



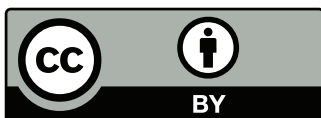
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# List of abbreviations

Abbreviation	
AI	Artificial intelligence
BSW	<i>Behörde für Stadtentwicklung und Wohnen</i>
BUKEA	<i>Behörde für Umwelt, Klima, Energie und Agrarwirtschaft</i>
IDM	Intelligent Dialogue Management
GLA	<i>Geologisches Landesamt (Geological State Office)</i>

SKA	Brief written inquiries (Schriftliche Kleine Anfragen)
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# As-is Business Process Model

This deliverable entails an as-is business process model in BPMN format of the five processes from the short list as well as their corresponding descriptions.

## Executive Summary

This as-is business process model is the deliverable 3 of the project “Determination of the potential for digitisation and harmonisation of processes of the City of Hamburg”. The structure of this document is as follows: After a brief introduction of a short list to be automated with the Intelligent Dialogue Management (IDM) tool as well as other AI & statistical technologies, an as-is process description of each short list process is presented. This includes the key characteristics of the process as well as the as-is BPMN model of each of the five processes on the short list. Some processes include two BPMN models that represent the process from different perspectives or hierarchic levels. The annex contains the as-is BPMN model in German for each short list process.

The **process description and BPMN models** were developed based on the information gathered during the stakeholder interviews and the documentation provided. The BPMN models were further discussed and confirmed in bilateral meetings with the process owners. If any changes are made these will be updated accordingly. A detailed description can be found in the respective chapters, as well as a detailed description of the technologies in Deliverable 2. The following is a summary of the most important points for each process.

The first process is the **‘brief written inquiries’** (Schriftliche Kleine Anfragen) process, which involves inquiries from members of parliament to the Senate of the City of Hamburg, which is required to respond within a few days. For this process multiple technologies can be used to achieve an automation, the IDM tool for a general workflow management, an intelligent search which can be implemented to search for similar inquiries and a classification for the determination of responsibilities to identify the authority that should provide information to answer the inquiry. The process **‘knowledge management’** (Wissensmanagement) describes a process of storing and accessing information and data via a drive that can be accessed within a unit. Automation can be achieved through an intelligent search or a dashboard to easily access the information and data. The process **‘info boxes’** (Infoboxen) represents a collection point for a wide variety of inquiries and requests (e.g. from citizens, applications for tender procedures, awarding, EU inquiries and letters from citizens). The receipt of the inquiries is exclusively a digital receipt via an email inbox. Automation for this process can be achieved through classification and Named Entity Recognition, to extract the relevant information to identify the responsible department. Furthermore, regarding the general process **‘imputing procedure’** (“Imputing-Verfahren”), the process analysis performed in activity 2 of this project found several processes that can be used to illustrate the imputing procedure. For the short list and for the purpose of illustrating this category of processes in the present deliverable, the process of drilling reports, was selected. The last process on the short list is the **‘senate printed matter coordination’** (Senatsdrucksachenabstimmung), which are items on which the Senate is to make a decision. This process could be automated by using the IDM tool for a general workflow management, as well as Named Entity Recognition, for an automated filling of the template, on which the Senate has to vote.

In activity 3, these processes are analyzed in detail and further conversations will be held with the process owners, leading to business cases of three different alternatives of the level of automation of the processes on the short list.

## Introduction

The present document describes the as-is business process model of the five short list processes that were selected by the Hamburg-internal Steering Committee (see deliverable 2). This deliverable further contains a description of the process as well as an as-is business process model in business process model and notation (BPMN) format.

The structure of this Deliverable is as follows: firstly, the short list of processes and AI (Artificial intelligence) processes that could serve to automate these processes is presented and characterised in more detail. Thereafter, the short list processes are described, thereby focussing on process steps, stakeholders involved and activities to be conducted. This description also includes a process flowchart in BPMN format.

The annex of this document entails the BPMN versions in German that were also discussed with and validated by the respective process owners.

## Definition of a short list to be automated

As described and outlined in deliverable 2 and described in more detail in the subsequent chapter, the following five short list processes were determined by the Hamburg-internal Steering Committee:

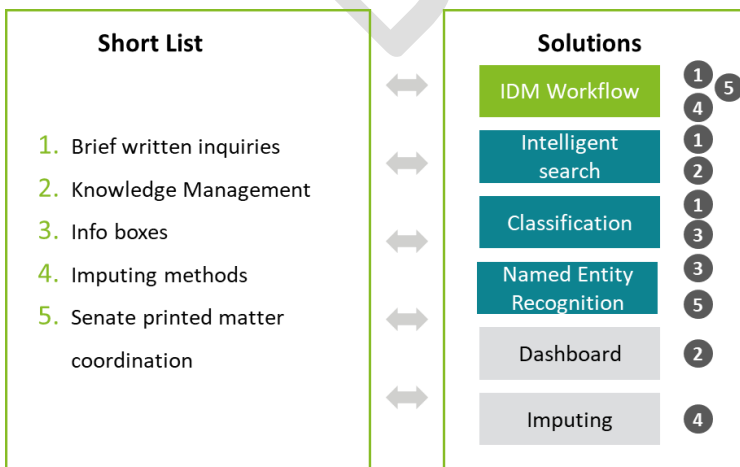
- Brief written parliamentary inquiries (Schriftliche Kleine Anfragen)
- Knowledge Management (Wissensmanagement)
- Info boxes (Infoboxen)
- Imputing methods (Imputing-Verfahren)
- Senate printed matter coordination (Senatsdrucksachenabstimmung)

This chapter explains the technologies that can be used to automate the short list processes determined as part of activity 2. These technologies can broadly be classified into two groups:

1. Processes that can be supported by the IDM-tool
2. Processes that can be automated using other AI & statistical technologies technologies, e.g. Natural Language Processing or statistical methods

The following figure shows the short list processes mapped to the corresponding proposed solutions for automation.

Figure 1: Short list processes mapped to the corresponding solutions



Source: Deloitte 2022

The solutions were divided into three different categories (colored in the figure above).

- The first category is the IDM Workflow system, coloured in green, which refers to the system already in use for the routing of citizen letters.
- The second category (blue) represent natural processing methods.
- The third category, coloured in gray, includes statistical methods and Dashboards.

## Definition of processes that can be supported by the IDM tool

In the following section the processes that have automation potential using the IDM tool, by using already existing tools of the IDM or by using modifications or by adding new functionalities of the IDM-tool will be presented. The processes to be automated by the IDM tool can be divided into a cluster of processes, in which the main task is to route the process through several steps to different departments, each of which has to perform an activity. For this purpose, the use of the IDM Workflow system would be suitable. In particular, the following three processes are addressed:

- Brief written inquiries (Schriftliche Kleine Anfragen)
- Imputing methods (Imputing-Verfahren)
- Senate printed matter coordination (Senatsdrucksachenabstimmung)

For more information about the IDM system refer to deliverable 2 chapter “Assessment of the technologies and systems for automation of processes”. In a further step, the IDM tool could be modified to include other useful add-ons. Possible further features could be the generation of answers (currently not yet available in the tool) and the display/suggestion of comparable requests/ procedures.

## Definition of processes that can be automated using other AI & statistical technologies

In addition to processes that can be automated through the IDM Tool, other automation potentials using AI technologies were also examined. Each of the above shortlist processes could be further automated through the use of AI. The proposed AI methods can be grouped into four clusters:

- Completion of missing data: Imputation methods<sup>1</sup>
- Natural Language Processing<sup>2</sup>: Named Entity Recognition<sup>3</sup>, Dense Information Retrieval<sup>4</sup>
- Predictive analytics<sup>5</sup>: Dashboards<sup>6</sup>, Predictive Analytics
- Classification: Determination of responsibilities

For more information about the other AI technologies refer to deliverable 2 chapter “Assessment of the technologies and systems for automation of processes”.

<sup>1</sup> In statistics, imputation is the process of replacing missing data with substituted values.

<sup>2</sup> Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data.

<sup>3</sup> Named Entity Recognition (NER) (also known as (named) entity identification, entity chunking, and named entity extraction) is a subtask of information extraction that seeks to locate and classify named entities mentioned in unstructured text into pre-defined categories such as person names, organizations, locations, medical codes, time expressions, quantities, monetary values, percentages, etc.

<sup>4</sup> Dense Information Retrieval systems conduct first-stage retrieval using embedded representations and simple similarity metrics to match a query to documents.

<sup>5</sup> Predictive analytics is a branch of advanced analytics that makes predictions about future outcomes using historical data combined with statistical modeling, data mining techniques and machine learning.

<sup>6</sup> A dashboard is a type of graphical user interface which often provides at-a-glance views of key performance indicators (KPIs) relevant to a particular objective or business process.

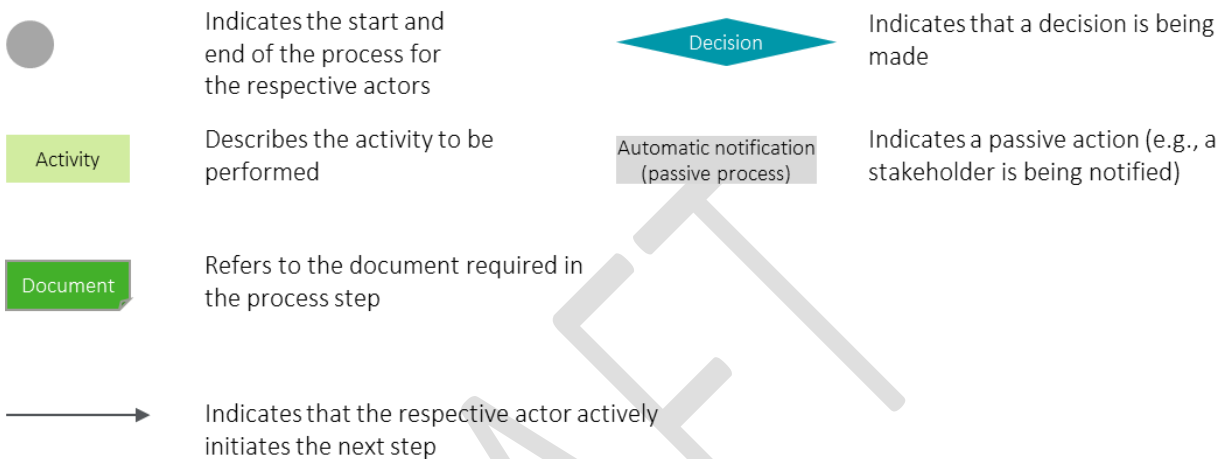


## As-is business process models in BPMN format

The BPMN models for the five short-list processes are illustrated and described in the following subchapters. These graphics are a simplified representation of the current process and should be understood in the context of the descriptions provided. The BPMN models only focus on those aspects of the process that are relevant for a potential automation of the process.

