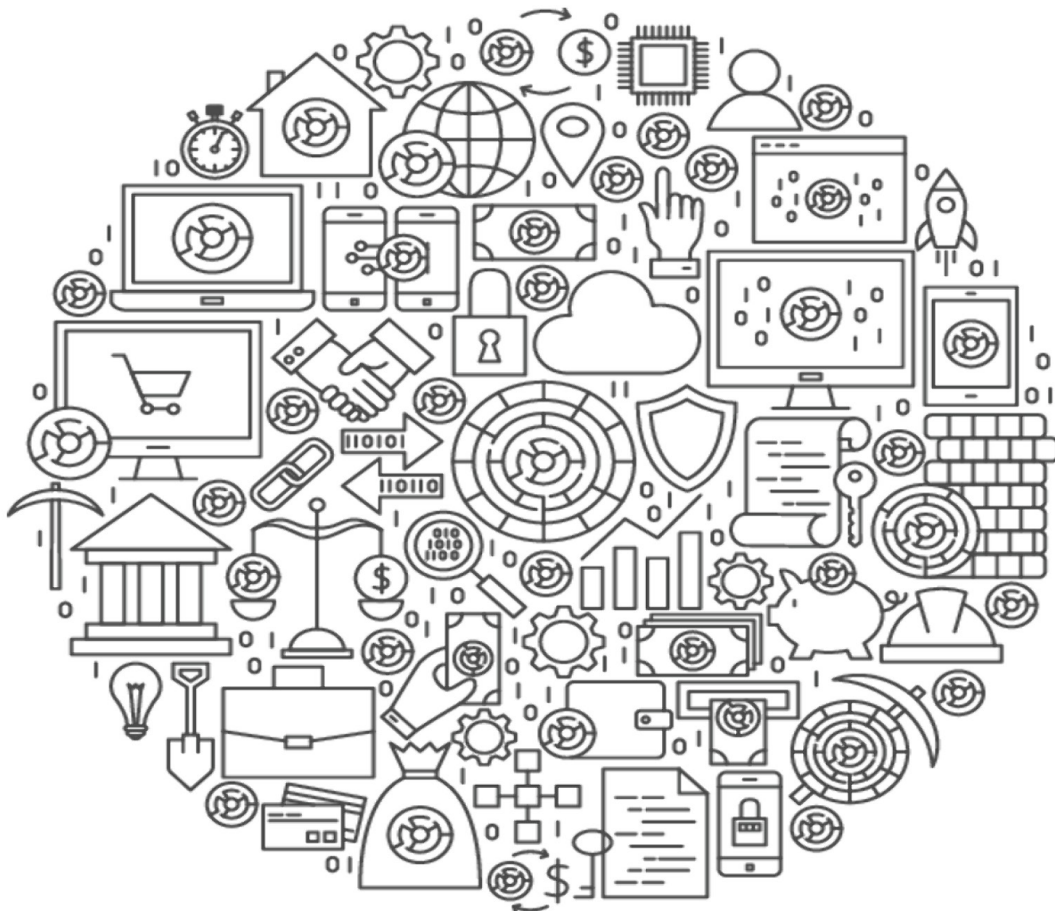


Determine the potential for digitization and harmonisation of administrative process

Deliverable 7: To-be business process model

Technical Support Instrument

Supporting reforms in 27 Member States



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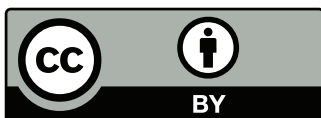
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List of abbreviations

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

To-be process models in BPMN format

Executive summary

This document presents the to-be process models in BPMN format as well as their operational implications of the five selected to-be processes:

- Brief written inquiries
- Senate printed matter coordination
- Bohrls (imputing procedure)
- Info boxes
- Knowledge management.

In order to obtain and specify the information for the to-be process models, five stakeholder workshops with the respective process owners were conducted as part of this deliverable. As part of these workshops, details regarding the respective to-be process models and additional aspects regarding the IT architecture were discussed.

