Analyzing the New 2019 Dutch Environment and Planning Act

John Bulles[1(✉)], Bas Cartigny[1], and Peter Bollen[2]

[1] PNA Group, Heerlen, The Netherlands
{john.bulles,bas.cartigny}@pna-group.com
[2] Maastricht University, Maastricht, The Netherlands
p.bollen@maastrichtuniversity.nl

Abstract. In The Netherlands, all legislation regarding infrastructure and environment is described in more than 250 legal documents. In 2019 the new "Omgevingswet" (translated as "Environment and planning act" [1, 4]) was supposed to come into force. This law modernizes, harmonizes and simplifies the mentioned regulation and integrates this myriad of legislations, decrees and regulations into one legal framework.

To be able to apply the environment and planning act, legal analysis of this legislation is required. The Dutch Rijkswaterstaat ministerial department [2, 3] has developed an approach to analyze (interpret), structure and store the rules contained in the legislation. In their approach, all rules are associated with activities, which form a functional structure. This functional structure is the baseline from which relevant parts of the legislation is grouped. This paper describes how this approach works, how it is supported by Fact Based Modeling and the software environment used (Cognitation) to perform the document analysis.

Keywords: Laws · Regulations · Cognitation · Omgevingswet
Analysis of legal documents · Fact based modeling (FBM)

1 Introduction

Currently any person or organisation in the Netherlands that wants to interact with the environment, is forced to adhere to many laws and regulations. The legislation concerning infrastructure and environment is described in more than 26 laws, 120 governmental decrees and 120 ministerial regulations. The legislation was never meant to become this extensive, but it grew over time.

In 2015, the Dutch government accepted the law proposal for the new "Omgevings-wet" (translated as "Environment and planning act" [1, 4]). Together with 4 governmental decrees and 10 ministerial regulations, this new legislation will replace (parts of) the current legislation with the intent to modernize, harmonize and simplify the rules on land use, environmental protection, environmental conservation, construction of buildings, protection of cultural heritage, water management, urban and rural redevelopment, development of major public and private works and mining and earth removal.

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The new legislation still adds up to multiple thousands of pages. Therefore the Dutch Rijkswaterstaat (abbreviated into RWS) ministerial department (the Ministry of Infrastructure and the Environment) developed an approach to analyse, structure and store the legislation in order to prepare them for the specification of the underling rules that, eventually, must be implemented in a so-called digital counter. Individuals and organizations will be able to use this digital counter to obtain further information about necessary building permits, notification obligations, etc. needed for particular projects that have an effect on the environment.

Because of the impact this new legislation has on municipalities, provinces and other local governments, the date that this legislation will come into force has already been delayed. It was supposed to come into force in 2019. The described approach makes it possible for RWS to be able to enforce their part of the legislation on time.

Such an approach requires sufficient support in tooling as the amount of legislation makes it impossible for individuals to oversee everything. Therefore RWS put out a tender on support for their approach. PNA has developed a legal analysis software tooling, named Cognitation, which PNA offered for this tender. Cognitation is developed in collaboration with the Dutch Tax Office, after winning the tender for an Annotation environment of "Wendbare Wetsuitvoering" in 2014 [6, 7]. After winning the tender of RWS in February 2017 [5], PNA, in collaboration with RWS, added the necessary changes to Cognitation to be able to fully support the analysis process of RWS.

2 Outline of the Approach

The first step of the approach is building up (part of) a functional structure of activities. Therefore the text is analyzed and all activities and subjects in the documents are identified and annotated. This functional structure describes hierarchical relations between activities and subjects, but also the non-hierarchical relations between two activities, an activity and a subject or two subjects. A subject is a special kind of activity in the hierarchical structure that has no more sub-activities. One of the important demands of RWS for support tooling was to be able to trace the existence of an activity or subject back to a particular piece of text in one (or more) of the legal documents.

After defining the functional structure, a document is analyzed in more depth by defining which sections of a document are linked to a certain activity or subject. When finished, these sections are classified into different categories. The categories indicate, e.g. whether the text describes the scope of the application of the activity/subject, a filling requirement for a permit, or whether a permit is necessary for a certain activity, etc.

Finally the actual set of words which describe a rule for such a category of an activity/subject are annotated in the text. These annotations also belong to a certain category like what, where, who, how much, etc.

Operation areas are determined for the activities and subject as well for some of the rules that are annotated. An operation area describes the actual are of the Netherlands a rule applies to.