### Descriptions and legend

Figure 2: Descriptions and legend to the as-is BPMN Models



Source: Deloitte 2022

## Prozess 1: Brief written inquiries (Schriftliche kleine Anfragen (SKA))

On a superordinate level, the process of brief written inquiries (*Schriftliche kleine Anfragen*) can be shown in the process flow chart (Figure 3) from the perspective of the Senate Chancellery. As an example, the process within an individual agency can be seen in the process flow diagram Figure 4. In the following, the process is described along the flowcharts.

### As-is process description of brief written inquiries

The SKA process involves inquiries from members of parliament to the Senate of the City of Hamburg, which is required to respond within a few days. The process is divided into two sub-processes: firstly from the point of view of the Senate Chancellery, and secondly from the point of view of the individual authorities (by way of example).

#### Regarding the process from the perspective of the Senate Chancellery (see Figure 3):

The inquiries of the members of parliament are collected by the office of the citizenry (*Bürgerschaftskanzlei*) and transmitted to the Chancellery of the Senate (*Senatskanzlei*) via the portal ESIS/EVIS.<sup>7</sup> The questions of the members of parliament to the Senate of the City of Hamburg, must answered within a few days. The deadline is determined by legislation and is approximately eight days from receipt to the response to the inquiry. In terms of content, the inquiries are very broad (e.g. requests for information on the state of affairs) and concern the entire administration of the city of Hamburg.

<sup>7</sup> System and database for all SKA and meetings. More details below.

All inquiries are first collected by the office of the citizenry (*Bürgerschaftskanzlei*), afterwards the appropriate distribution list is selected via the portal and sent collectively to all presidential departments of the authorities. The authorities decide among each other which one will take the lead in answering individual SKAs and reports this to the Senate Chancellery, which forwards back the respective written inquiries number and the agenda item via the portal. After the leading authority has answered the SKA and all other agencies involved have submitted their answers, the answer is forwarded via ESIS/EVIS in a Word format to the Senate Chancellery, which collects all answers, converts them into a PDF format and forwards them to the inquiry committee. This commission meets on Tuesdays and Fridays. Within the framework of this commission, the city councils discuss the proposals of the authorities and determine the final version of the response. The Senate Chancellery takes minutes of this meeting and incorporates the discussed changes into the answers and finally forwards them to the office of the citizenry (*Bürgerschaftskanzlei*) in bundled form. The office of the citizenry (*Bürgerschaftskanzlei*), in turn, sends the answered questions to the members of parliament.

In the case that the lead in answering individual SKA cannot be clearly decided or clarified among the authorities, **two different conflicts** can arise:

- Negative conflict of competence: None of the agencies want to take the lead in responding to the inquiry
- Positive conflict of competence: Multiple agencies want to take the lead in responding to the inquiry

Agreement is first reached among the agencies themselves, but if this is not possible, the Senate Council decides on the lead. The Senate Chancellery assumes a purely coordinating role in this regard.

The **deadlines and form** of the SKAs are determined by constitutional law. The deadline from receipt to response is specified as eight days (including weekends). The Senate Chancellery is responsible for ensuring that deadlines are met and, if necessary, following up with all agencies involved in responding. If the deadlines are not met, constitutional requirements are violated, and the deputy would have the right to file a complaint with the Constitutional Court.

The **system** currently in place in the context of processing SKAs is the ESIS/EVIS system. The system serves as a database for all SKAs and meetings, allowing to create records with information and master data (e.g. rapporteurs, questioners, etc.). In this system, the collected requests are forwarded to the Senate Chancellery and serves as an interface between the Senate Chancellery, the office of the citizenry (*Bürgerschaftskanzlei*) and the City Council. The system serves the forwarding of the SKA by email, as well as the selection of different mailing lists. In addition, agendas and printed matter numbers can be generated and files can be converted into various formats (e.g. Word to PDF). The minutes are also documented in ESIS/EVIS.

#### **Regarding the process from the perspective of a presidential department of an individual authority (see Figure 4):**

All presidential departments of the individual authorities receive all SKAs bundled by mail from the Senate Council. The presidential departments have the choice of which SKAs they would like to respond to and select them from the total collected requests. If an authority wishes to respond to a request, it agrees with the other presidential departments among themselves who will take the lead to answer the request. After deciding on the lead, the lead authority reports this to the Senate Chancellery and receives the relevant printed matter number and agenda item. If the authorities do not agree on the lead, the two cases described above arise.

The Presidential Department forwards the selected SKA to departments and district offices that can and should provide answers to the SKA and subsequently collects all answers. It then determines the content and form in which the SKA should be answered and forwards it by mail and in a Word format to the Senate Council.

There is no uniform routing solution within the agencies. Each agency uses its own systems (e.g. ESIS/EVIS, Mail, SharePoint etc.).

Table 1: Key characteristics of the SKA as-is process

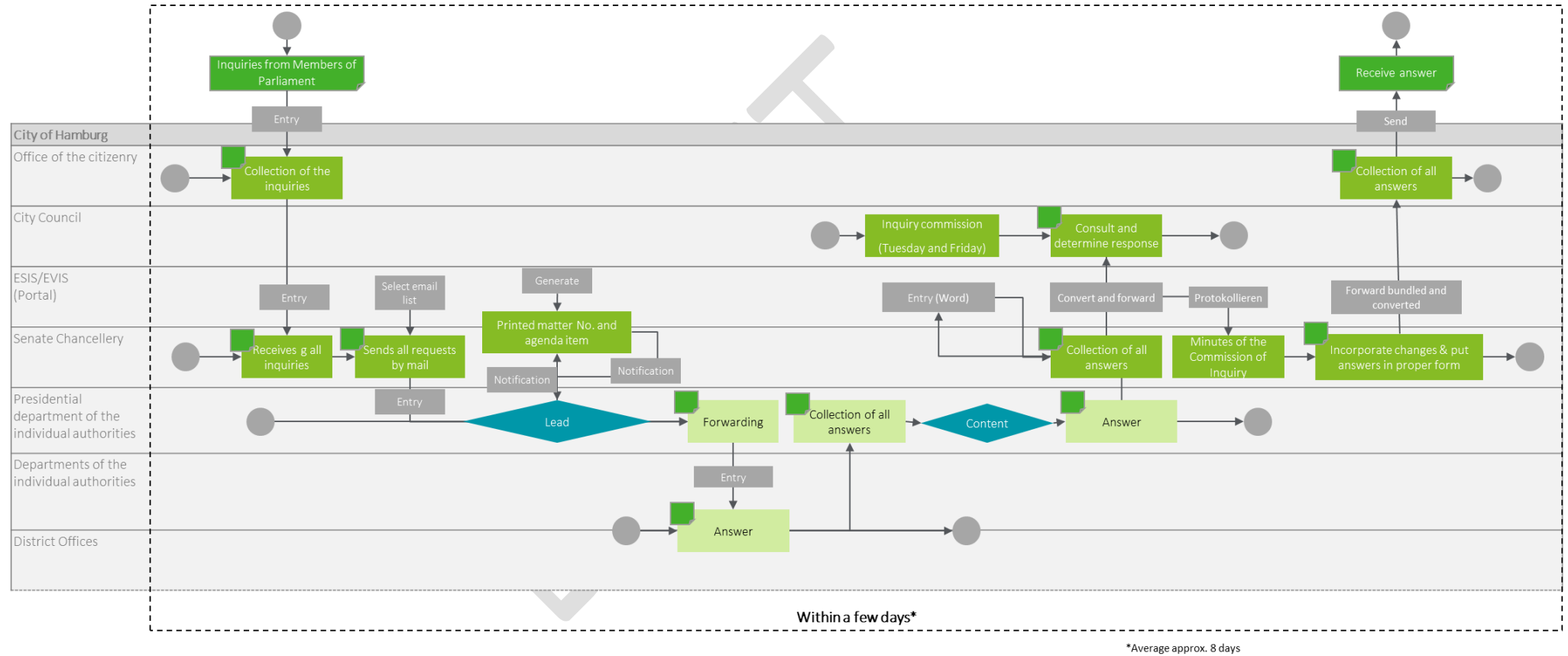
Key characteristics	Specification
<b>Degree of digitization</b> (low, medium, high)	High
<b>Complexity</b> (low, medium, high)	High
<b>Scalability</b> (yes, no)	Yes
<b>Time criticality</b> (low, medium, high)	High
<b>Rule-based</b> (yes, no)	Yes
<b>Volume</b>	<ul style="list-style-type: none"> <li>• BUKEA/BSW: 10 per day</li> <li>• Senate Council: 50-70 per week</li> </ul>
<b>Organization chart</b>	<ul style="list-style-type: none"> <li>• BSW - Presidential Department</li> <li>• BUKEA - Presidential Department</li> <li>• Senate Council</li> </ul>