Introduction

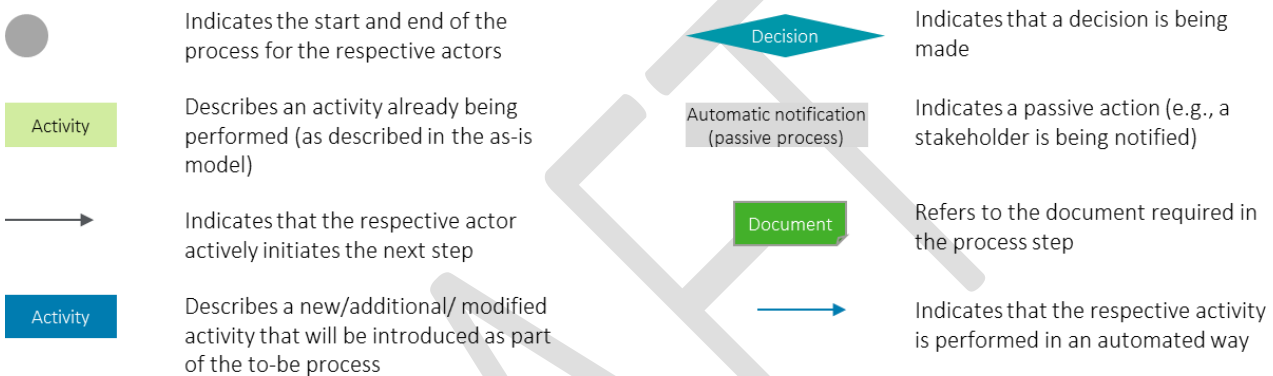
The structure of this document is as follows: for each of the five below-listed processes, the to-be process description including the to-be process model in BPMN format is presented. Thereafter, the respective operational implications for each process are characterised.

The five to-be processes are as follows:

- Brief written inquiries
- Senate printed matter coordination
- Bohrls (imputing procedure)
- Info boxes
- Knowledge management.

The following figure provides an overview of the icons and boxes that were used in this Deliverable to illustrate the to-be process models.

Figure 1: Legend of the to-be BPMN process models



Source: Deloitte (2022)

Please note that all described to-be models in this Deliverable are considered to be suggestions. Before the implementation of the five to-be process models, **further alignments and consultations** should be made with the process owners, although the process owners are not authorised to make the final decisions regarding the to-be processes.

Brief written inquiries (Schriftliche kleine Anfragen (SKA))

Brief written inquiries are inquiries on public matters, which are addressed to the Senate by members of the Parliament. These inquiries are transmitted forthwith to the Senate and are to be answered in writing by the Senate within eight days.

To-be process model

The to-be model of the brief written inquiries correspond to the presented alternative 3 in Deliverable 5 ("Business Case"). This includes the following elements:

- IDM workflow management system (IDM)
- a central access channel
- a forwarding assistant for determining the potentially responsible authorities and offices of the inquiries
- a monitoring and deadline tracking dashboard
- a comment and communication function
- an archive function
- an intelligent search
- inter-authority access
- interface to the eSIS system
- interface to E-mail

The to-be model process steps are shown in blue in the following flowchart, with the IDM tool as the intermediate point. The process steps are described below on the basis of the drawn-in phases. On a superordinate level, the process can be shown in the process flow chart below from the perspective of the

Senate Chancellery. As an example, the process within an individual agency can be seen in the following process flow diagram. The process of an individual agency is briefly described below along the following flowchart and phases.

The module of the intelligent search allows for facilitated searches over the already answered inquiries, and thus simplify and accelerate the process, which would be advantageous in such a time-critical process. The access would be implemented as an inter-agency and inter-departmental.

Phase I: Determination of leading authority

The 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 inquiries of the members of parliament are collected by the office of the citizenry (*Bürgerschaftskanzlei*) and transmitted to the Chancellery of the Senate (*Senatskanzlei*). The latter sends all inquiries to the authorities. The IDM tool notifies the authorities via E-mail of new requests and each presidential department of the authorities decides, which request they would like or need to answer. The objective of this first phase is to decide which authority will take the lead in answering the individual brief written inquiry. The authorities decide among each other via the communication and comment function of the IDM tool and report the outcome to the Senate Chancellery, which forwards back the respective written inquiries number and the agenda item via the portal.

Phase II: Response and archiving

The leading presidential department of the authority can submit the responsibilities and deadlines to answer the request and track them via the IDM tool. Through the module for the (assisted) **determination of responsibilities**, the user receives the potentially responsible authorities or offices determined by the forwarding assistant to answer the respective inquiry.

After collecting the individual answers of the IDM tool, which are transmitted and archived in the IDM tool, the answer of the brief written inquiry is written, the answer is forwarded to the Senate Chancellery, which collects all answers, 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 in bundled form. The office of the citizenry, in turn, sends the answered questions to the members of parliament.