All annotations concerning (a set of) activities and/or subjects spanning one or more documents will be subject to a set of validations, which will validate the consistency of the annotations. After this check, the documents together with the annotations are sent to the specification tooling in which the rules are formalized. After the formalization the rules are implemented in a rule based environment.

Because of the detailed analysis at the start of this process, all parts of the resulting model are traceable to a specific part in the legal documents. Through support of Cognitation, RWS has the possibility to trace all implemented rules back to their source. This leads to full traceability of all implemented rules.

Legislation often changes, in case of changes Cognitation supports in identifying and processing the new, changed or deleted parts in the new legislation. This helps to stay compliant at all times.

3 Step 1 - Defining a Functional Structure

An activity describes what type of work an individual or organization can perform on the environment. In the legal documents of the Environment and planning act, a lot of these activities are mentioned. The legal texts are defined in a way that they describe a hierarchical structure of these activities.

For example, two parts from the translation of the Omgevingswet [1]:

"

Article 1.2 (physical environment)

1. This Act is concerned with:

    a. the physical environment, and
    b. activities that affect or may affect the physical environment."

…

Article 4.21 (government regulations relating to buildings)

1. The rules referred to in Article 4.3 relating to construction activities, demolition activities and the use and maintenance of buildings are laid down for the purpose of:

    a. ensuring safety,
    b. safeguarding health,
    c. sustainability.

"

Article 1.2, 1. b. is the description of the root activity which is defined as "activities that affect or may affect the physical environment". In article 4.21, 1. the activity "the use and maintenance of buildings" is mentioned. This activity is hierarchically placed beneath the root activity in article 1.2, 1. b.

This functional structure of activities is not limited to one document. In another document, the "Besluit bouwwerken leefomgeving" (freely translated as Decree buildings living environment), the activities "the use of buildings" and "the maintenance of buildings" are described. These activities are again hierarchically beneath the activity of article 4.21, 1. When activities do not have any more sub-activities, they will be set as a subject.

This kind of relation between activities and subjects is called a "is subactivity of"-relation in the RWS approach. Cognitation is built in a way that it is highly configurable. Therefore this relation can easily be supported by adding an annotation type "Activity", which is used to link concepts of the type activity to parts in the actual documents as shown below (Fig. 1).

Fig. 1. Identifying activities

The created concepts can then be linked using the "is subactivity of" hierarchical relation by creating a binary concept relation. The type of relation is also configured by an administrator, who is able to add multiple types of relations. In the example of above, three relations are defined:

1. "the use and maintenance of buildings" is subactivity of "activities that affect or may affect the physical environment"
2. "the use of buildings" is subactivity of "the use and maintenance of buildings"
3. "the maintenance of buildings" is subactivity of "the use and maintenance of buildings"

Because the complete set of activities will add up to more than 100 different activities, Cognitation offers the user the possibility to filter a part of the functional structure and to display the hierarchical relations in a tree view.

When performing a certain activity other activities are often involved. For example, when building a new garage, you possibly also need a drive-in from the public road. These kind of relations between activities and/or subjects are necessary to support people and organizations when requesting information about particular activities. For this purpose

another concept relation type is introduced: “is legally related to”. This relation offers the possibility to define that, when requesting information about a particular activity, other activities are listed as worthwhile looking at as well.

4 Step 2 - Adding Rule Maintenance Objects

Laws, governmental decrees and ministerial regulations are divided into different types of document structure elements, like parts, chapters, sections and articles. An article again can be divided into clauses which can contain lists. These different text parts of a legal document are used to navigate in a legal document (index), but also are the basis for the next part of the analysis.

In the RWS approach these document structure elements of a legislation are linked to the defined activities and subjects. Such a link states that this part of the document concerns this activity or subject. The hierarchical structure of the activities is used to link the document structure elements as high as possible in this structure. All rules that are defined for an activity will by default also apply to the sub-activities of this activity. Therefore linking as high as possible in the hierarchical structure is preferable.

The next step is to classify the document structure elements as irrelevant for the rule analysis process or as a particular rule maintenance object. If a document structure element is irrelevant for the rule analysis process, this part of the document is no longer issue of further analysis. A rule maintenance object describes a certain field of interest for a specific activity or subject. These fields of interest are categorized as follows:

- Scope of the application,
- Permissions,
- Filing requirements,
- Measures,
- Notification requirements,
- Permit requirements,
- Etc.