Source: Deloitte 2022

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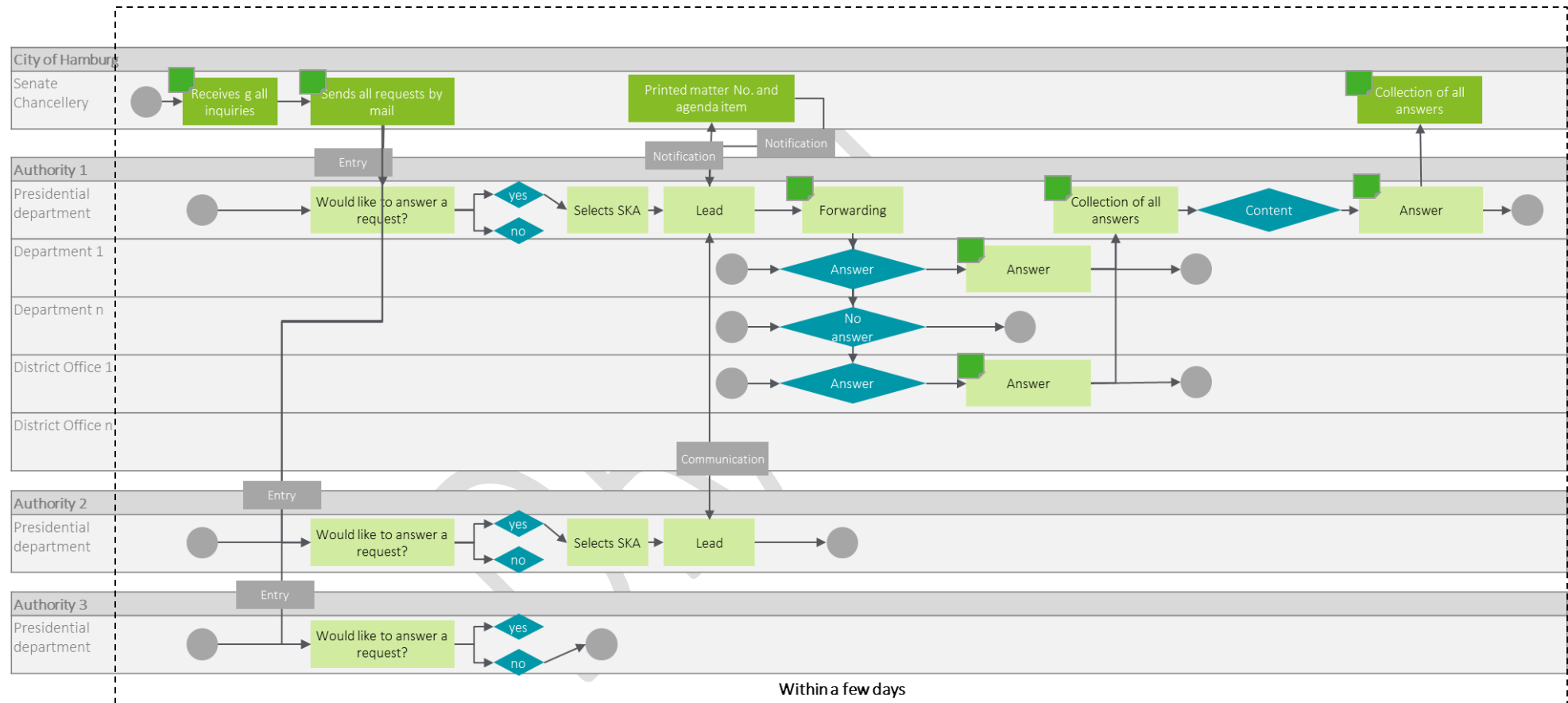
## As-is BPMN Model

Figure 3: As-is BPMN Model SKA - From the perspective of the Senate Chancellery



Source: Deloitte 2022

Figure 4: As-is BPMN Model SKA - From the perspective of the individual departments (example)



Source: Deloitte 2022

## Process 2 – Knowledge management (Wissensmanagement)

The process 'knowledge management' describes a process of storing and accessing information and data via a drive that can be accessed within a unit.

In the following, the current state of the process 'knowledge management' is described. This process is allocated in the presidential departments (*Präsidentialabteilungen*) at BUKEA and BSW, respectively, but can be found in many other departments of the City of Hamburg as well.

### As-is process description 'knowledge management'

Within the as-is process 'knowledge management' all departments of the presidential department of the BSW currently have their own folder drives, which are managed by the central IT department Z4. The folder drives have an extensive unit-specific structure and have been maintained for many years (in the case of P1 since 2005). All members of a unit have access to the department drive, external departments can only gain access under special conditions and with an application.

Each member of the department can create a new process in this folder drive at any time by compiling relevant information, creating a new folder, setting up a suitable folder structure and filing documents.

Information searches are performed on the respective drive. The information needs of an official is usually very time-critical and must be met within a few hours or days. Therefore, the user can start a search in the folder drive. The official clicks through individual folders, opens documents that may be relevant and then orients themselves further until the information requirement is covered. This ends the process. The folder drive is used regularly (approximately daily to twice a week per person) to search for data and information. There is also a large amount of implicit (unwritten) knowledge about folder structures and content that individuals have built up over the years.

Cross-unit searches are not possible. Information from other drives must be requested by mail or telephone.

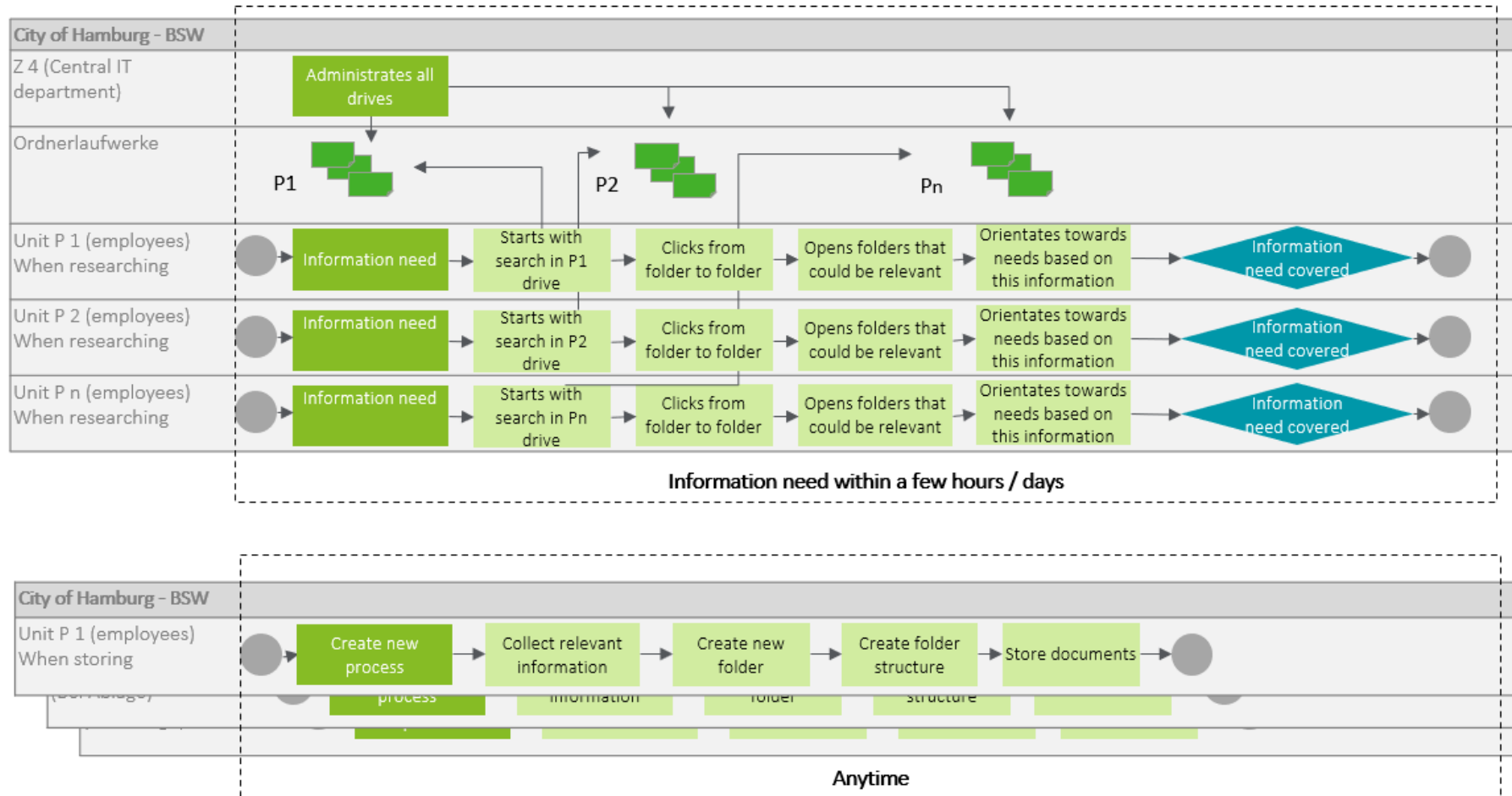
Table 2: Key characteristics of the knowledge management as-is process

Key characteristics	Specification
Degree of digitization (low, medium, high)	High
Complexity (low, medium, high)	Low
Scalability (yes, no)	Yes
Time criticality (low, medium, high)	High
Rule-based (yes, no)	Yes
Volume	Daily use (for P1, BSW)
Organization chart	BUKEA -> P BSW -> P

Source: Deloitte 2022

## As-is BPMN Model

Figure 5: As-is BPMN Model knowledge management



Source: Deloitte 2022, based on stakeholder interviews

## Process 3 – Info boxes (Infoboxen)

### As-is process description

The process 'info boxes' resides in unit V 213 (Internal Operations) at BSW and represents a collection point for a wide variety of inquiries and requests (e.g., from citizens, applications for tender procedures, awarding, EU inquiries and letters from citizens). The receipt of the inquiries is exclusively a digital receipt via an email inbox. The assignment and forwarding usually takes place on the same day.

The assignment or research regarding the responsibility of the respective request within BUKEA and BSW is currently mainly carried out by using implicit knowledge and by additionally conducting research in the organizational charts of BSW and BUKEA. The process owner and employee in unit V 213 has been entrusted with this process for years and therefore has extensive experience in the assignment to the respective contact persons. The volume of inquiries varies from year to year and also depends on external factors and current events. During the corona pandemic, the number of inquiries tended to decrease somewhat and, according to V 213, amounted to around 1,000 inquiries per year (approx. 3-4 inquiries per day).

During the interviews, the process owner appeared highly reluctant regarding any potential automation and/or change of this process. It was therefore emphasised various times that the scope of this project is only to develop a potential automation concept of this process and not to automate the process itself. Given these circumstances, it can be expected that the future collaboration with this process owner can result in difficulties.

Table 3: Key characteristics of the Info boxes as-is process

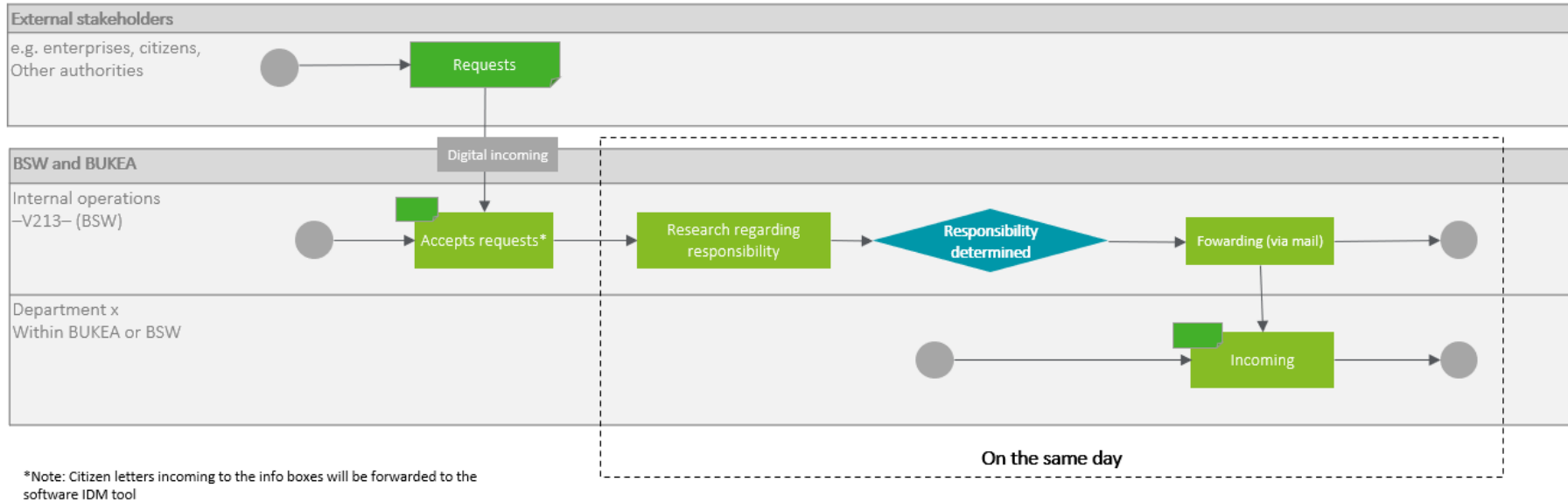
Key characteristics	Specification
<b>Degree of digitization</b> (low, medium, high)	High
<b>Complexity</b> (low, medium, high)	Medium
<b>Scalability</b> (yes, no)	Yes
<b>Time criticality</b> (low, medium, high)	Medium
<b>Rule-based</b> (yes, no)	Yes
<b>Volume</b>	Approximately 1 000 emails per year (however, volume varies strongly due to external factors)
<b>Organization chart</b>	BSW -> V213