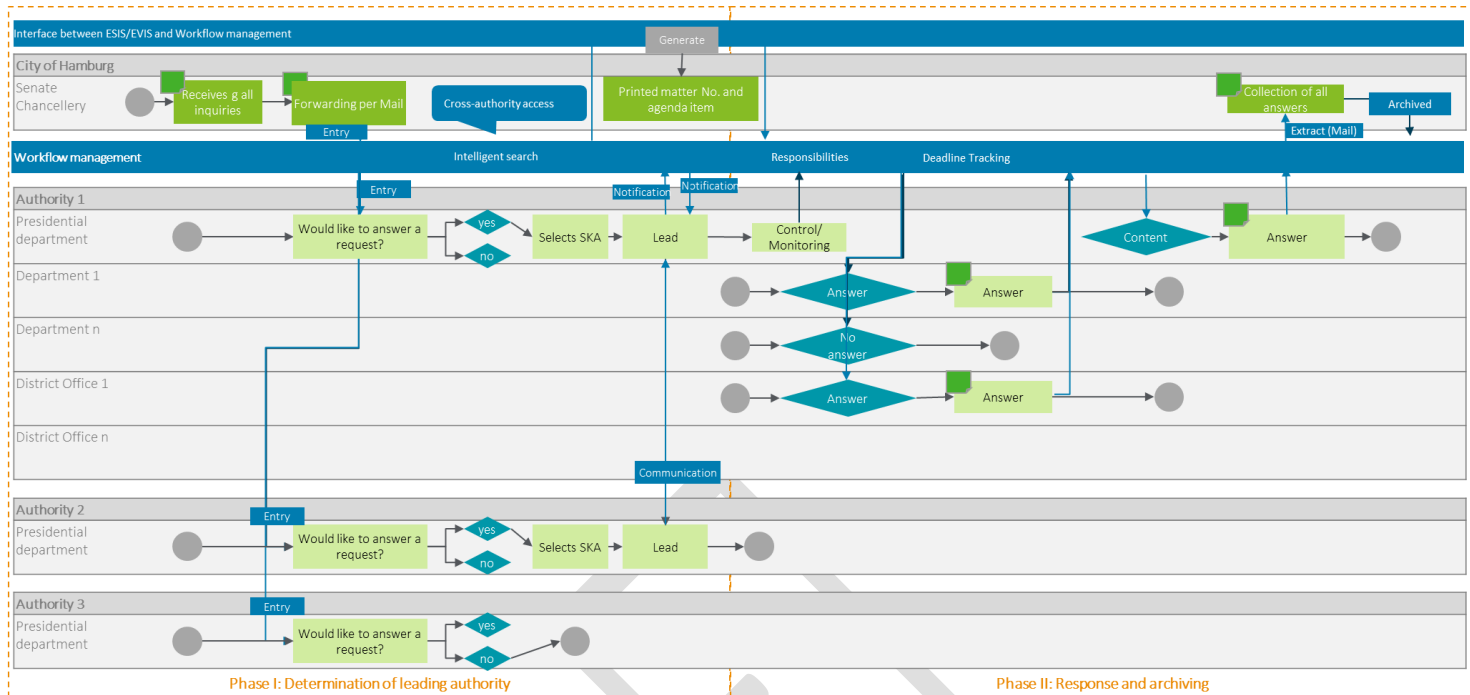
From the perspective of the Senate Chancellery

Currently, the Senate Office is already working with a system for processing such requests. The system currently in place is the eSIS 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 is used for forwarding the SKA by e-mail, as well as the selection of various 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.

As part of the to be model, an interface to the IDM tool is established. The Senate Office will continue to work with the eSIS tool, which will transmit requests directly to the IDM tool and vice versa.