A categorized document structure element in Cognitation is called a context. As Cognitation is not a RWS application all these categories, similarly to the concepts and relations, are also configurable. Contexts offer the possibility to add traceability to parts of documents up to single paragraphs. Furthermore, it is possible to filter the actual text of a legal document on basis of these contexts. If a document has multiple hundreds of pages, it is convenient to have the possibility to filter the view, so that only the text which is relevant for the activities is shown. Also Cognitation offers the users navigation possibilities between text, contexts and document structure elements, which helps further analysis.

After performing this step in the RWS approach, it is clear what parts of what documents are needed for a particular activity or set of activities. A filter option in

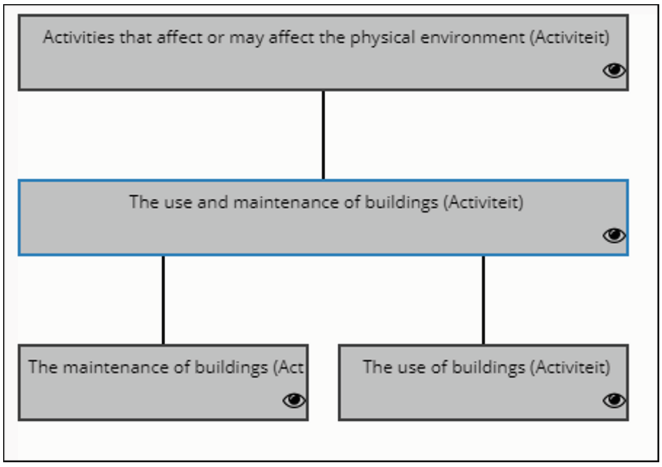

Fig. 2. Functional structure view

Cognitation helps a user to focus on these linked contexts. Also, as shown in the overview of Fig. 2, the user has the possibility to see the linked contexts.

5 Step 3 - Adding the Actual Rules

Now it is clear what parts of the documents are relevant for a particular activity, more thorough analysis can be performed on these sections. Within such a section, one or more legal bases for rules which need to be formalized can be found. A legal base is often a set of words and belongs to a certain category. Again these categories are configurable, but in the RWS approach the following legal base categories are used:

- What
- Where
- How
- How much
- For what
- Who
- When
- Filing requirement

These legal bases are indicated in the text as text annotations of the particular category. The text annotations are all part of the earlier defined contexts, therefore it is also possible to filter out the relevant text annotations for certain activities.

In Cognitation these text annotations can span words from different parts of a document structure element and don't need to be contiguous. Also the same word can be part of multiple text annotations. For lists, the text before the list is often part of text annotation for multiple items of that list.

Additionally, interpretations as to why a certain part of the text is categorized as a particular legal base can be added as well. This helps to understand why a legal analyst made a certain decision.

An example of a categorized text is shown below. As the shown example concerns Dutch legislation the text is also in Dutch (Fig. 3).

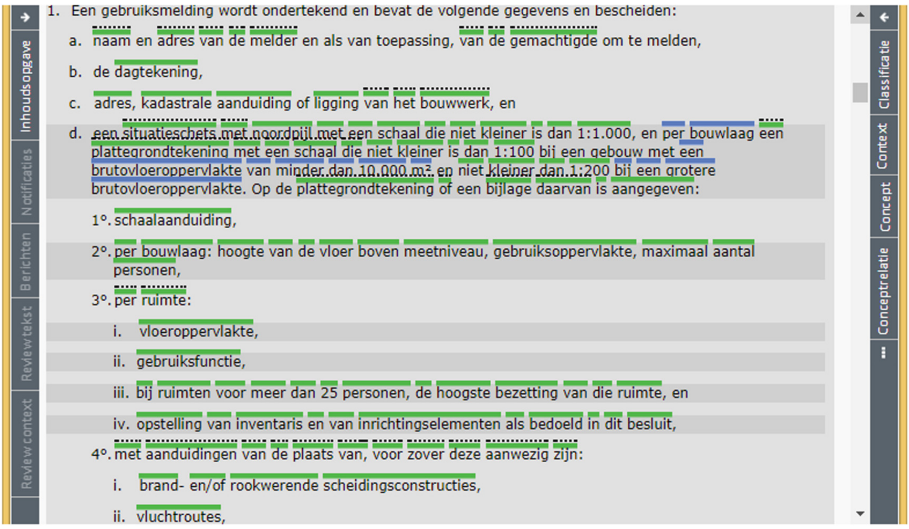

Fig. 3. Annotated legal bases

6 Step 4 – Determining Operating Areas

Parts of the legislation of the Environmental and planning act are limited to certain operating areas. Some rules apply to all of the Netherlands, others only to parts of the Netherlands, like the coastal area or surface water areas. For local governments, an operating area could even be limited to a certain district of a city. Such an operating area exists of one or more polygons. These polygons are described as a set of coordinates.