Source: Deloitte 2022



## As-is BPMN Model

Figure 6: As-is BPMN Model Info-boxes



Source: Deloitte 2022

## Process 4 – Imputing procedure (“Imputing-Verfahren”)

### Imputing procedure in general

Regarding the general process "imputing procedure", the process analysis performed in activity 2 of this project found several processes that can be used to illustrate the imputing procedure. For the short list and for the purpose of illustrating this category of processes in the present deliverable, the process of drilling reports, allocated in the Geological State Office (*Geologisches Landesamt*) at BUKEA, was selected. The relevant steps of this process are characterized below as representative of other processes that could be automated using imputing methods.

### As-is process description BohrIS review and tracking

This short-list process consists of **two interrelated sub-processes** and is **part of the higher-level process "edit drilling reports"**, which is located at the Geological State Office of BUKEA. This overarching process is already maintained in the Aris database and describes the various steps involved in processing and completing the drill listings. The first sub-process relates to checking the timely receipt and completeness of the specific drilling data, the second sub-process is a process that is required by law as part of the Geological Data Act and includes the tracking of data that has not been received.

In the following, only those process aspects are described that are directly related to the sub-aspects of the process to be automated. Any content-related process steps (e.g., substantive assessments and analysis of the received data) to be carried out as part of the overall drilling notification process are not described in detail.

The Geological State Office operates a **database (BohrIS)** that collects various data on boreholes carried out in the City of Hamburg. The legally required data to be recorded are specialist data (*Fachdaten*; geological data on the content of the boreholes), optional evaluation data (*Bewertungsdaten*; e.g. conclusions and reports on boreholes) and verification data (*Nachweisdaten*; metadata such as location and time of a borehole). The technical and evaluation data of a bore are assigned to the verification data.

Upfront to these sub-processes, the reporting party who is carrying out the drilling provides information about the planned drilling via the NoBo portal (data portal that the City of Hamburg operates together with other neighbouring Federal States) and, if necessary, uploads verification data (meta information) about the drilling via this portal to the BohrIS database. The responsible department W3 in the Geological State Office checks the receipt of the verification data and accompanies the drilling professionally if necessary. If it is not received, W3 will request the verification data from the person making the notification by email and by telephone. The latter can then load them into the BohrIS portal. This iteration can be done any number of times. In the case of data in the context of water law, the Water Office (W1) of the Geological State Office is also informed about the receipt of the data.

Upon receipt of the verification data, the sub-processes relevant to the scope of this project begin:

The first sub-process, **review of incoming drilling data**, begins with W3 verifying the timely receipt of verification, specialist and (where relevant) evaluation data. If the data is not received by the deadline, W3 will request this data from the person making the notification by email or telephone. The reporting party can then send the missing data to the Geological State Office (W3) by email. W3 then enters this drilling data manually into the BohrIS database. It should be noted that the datasets have different formats and a different level of detail. Thereafter, the completeness of the data records is checked. If the data is received on time, the completeness check is carried out immediately after the receipt on time. The completeness check is currently carried out manually. If W3 comes to the conclusion that the data is not complete, the applicant will be asked again by email and telephone and the subsequently incoming drilling data will be entered manually in BohrIS. This iteration continues until the data set is complete, i.e. contains all legal requirements. Once the data set is complete, the data is checked for correctness in terms of content. Checking for the correctness of the content is not part of a possible automation and is therefore not explained in more detail.

The second sub-process, **tracking the incoming drilling data**, is a process that does not yet exist, as it has to be implemented by summer 2022 as part of the new legal obligations under the Geology Data Act. The process is therefore described as it would be implemented without an automation solution. This sub-process starts immediately after checking for completeness. If the drilling data requested is not complete, the follow-up process will be initiated by W3. A reminder letter will manually be created by W3, which W3 sends to the person making the notification. It is then checked whether the reporting party has sent the drilling data to W3 by email within the legally stipulated period (varies depending on the type of drilling). If the data is not received within the deadline, various escalation steps such as reminders and fee notifications are initiated. If it is received within the specified period, the data received by email from W3 is entered manually in Bohris and the data is compared again for completeness (see sub-process 1). If the data is still incomplete, the tracking process is restarted. This iteration takes place until the requested data is complete.

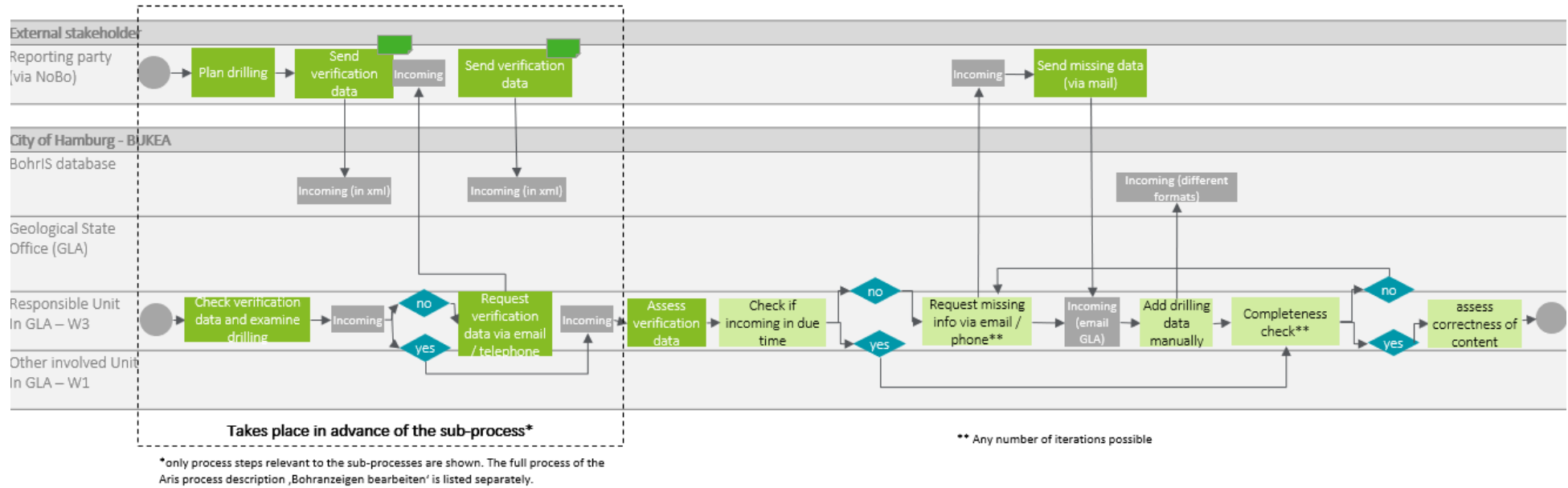
Table 4: Key characteristics of the Bohris as-is sub-processes

Key characteristics	Specification
<b>Degree of digitization</b> (low, medium, high)	High
<b>Complexity</b> (low, medium, high)	Medium
<b>Scalability</b> (yes, no)	Yes
<b>Time criticality</b> (low, medium, high)	High
<b>Rule-based</b> (yes, no)	Yes
<b>Volume</b>	Approximately 20 new entries per day (ca. 5 000 new entries per year)
<b>Organization chart</b>	BUKEA -> W -> W3 (Geologisches Landesamt)

Source: Deloitte 2022

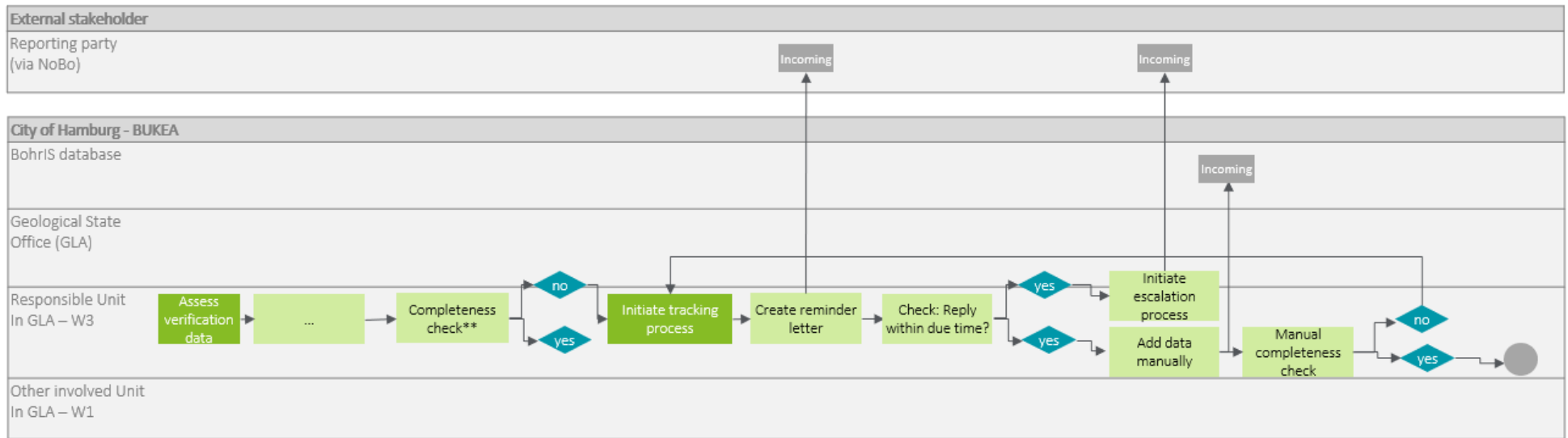
## As-is BPMN Model

Figure 7: As-is BPMN Model Subprozess 1: Bohris completeness check



Source: Deloitte 2022, based on the stakeholder interviews with the Geographical State Office, BUKEA

Figure 8: As-is BPMN Model Subprocess 2: Tracking of missing Bohris data



Source: Deloitte 2022, based on the stakeholder interviews with the Geological State Office, BUKEA

## Process 5: Senate printed matter coordination (Senatsdrucksachenabstimmung)

At a higher level, the Senate printed matter coordination (*Senatsdrucksachenabstimmung*) process can be represented in the process flowchart (Figure 10) below. In the following, the process is described along the flowchart.