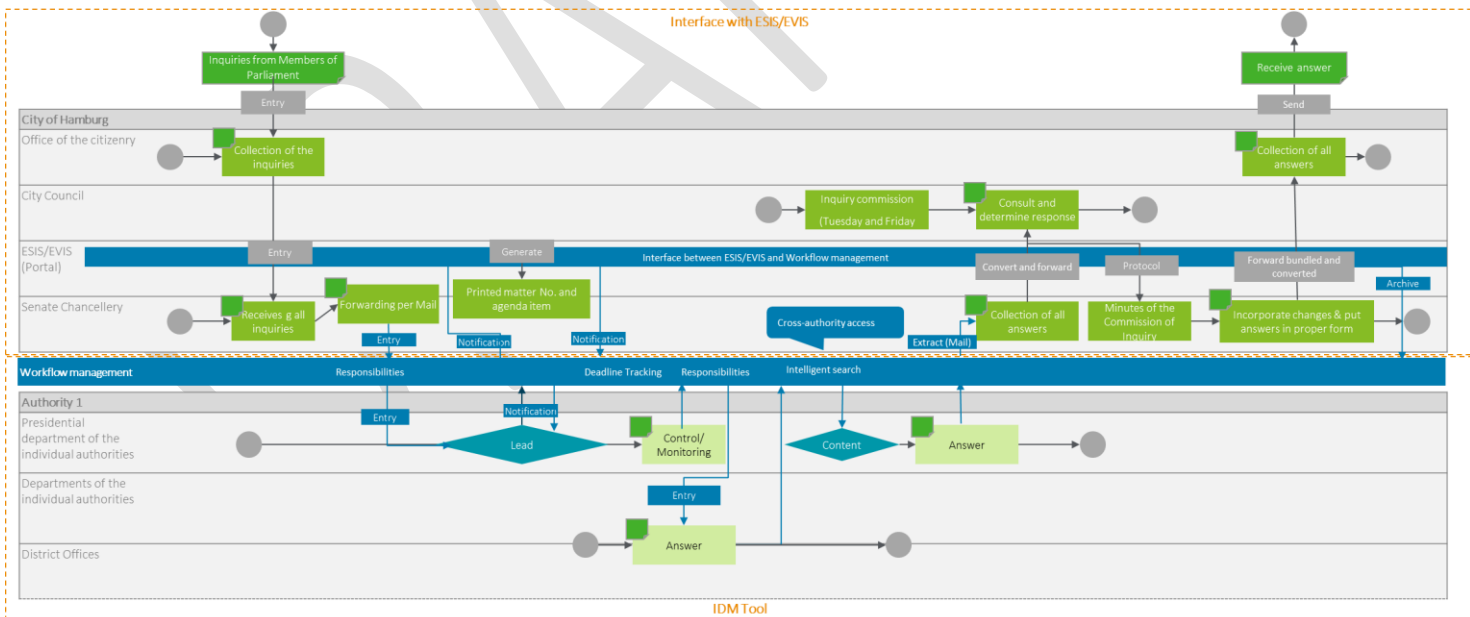
The flowchart shows the differentiation between the use of eSIS and the IDM tool.

Figure 2: To-be business process model SKA - From the perspective of the individual presidential department



Source: Deloitte (2022)

Figure 3: To-be business process model SKA - From the perspective of the Senate Chancellery



Source: Deloitte (2022)

Operational implications

On a process level, the implementation of the to-be process model of the Brief Written Inquiries (Schriftliche kleine Anfragen) would have the following operational implications:

- Given the fact that the SKA process would be processed from the beginning in the workflow management tool – the IDM tool – (excluding the process steps that are processed in the eSIS system and relate to the Senate Chancellery, “Senatskanzlei”), the process allows for a **clear overview and transparency**, especially with the dashboard functions.
- The central storage of documents and information as well as their access via the IDM tool allow for a **better and easier cross-authority and cross-department information exchange and coordination**.

The IDM tool further allows to easily integrate additional authorities/departments/units, which, in turn, facilitates the determination of the authority/departments/unit that is leading the SKA (has the “*Federführung*”) and the coordination between involved authorities (also via the dashboard overview).

- The to-be process model foresees a facilitated forwarding, thereby **streamlining the as-is process for more efficient procedures** (e.g., internal research will be discontinued).
- The intelligent search combined with the assisted assignment of responsibilities allows for a faster determination of the leading authority/departments/unit (with “*Federführung*”) as well as of the other involved units. Given the time-criticality of SKAs, a **quick allocation of responsibilities** is particularly important. As a consequence, involved units/departments/authorities have more response time.
- Via an access management (assigning different rights to different involved authorities/departments/units), **sensitive information and personal data can be restricted** to those officers in charge.
- In the best-case scenario and as far as legally possible, forwarded SKAs could be archived in a central storage, thereby **creating a labelled database**¹ which, in turn, can improve the AI model for the assisted assignment of responsibilities. This labelled database can have, as a consequence, **synergy effects on an organisational level given its relevance for other processes** with assisted assignment (e.g. the process Info Boxes).

¹ https://en.wikipedia.org/wiki/Labeled_data - Labeled data is a group of samples that have been tagged with one or more labels. Labeling typically takes a set of unlabeled data and augments each piece of it with informative tags. For example, a data label might indicate whether a text was assigned to person A for an answer.

Senate printed matter coordination (Senatsdrucksachenabstimmung)

Senate printed matter coordination are issues of fundamental importance, which are decided by the Senate. These issues are regulated on the Senate's Rules of Procedure (*Geschäftsordnung*) and are addressed by the respective departments of the authorities (e.g. in the case of ordinances or draft laws). This is a completely internal process.