In the RWS approach, these polygons that describe an operating area are identified with a unique number. This number is used to link an activity or legal base of the category "Where" to an operating area. When formalizing the rules, these are also linked to this operating area number. With this information (rules and operating areas) bundled, a user of the digital counter can easily see which ever set of rules apply to his location in combination with a specific activity.

7 Step 5 – Validating the Annotations

After analyzing a certain part of the functional structure, one wants to be sure that the different annotations (activities, categorized context, legal bases and relations) are consistent. This can be checked using self-defined validations. For example, to have a good functional structure, there are some demands for the activities, subjects and the "is subactivity of"-relations, namely:

- Each activity is subactivity of at most one activity.
- Each subject is subactivity of exactly one activity.
- No activity is subactivity of a subject.
- Is subactivity of-relation has no circularity.

Another check that needs to be performed verifies whether each context that is categorized as a rule maintenance object is linked to exactly one activity or subject and that each such a context has at least one legal base.

8 Step 6 – Exporting the Results

After all violations of validations are resolved, the result of the analysis can be exported. The export of Cognitation exports the documents to a newly developed Dutch standard for public documents [9]. All annotations are exported separated from the actual documents, using the open annotation standard [10].

In the RWS approach, rule analysts use the output to be able to write formal rules which can be used in the digital counter. At all times, all information of the performed analysis is available. This provides traceability of the legal base for all rules used in the digital counter. This is possible because Cognitation has a unique URL for each annotation of the analysis. Entering such an URL into a common browser will lead to the particular part of the document of this annotation.

9 Step 7 – Performing Legal Maintenance

Of course, these legal documents are subject to change. Either to improve them, but also because of changes in other regulations, or just because politicians agree to change some rules.

Instead of repeating the analysis again on the changed document, the document will be uploaded as a new version of an existing document. Cognitation helps the user in viewing the changes of such documents (up to word-level). The user can then migrate all annotations to the newer version, only having to change annotations which contain text changes or adding new annotations for new texts. Also it is possible that a new activity is added, which also influences the functional structure. After applying the necessary changes, the analysis is compliant to the changed regulations.

Cognitation also keeps track of all made changes, which helps in overviewing all changes over time. Also the possibility of defining when which annotation is valid exists, which can help to determine what rules apply at what time.

10 Future Development

RWS is only responsible for a part of the analysis and implementation of the new regulations. Other local governments, like hydrographic confederations, counties and municipalities in the Netherlands also need to apply similar analysis to their part of the process. In the upcoming years this will lead to a lot of changes for these local governments in their process of writing environmental visions, plans, zoning plans, etc.

Because of the complexity of the regulations and current state hereof at these local governments, the intended deadline for compliance to the new law is postponed [8].

11 Summary

The RWS approach for analyzing the legislation of the new Environmental and planning act contains the following steps:

1. *Defining the functional structure*
   A hierarchical structure is defined using the "is subactivity of"-relation between activities and/or subjects. Also the non-hierarchical "is legally related to"-relations are added.
2. *Adding rule maintenance objects*
   For a specific activity or subject it is determined which sections of the legislation describes this activity or subject in more detail. These sections are linked to the activity or subject and then classified into a specific category.
3. *Adding the actual rules*
   Within the rule maintenance objects, legal bases for rules are annotated and classified. Interpretations of the analysts, as to why these annotations are added, are also included.
4. *Determining Operating areas*
   The operating area of an activity or subject is determined and stored. The operating area for specific legal bases of the category "Where" are determined as well.
5. *Validating the annotations*
   All annotations (step 1 to 4) are validated against predefined validation rules. Violations of the validations are repaired.
6. *Exporting the results*
   The results of the previous steps are exported into standardized files (Standaard officiële publicaties (STOP) [9] and Open Annotation standard [10]). These files are used in the tooling for formalizing the rules.
7. *Performing legal maintenance*
   Changes in the legislation are identified and processed.

The support of Cognitation is needed for this process to be able to easily annotate the documents and link all parts of the analysis together. Supporting the user in doing this quickly, but correctly is the main issue for Cognitation. When handling changes in the legislation, Cognitation determines the changes in the documents automatically and where possible migrates the annotations into the new document version.

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