Senate printed matters are items on which the Senate is to make a decision. In general, the Senate decides on items of fundamental importance, those items are regulated in the Senate's Rules of Procedure (e.g. in the case of ordinances or bills). Before the Senate votes on the printed matter, the bills are coordinated with all involved authorities and forwarded by the Presidential Department.

### As-is process description of Senate printed matter coordination

The content of the printed matter is first prepared and written by the department (*Fachamt*) of an authority and then forwarded to the respective presidential department of the authority (in a standardized template). The responsibility of the presidential department is to formally review the template of the printed matters and to coordinate it with other authorities. This template must be coordinated with all the authorities that it concerns. Those authorities who wish to comment on the printed matter or can provide additional information may submit their comments and statements. The presidential Department collects these statements from other authorities and forwards them collectively to the department (*Fachamt*) that prepares the template. The latter rewrites the printed matter if necessary and forwards it back to the presidential Department. The presidential department checks it again for completeness and forwards it to the Executive Board (*Behördenleitung*) for approval. After the approval of the Executive Board, the finished and completely coordinated template of the printed matter is forwarded to the Senate Chancellery and announced. The Senate Chancellery then takes it to the agenda for a vote.

In general, the entire administration of the Free and Hanseatic City of Hamburg is involved in this process. Taking the lead are the presidential departments of the authorities, which collect the Senate votes and coordinate them with the other authorities.

This is a preliminary description of the process and will be updated as modifications are needed.

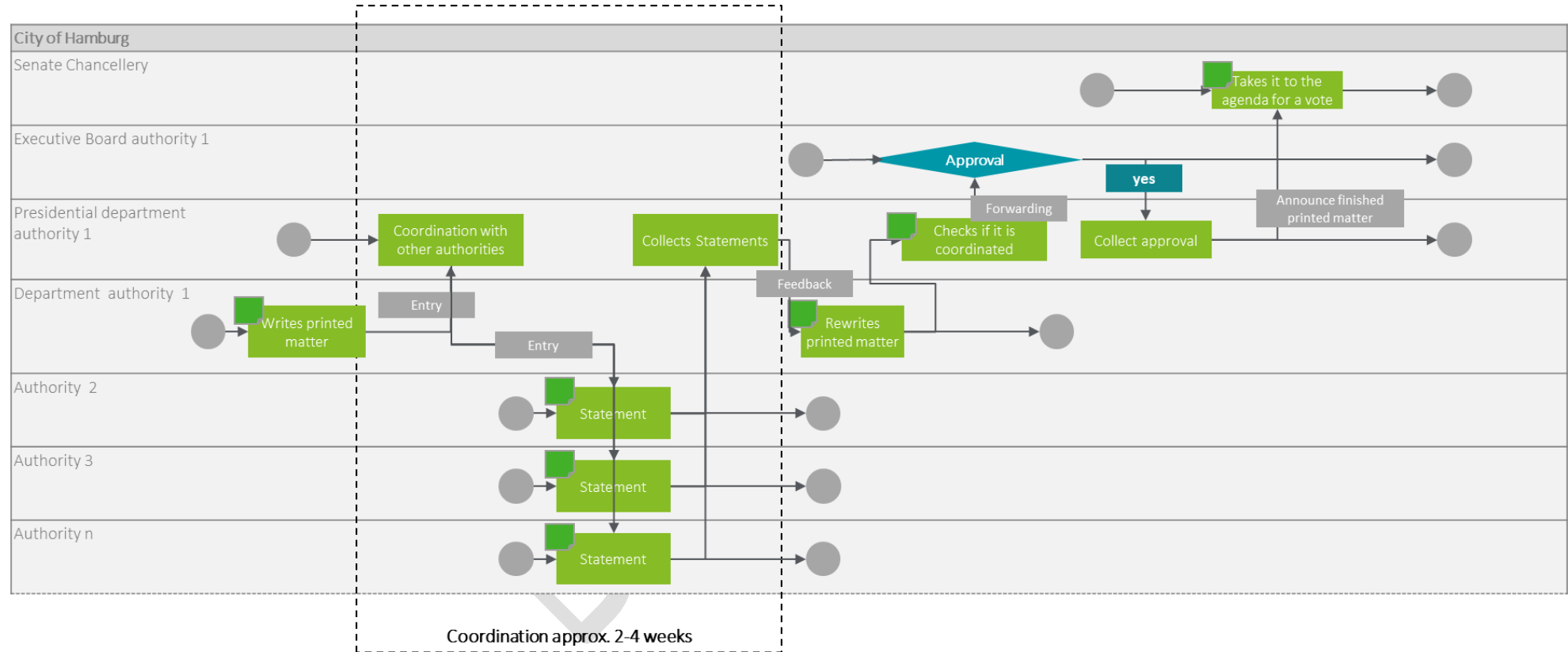
Table 5: Key characteristics of the Senate printed matter coordination as-is process

Key characteristics	Specification
<b>Degree of digitization</b> (low, medium, high)	High
<b>Complexity</b> (low, medium, high)	High
<b>Scalability</b> (yes, no)	Yes
<b>Time criticality</b> (low, medium, high)	medium
<b>Rule-based</b> (yes, no)	Yes
<b>Volume</b>	wenig (einmalig pro Inhalt), eher alle paar Jahre Aktualisierung,
<b>Organization chart</b>	<ul style="list-style-type: none"> <li>• BSW - Presidential Department</li> <li>• BUKEA - Presidential Department</li> </ul>

Source: Deloitte 2022

## As-is BPMN Model

Figure 9: As-is BPMN Model Senate printed matter coordination



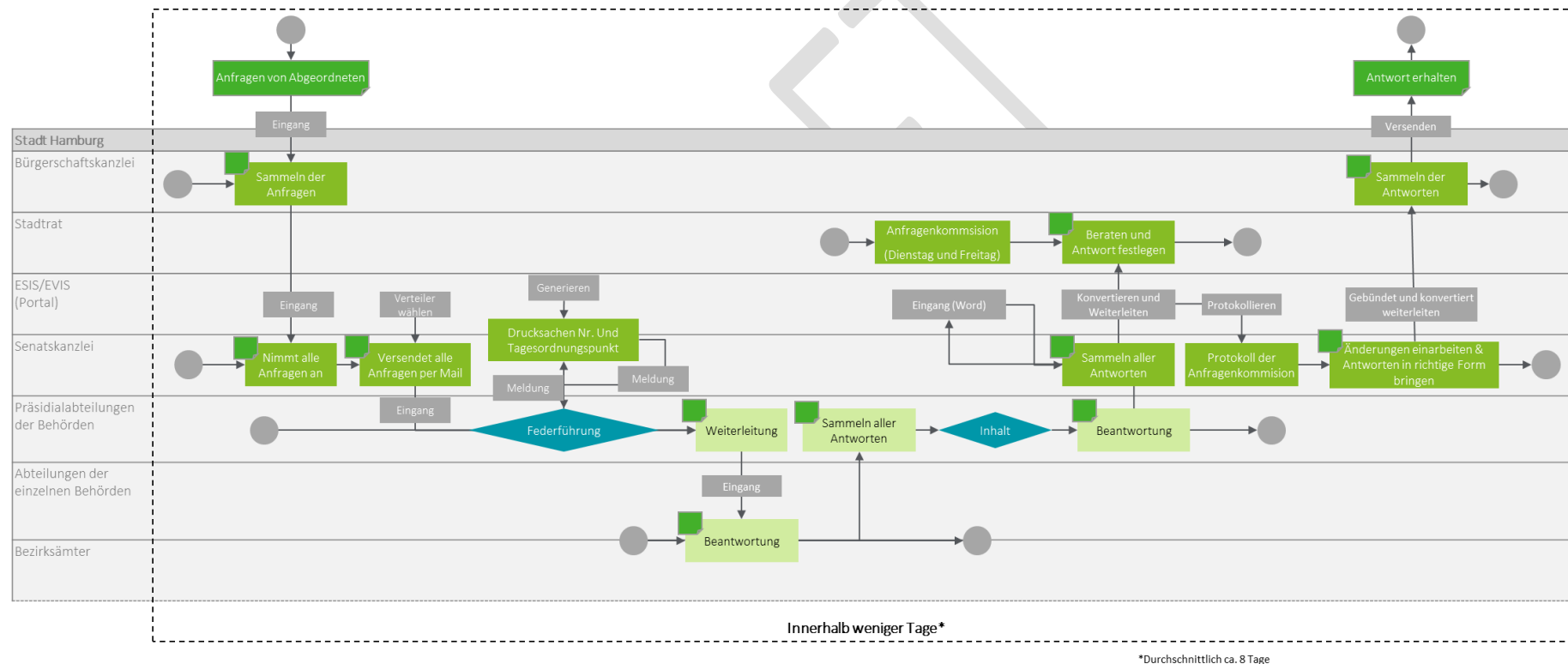
Source: Deloitte 2022

## Annex

Below are included the BPMN models for the short list processes in German. These graphics are a simplified representation of the current processes and should be understood in connection with the texts listed above.