To-be process model

The to-be model for the senate printed matter coordination corresponds to the presented alternative 2 in Deliverable 5 ("Business Case"). This includes the following elements:

- IDM workflow management system (IDM)
- assignment of responsibilities (manually)
- a central access channels
- a monitoring and deadline tracking dashboard
- a comment and communication function
- archiving
- inter-authority access
- interface to E-mail

The to-be model process steps are shown in blue in the following flowchart, with the IDM tool as the intermediate point. The process steps are described below on the basis of the drawn-in phases.

Phase I: Internal coordination of the authority

In the case of a new printed matter, the authority coordinates the printed matter internal with the involved departments of the authority. After the successful coordination, the authority informs the Authority Directorate (*Behördenleitung*) via the IDM tool. In some cases, the approval of the latter is necessary to distribute the printed matter to other authorities. In other cases, a sole information of the Authority Directorate is sufficient. In that case, the authority can proceed with the internal coordination without its approval.

Phase II: Collection of inter-authority statements

The authority writes the printed matter and forwards it via the IDM Tool to collect statements from the authorities involved. The authorities involved are informed by the tool through an e-mail and can enter their comments in the communication and comment function. These are viewable via the IDM tool for the initiating authority, which incorporates the statement and rewrites the printed matter accordingly. The individual statements and comments of the involved authorities are archived in a central database.

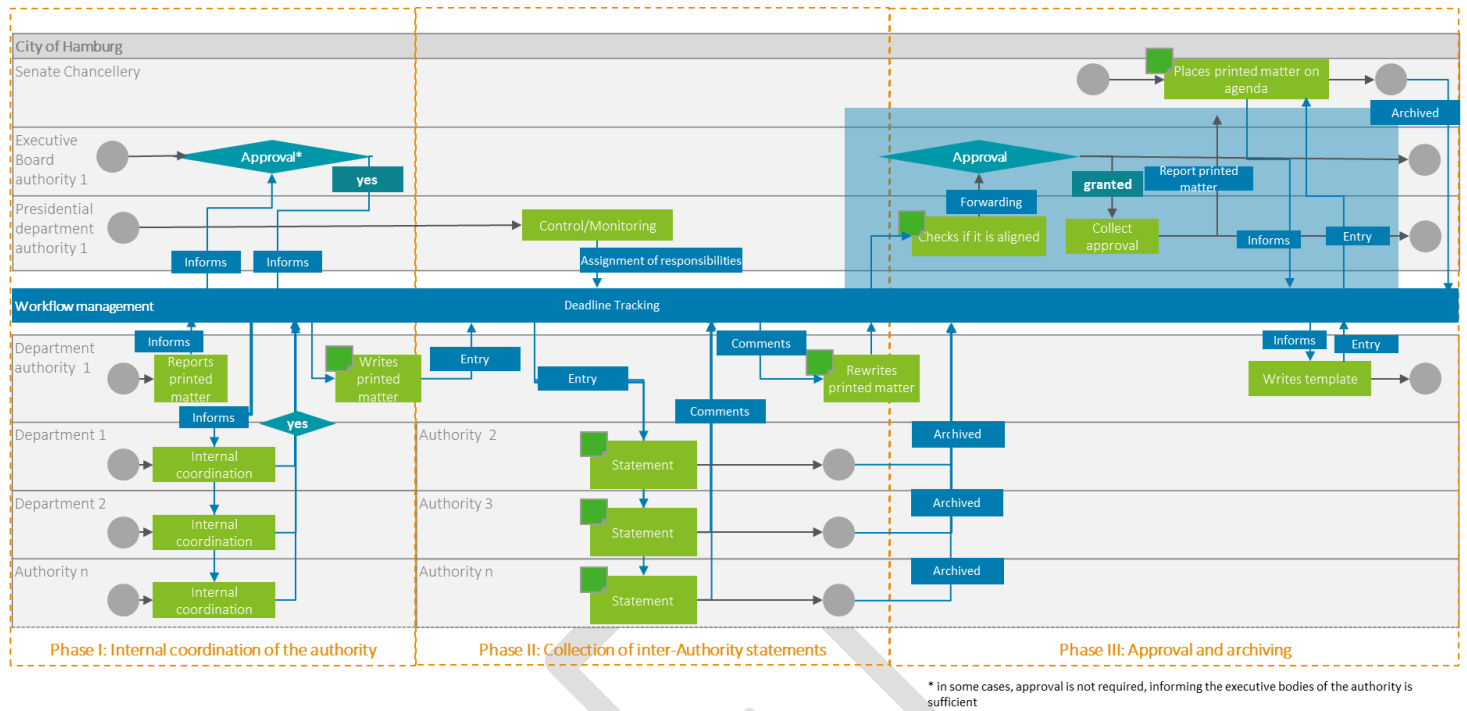
With the assistance of the IDM tool, a central dashboard can be used to track the deadlines and responsibilities.

