' in his/her Word document /Passes
User clicks 'Search court case' tab in xLaw task pane /Passes
User can see court case 3-2-1-15-10 opened on Supreme Court´s webpage in new window /Passes
Status: Test passes
Comments: -

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