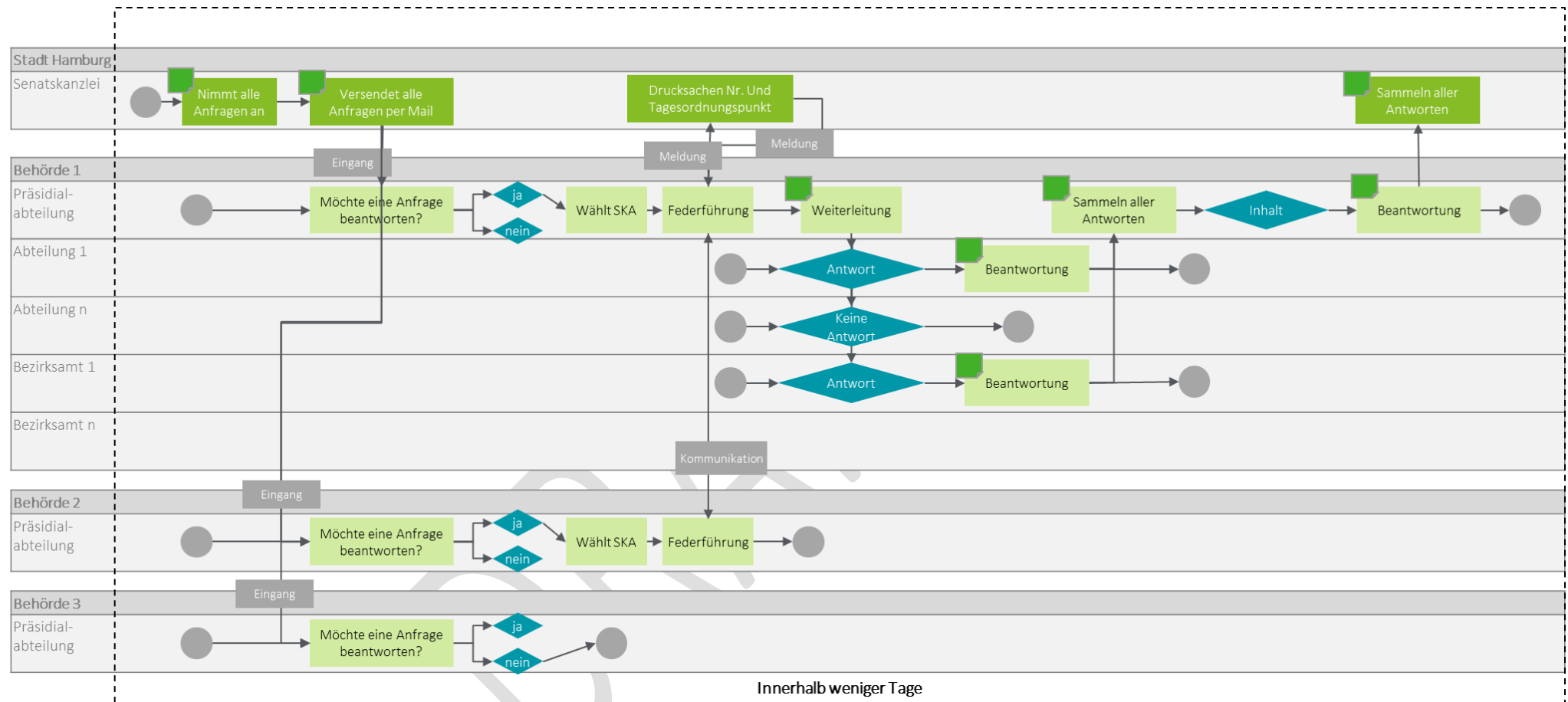
### As-is BPMN Model 'Schriftliche Kleine Anfragen' in German

Figure 10: As-is BPMN Model 'Schriftliche Kleine Anfragen' (German)



Source: Deloitte 2022

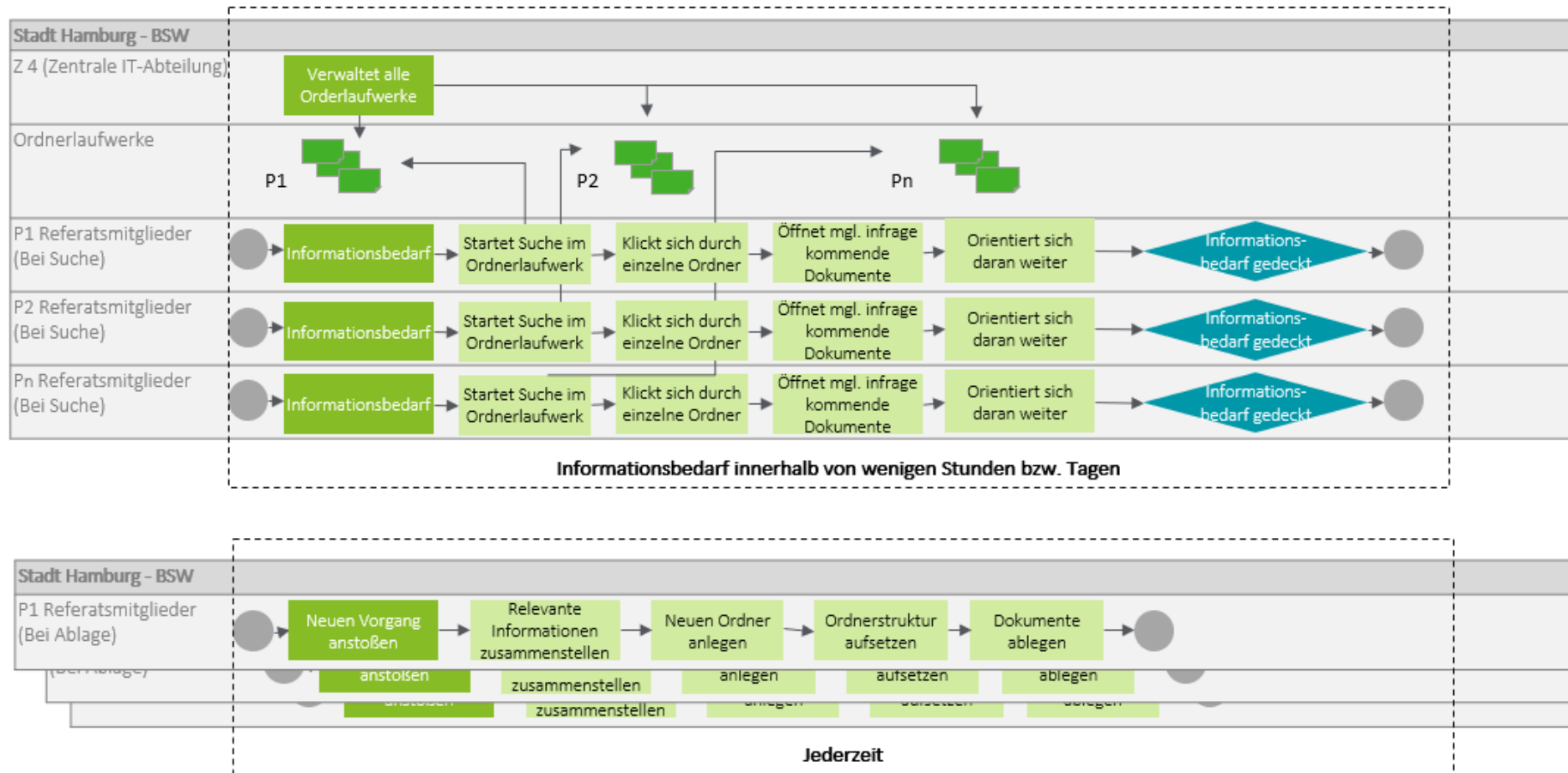




Source: Deloitte 2022, based on stakeholder interviews

## As-is BPMN Model 'Knowledge Management' in German

Figure 11: As-is BPMN Model 'Knowledge Management' (German)



Source: Deloitte 2022, based on stakeholder interviews

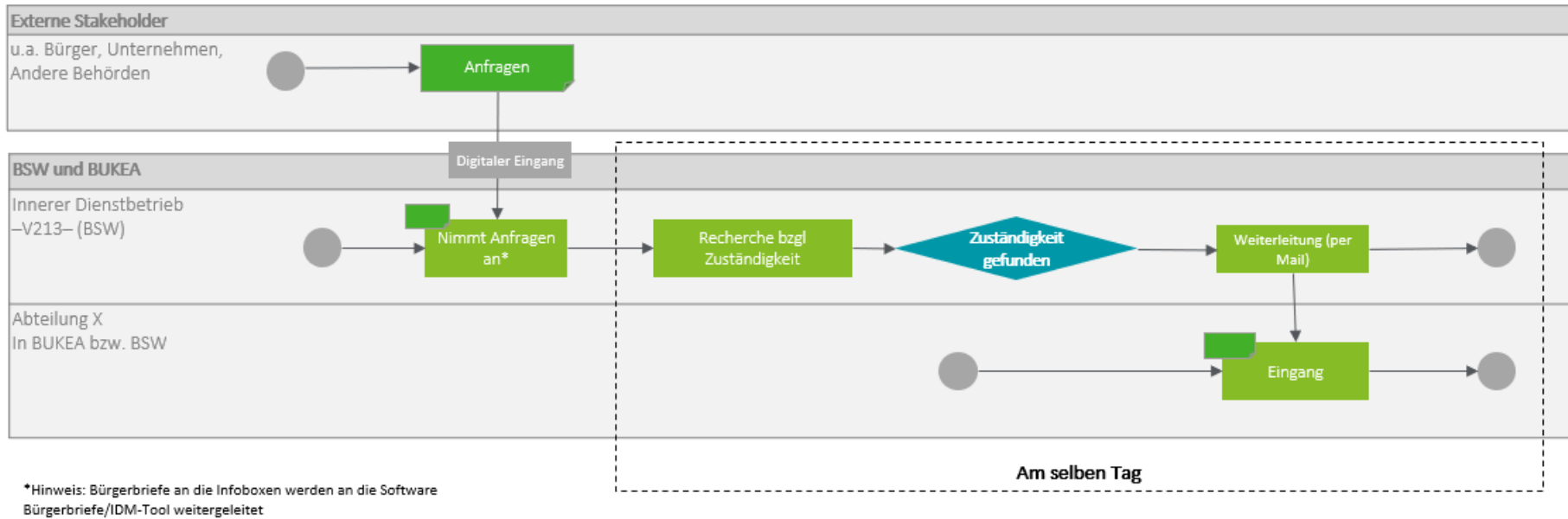
## **As-is BPMN model 'Infoboxen' in German**

Der Prozess ist beim Referat V 213 (Internal Operations) der BSW angesiedelt und stellt ein Sammelbecken für unterschiedlichste Anfragen dar (z.B. von Bürgern, Bewerbungen für Ausschreibungsverfahren, Vergabe, EU-Anfragen und Bürgerbriefe). Bei dem Eingang der Anfragen handelt es sich ausschließlich um einen digitalen Eingang über einen Emailpostfach. Die Zuordnung und Weiterleitung erfolgt in der Regel noch am selben Tag.

Die Zuordnung bzw. die Recherche bzgl. der Zuständigkeit der jeweiligen Anfrage innerhalb von BUKEA und BSW erfolgt aktuell vorwiegend mittels implizitem Wissen und Recherche in den Organigrammen von BSW und BUKEA. Die Process Owner und Referatsmitarbeiterin im Referat V 213 betreut diesen Prozess schon jahrelang und verfügt daher über einen umfangreichen Erfahrungsschatz hinsichtlich der Zuordnung zu den jeweils relevanten Ansprechpersonen. Das Anfragenvolumen variiert jährlich und hängt zudem von externen Faktoren dem aktuellen Tagesgeschehen ab. In der Coronapandemie wurde das Aufkommen der Anfragen tendenziell etwas weniger und belief sich laut Angaben von V 213 auf ca. 1 000 Anfragen jährlich (ca. 3-4 Anfragen pro Tag).