Phase III: Approval and archiving

After rewriting the printed matter, it is forwarded via the IDM tool to the presidential department (*Präsidialabteilung*), which checks its alignment with other written matters, and the Authority Directorate (*Behördenleitung*). After its approval, the matter is reported to the Senate Chancellery which places it on the agenda. As soon as the printed matter is placed on the agenda of the Senate Chancellery (*Senatskanzlei*), the initiated authority is informed about this via the IDM tool and writes a template ('*Waschblatt*') and submits it through the IDM tool in turn to the Senate Office. This template summarizes and explains the contents of the printed matter.

The statements of the involved authorities as well as the finalized printed matter are **archived** in a central database.

Figure 4: To-be business process model Senate printed matter coordination



Source: Deloitte (2022)

Operational implications

On a process level, the implementation of the to-be process model of the Senate Printed Matter Coordination ("Senatsdrucksachenabstimmung") would have the following operational implications:

- Given the fact that the SKA process would be processed from the beginning in the workflow management tool – the IDM tool –, the process allows for a **clear overview and transparency**, especially with the dashboard functions. For example, old senate printed matters can be accessed via the dashboard.
- The central storage of documents and information as well as their access via the IDM tool allow for a **better and easier cross-authority and cross-department information exchange and coordination**. The IDM tool further allows to easily integrate additional authorities/departments/units, which, in turn, facilitates the determination of the authority/department/unit that is leading the senate printed matter (has the "*Federführung*") and the coordination between involved authorities (also via the dashboard overview).
- Via an access management (assigning different rights to different involved authorities/departments/units), **sensitive information and personal data can be restricted** to those officers in charge.

Imputing procedure (Imputing-Verfahren) – BohrIS

The process “Bohranzeigen bearbeiten” (processing of drilling data) is a process that is allocated in the Geological State Office (*Geologisches Landesamt, GLA*) at BUKEA. The responsible unit of the main parts of this process is unit W3 at the GLA. Three process activities are of particular relevance regarding the imputing procedure and will therefore be described in detail in this to-be model, namely

- the completeness check (phase IIa)
- the tracking of incoming drilling data (phase IIb)
- the imputing of missing values (phase III)

These phases are surrounded by the preceding phase 0 and I, the technical review of the drilling data, and the subsequent archiving (part of phase III). Phase 0, phase I and the archiving are the same for both subprocesses.

To-be process model

Substantial parts of this process, in particular those process steps prior to the tracking of incoming drilling data and the completeness check, largely remain unchanged. Therefore, only those process steps of the process “Bohranzeigen bearbeiten” (processing of drilling data) are described in the following that are relevant to the tracking of incoming drilling data and the completeness check. The entire process description can be obtained in Aris (“Bohranzeigen bearbeiten”).

The to-be model for the processing of drilling data corresponds to the alternative 3 presented in deliverable 5 (“Business models”). This includes the following elements:

- a workflow management tool (IDM or ‘Modul F’)*
- an interface between the BohrIS database and the workflow management including export function into the workflow management system
- access of W1 (Wasseramt) to the workflow management (to facilitate the information exchange with W3 regarding specific drillings that involve W1 participation)
- the manual assignment of responsibilities
- a control/monitoring dashboard
- a deadline tracking dashboard
- a comment and communication function
- archiving of the inquiries and the process and response histories in a central database
- an automated completeness check
- imputing of missing values
- an automated plausibility check

*For this process, it may also be possible to deploy another Hamburg internal solution, the “Modul F”² instead of using the IDM tool. The possibilities of using the IDM tool and “Modul F” should be examined in-depth in the implementation phase of this project (see Deliverable 8: Roadmap).

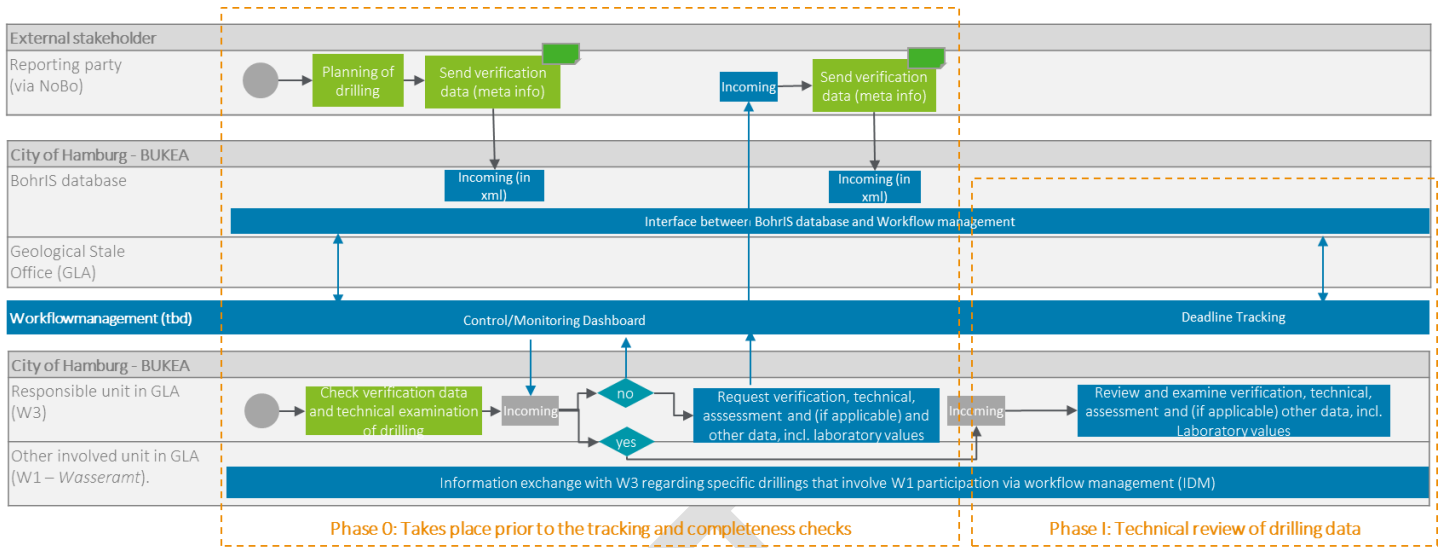
In the process flowcharts below, those activities, functionalities and arrows that are marked in blue are steps/features that will be new as compared to the as-is process (see Deliverable 2).

Phase 0

The Geological State Office operates a database (BohrIS) that collects various data on boreholes carried out in the City of Hamburg. 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 checks the receipt of the verification data and accompanies the drilling professionally** if necessary. If it is not received, the responsible department will request the verification data from the person making the notification via the workflow management.

² MODUL-F (Modular Solution for Specialized Procedures) is a platform that provides basic building blocks for the fast and economic development of specialized procedures as well as a space for the resulting specialized procedures.

Figure 5: To-be process model BohrIS process prior to the tracking and completeness check



*only process steps relevant for the to-be processes are shown. The entire process description of this process can be obtained in Aris (process, Bohranzeigen bearbeiten).

Source: Deloitte (2022)

Phase I: Technical review of drilling data

After having obtained the drilling data, the first **technical review of the drilling data performed by W3** begins. This entails a review and an examination of the verification (*Nachverfolgungs-*), technical (*Fach-*), assessment data (*Bewertungsdaten*) and (depending on the type of drilling) laboratory values (*Labordaten*). W3 thereby accesses the BohrIS database via the workflow management. In case the drilling data are incomplete and/or values are missing, phases IIa and IIb start.

BohrIS completeness check

This subchapter describes the to-be process of the subprocess completeness check.

Phase IIa: Completeness check

In the case the drilling data are not complete, Phase IIa is initiated. Phase IIa entails a completeness check, i.e. a check whether the drilling data to be handed in is complete and in due time. According to the regulation concerning Geological Data (“Geologiedatengesetz”)³, the deadline for the verification data is 3 months after the end of the drilling, the deadline for technical and assessment data is 6 months after the end of the drilling. With the **deadline tracking** function, an automated comparison of the data to be received and the end date of the drilling based on the indications of the drilling application (*Bohrantrag*) is performed. In case the applicant has indicated via NoBo another end date of the drilling, this date will be taken as a basis for the automated comparison of the deadline.

In the case all data was submitted in due time, the completeness check starts directly. In the case of missing data, W3 can send a **request of the missing data via the workflow management to the applicant**. The applicant then receives a notification and a deadline to deliver the missing data (either upload via NoBo or via email to W3). In case W3 receives this missing data via e-mail, it can upload this data into the BohrIS database.