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Figure 12: As-is BPMN Model 'Info boxes'



Source: Deloitte 2022, based on stakeholder interviews

## As-is BPMN model ‚Imputing-Verfahren‘ in German

Dieser Short-List-Prozess besteht aus zwei miteinander zusammenhängenden Sub-Prozessen und ist Teil des **übergeordneten Prozesses „Bohranzeigen bearbeiten“**, der beim Geologischen Landesamt der BUKEA angesiedelt ist. Dieser übergeordnete Prozess ist bereits in der Aris-Datenbank eingepflegt<sup>8</sup> und beschreibt die verschiedenen Schritte, die bei der Bearbeitung und Vervollständigung der Bohranzeigen durchlaufen werden. Der erste Subprozess bezieht sich auf die Überprüfung auf fristgerechten Eingang sowie auf Vollständigkeit der bestimmter Bohrdaten, der zweite Subprozess ist ein Prozess, der im Zuge des Geologiedatengesetzes gesetzlich vorgeschrieben ist und die Nachverfolgung von nicht eingegangenen Daten beinhaltet.

Im Folgenden werden nur diejenigen Prozessaspekte beschrieben, die unmittelbar mit den zu automatisierenden Teilaspekten dieses Prozesses zusammenhängen. Etwaige inhaltliche im Rahmen des Gesamtprozesses Bohranzeigen durchzuführende Prüfschritte werden nicht (detailliert) beschrieben.

Das Geologische Landesamt betreibt eine **Datenbank (BohrIS)**, die verschiedene Daten zu in der Stadt Hamburg durchgeführten Bohrungen erfasst werden. Die gesetzlich vorgeschriebenen zu erfassenden Daten sind Fachdaten (geologische inhaltliche Daten zu den Bohrungen), optional zu erfassende Bewertungsdaten (z.B. Schlussfolgerungen und Gutachten zu Bohrungen) sowie Nachweisdaten (Metadaten wie Ort und Zeitpunkt einer Bohrung). Die Fach- und Bewertungsdaten einer Bohrung werden jeweils den Nachweisdaten zugeordnet.

**Im Vorfeld dieser Subprozesse** informiert der Anzeigende, der die Bohrung durchführt, über das Portal NoBo (Datenportal, das die Stadt Hamburg gemeinsam mit anderen angrenzenden Bundesländern betreibt) über die geplante Bohrung und lädt ggf. Nachweisdaten (Metainformationen) zur Bohrung über dieses Portal in die BohrIS-Datenbank. Die zuständige Abteilung W3 im GLA überprüft den Eingang der Nachweisdaten und begleitet die Bohrung ggf. fachlich. Erfolgt der Eingang nicht, fordert W3 per Mail und per Telefon beim Anzeigenden die Nachweisdaten nach. Dieser kann sie dann in das BohrIS-Portal laden. Diese Iteration kann beliebig oft erfolgen. Bei Daten im wasserrechtlichen Kontext wird punktuell außerdem das Wasseramt (W1) des Geologischen Landesamt über den Eingang der Daten informiert.

Bei Eingang der Nachweisdaten beginnen der für den Scope dieses Projekts relevanten Subprozesse:

Der erste Subprozess, **Überprüfung der eingehenden Bohrdaten**, beginnt damit, dass W3 den fristgerechten Eingang der Nachweis-, Fach- und (sofern relevant) Bewertungsdaten überprüft. Sind die Daten nicht fristgerecht eingegangen, fordert W3 diese Daten per Mail oder Telefon beim Anzeigestellenden an. Dieser kann dann die fehlenden Daten per Mail beim GLA (W3) nachliefern. W3 trägt diese Bohrdaten anschließend manuell in die BohrIS-Datenbank nach. Hierbei ist zu beachten, dass die Datensätze unterschiedliche Formate und einen unterschiedlichen Detailgrad aufweisen. Anschließend erfolgt die Überprüfung auf Vollständigkeit der Datensätze. Liegt ein fristgerechter Eingang der Daten vor, erfolgt die Überprüfung der Vollständigkeit unmittelbar nach fristgerechtem Eingang. Die Überprüfung der Vollständigkeit erfolgt aktuell manuell. Kommt W3 zu dem Ergebnis, dass die Daten nicht vollständig sind, wird erneut beim Antragstellenden per Mail und Telefon nachgefordert und die anschließend eingehenden Bohrdaten manuell in BohrIS nachgetragen. Diese Iteration erfolgt so lange, bis der Datensatz vollständig ist, also alle gesetzlichen Anforderungen enthält. Nach Vollständigkeit des Datensatzes erfolgt die Überprüfung der Daten auf inhaltliche Korrektheit. Die Überprüfung auf inhaltliche Korrektheit ist nicht Bestandteil einer möglichen Automatisierung und wird daher nicht näher erläutert.

Der zweite Subprozess, **Nachverfolgung der eingehenden Bohrdaten**, ist ein Prozess, der noch nicht existiert, da er zum Sommer 2022 im Zuge der neuen gesetzlichen Verpflichtungen im Rahmen des Geologiedatengesetzes implementiert werden muss. Der Prozess wird daher so beschrieben, wie er ohne Automatisierungslösung implementiert werden würde. Dieser Subprozess beginnt unmittelbar nach Überprüfung der Vollständigkeit. Sind die angeforderten Bohrdaten nicht vollständig, wird der Nachverfolgungsprozess von W3 angestoßen. Dabei wird ein Erinnerungsschreiben erstellt, das W3 dem Anzeigenden schickt. Anschließend wird gecheckt, ob der Anzeigende innerhalb der gesetzlich

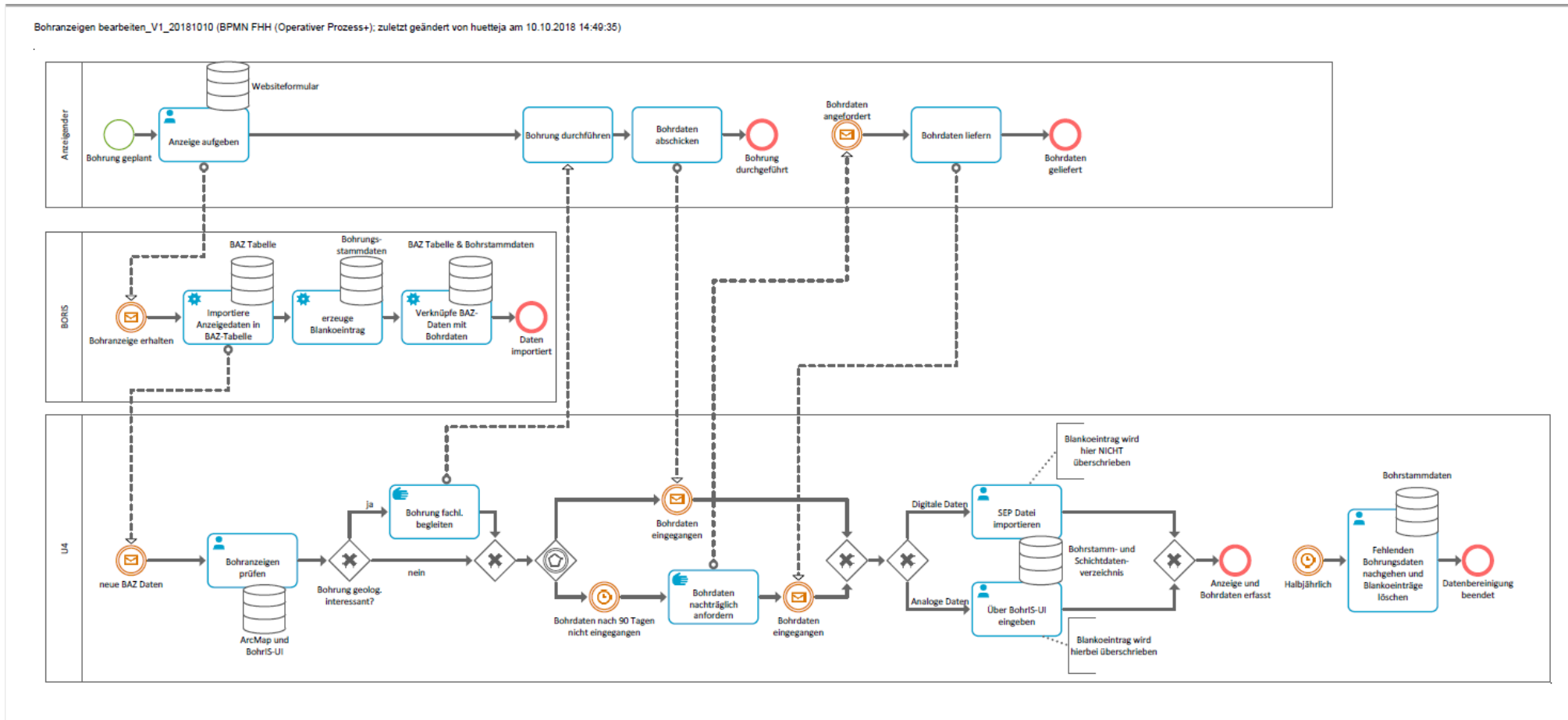
<sup>8</sup> Vgl. Aris-Prozess 77 – Bohranzeigen bearbeiten, zuletzt geändert am 10.10.20218

vorgegebenen Frist (variiert je nach Art der Bohrung) die Bohrdaten per Mail zu W3 schickt. Sind die Daten nicht innerhalb der Frist eingegangen, werden verschiedene Eskalationsschritte wie Mahnungen und Gebührenbescheide eingeleitet. Erfolgt der Eingang innerhalb der vorgegebenen Frist, werden die per Mail erhaltenen Daten von W3 manuell in BohrIS nachgetragen und ein erneuter Abgleich der Daten auf Vollständigkeit (siehe Subprozess 1) vorgenommen. Sind die Daten immer noch unvollständig, wird der Nachverfolgungsprozess erneut angestoßen. Diesbezüglich sind beliebig viele Iterationen möglich.

Zu den verschiedenen Datentypen teilte das Geologische Landesamt im Nachtrag zu den geführten Interviews außerdem noch Folgendes mit:

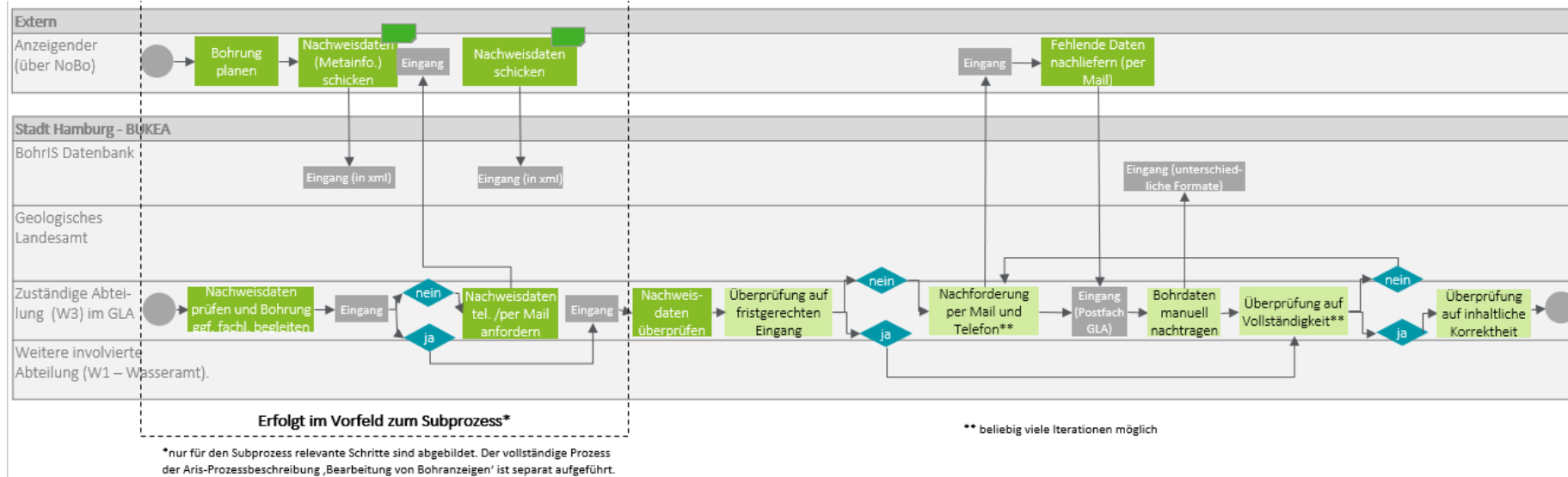
- **Nachweisdaten** (werden mit der Bohranzeige übers Nobo übermittelt, 2 Wochen vor Bohrbeginn): Hierzu gehören alle Metadaten wie Auftraggeber, Bohrfirma, Bohrzweck, Bohrverfahren, Lage der Bohrung, u.ä. Da die Bohrung dann noch nicht gebohrt wurde, können sich einzelne Datensätze – insbesondere die Lage – später noch ändern.
- **Fachdaten** (müssen spätestens 3 Monate nach Ende der Bohrarbeiten beim GLA eintreffen): Es handelt sich hierbei zumeist um Schichtenverzeichnisse oder Bohrsäulen. Digitale Schichtenverzeichnisse werden als SEP-Dateien von den Bohrfirmen an uns via Email übermittelt. Bei einigen Bohrungen überprüfen wir die Qualität der erstellten Schichtenverzeichnisse, in dem wir uns von den Bohrfirmen Gesteins-Proben schicken lassen, die von uns im GLA untersucht werden. Falls erforderlich werden die Schichtenverzeichnisse durch uns vor der Eingabe korrigiert. Bohrungen, deren Proben von uns untersucht und testiert werden, heißen bei uns Laborbohrungen. Alle anderen sind Infobohrungen. Wenn wir Schichtenverzeichnisse erhalten, prüfen wir auch die Daten zur Lage. Wir benötigen die exakten Koordinaten und auch einen Lageplan um die angegebenen Koordinaten überprüfen zu können (hier gibt es ein hohes Fehlerpotential). Lagepläne werden von uns häufig angefordert. Weitere Fachdaten sind z.B. Messdaten von Baugrunduntersuchungen, Korngrößenanalysen, oder andere Laboruntersuchungen. Auch die sollen uns via Email übermittelt werden. Die Nachverfolgung ist hier schwierig, da wir meist nicht wissen, was untersucht wird.
- **Bewertungsdaten** (müssen spätestens 6 Monate nach Ende der Bohrarbeiten beim GLA eintreffen): hierzu zählen Gutachten und Berichte. Auch hier ist die Nachverfolgung schwierig, da nicht zu jeder Bohrungen Gutachten oder Berichte erstellt werden.

Figure 13: As-is BPMN Model Edit drilling notifications (Overarching process)



Source: Aris database (City of Hamburg)

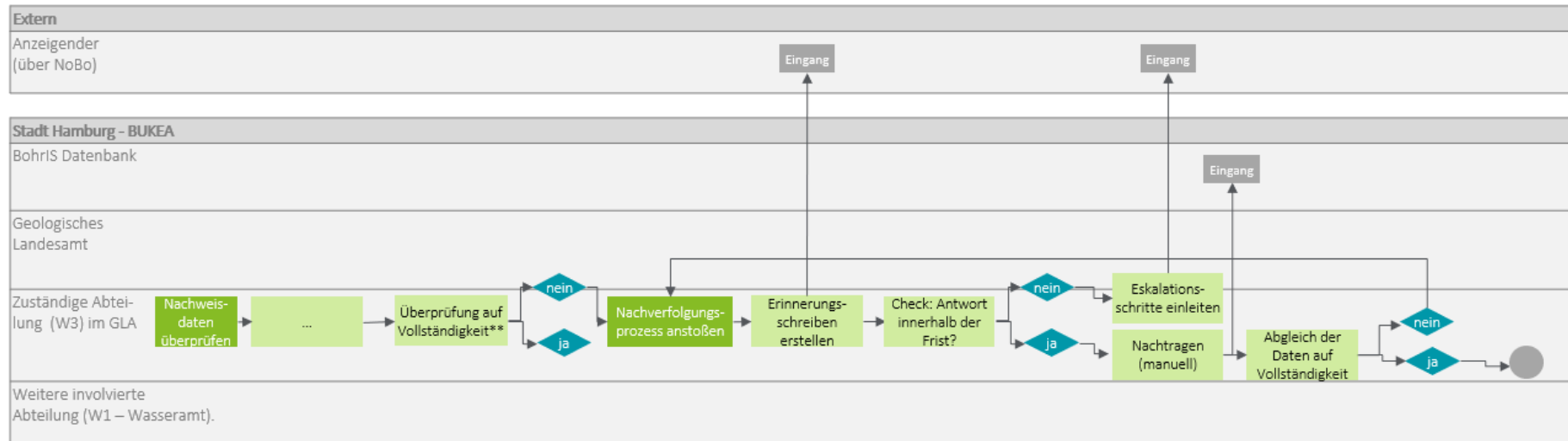
Figure 14: Process Review of incoming drilling data (Überprüfung Bohranzeigen)



Source: Deloitte 2022, based on the stakeholder interviews with the Geological State Office, BUKEA



Figure 15: Process Tracking the incoming drilling data (Nachverfolgung Bohranzeigen)

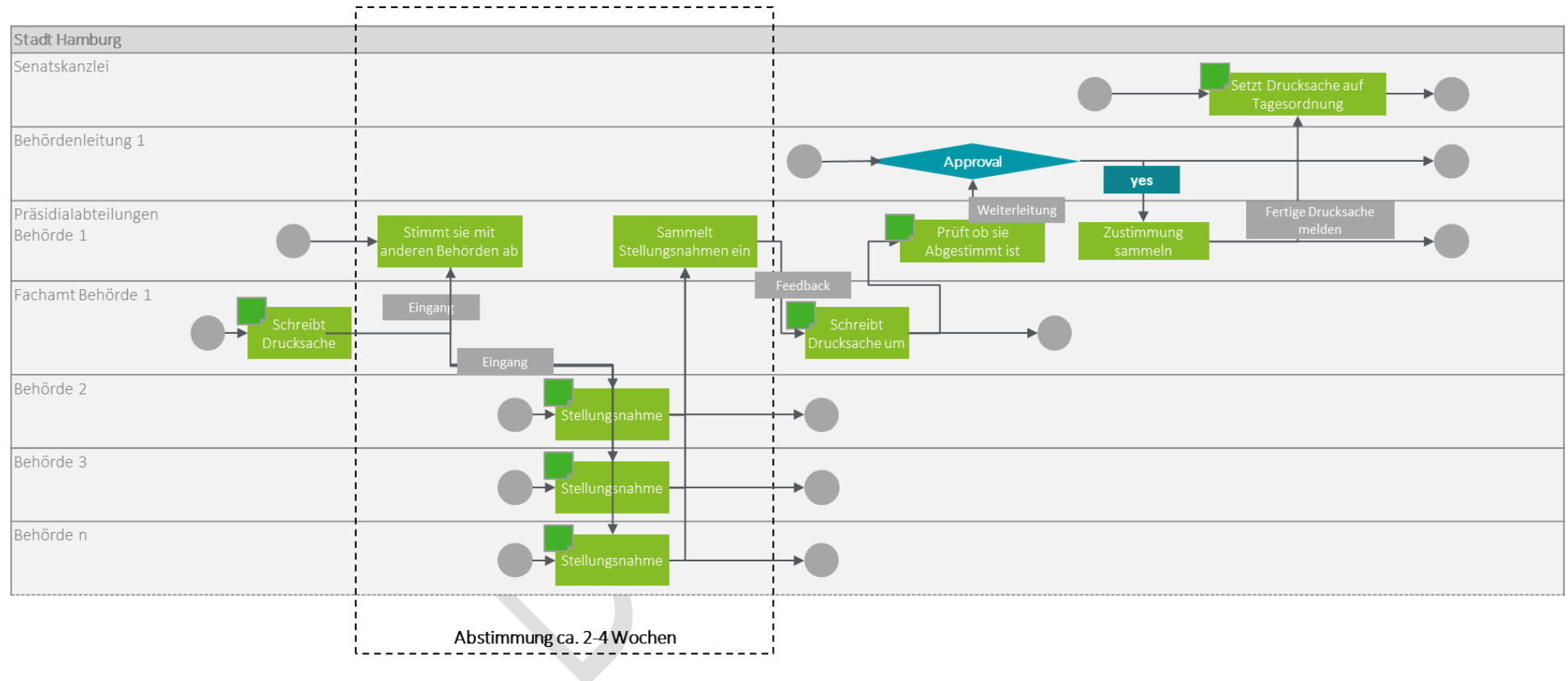


\*\* beliebig viele Iterationen möglich

Source: Deloitte 2022

### As-is BPMN Model 'Senatsdrucksachenabstimmung' in German

Figure 16: As-is BPMN Model 'Senatsdrucksachenabstimmung' (German)



Source: Deloitte 2022, based on stakeholder interviews



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