Thereafter, an **automated completeness check** of the drilling data takes place. The completeness check module automatically checks the received data for completeness by searching for missing values. This module is based on a rule-based approach (see Deliverable 6). In the case missing data is detected, the responsible person in W3 is notified via the IDM tool and can then send a follow-up request to the person

³ See Bundesministerium der Justiz, Gesetz zur staatlichen geologischen Landesaufnahme sowie Übermittlung, Sicherung und öffentlichen Bereitstellung geologischer Daten und zur Zurverfügungstellung geologischer Daten zur Erfüllung öffentlicher Aufgaben (Geologiedatengesetz). [GeolDG - nichtamtliches Inhaltsverzeichnis \(gesetze-im-internet.de\)](https://www.gesetze-im-internet.de/geologiedatengesetz/)

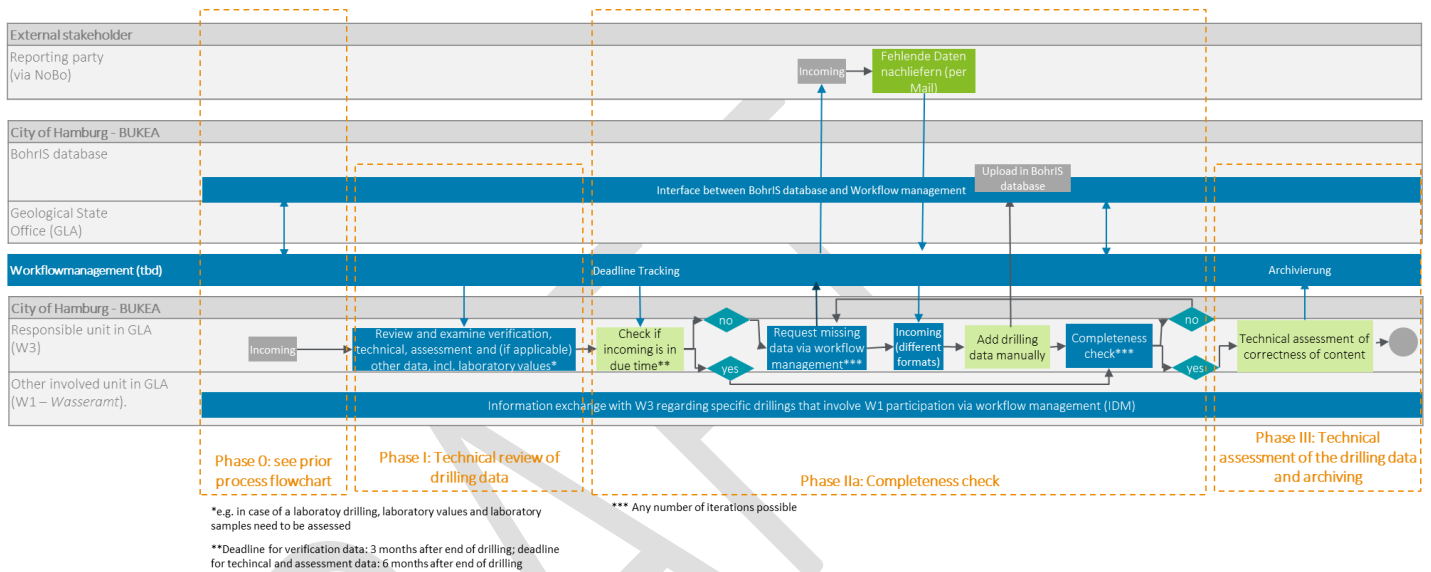
responsible for the data delivery (the applicant). This completeness check can have any number of iterations possible.

Phase III: Technical assessment of the drilling data and archiving

As soon as the completeness check succeeds (all drilling data completed), W3 starts with the **technical assessment**, i.e. the correctness and the technical examination of the drilling data (see also Aris flowchart “Bohranzeigen bearbeiten”). After having completed the technical assessment, W3 can **archive** the drilling data via the workflow management.

The figure below describes the to-be process steps of the completeness check as part of the process “Bohranzeigen bearbeiten”.

Figure 6: To-be process BohriS – completeness check



Source: Deloitte (2022)

BohrIS tracking of incoming drilling data

This subchapter describes the to-be subprocess tracking of the incoming drilling data.

Phase IIb: Tracking of incoming drilling data

In case the drilling data is not complete, the **tracking of incoming drilling data must be initiated according to the Regulation concerning Geological Data (“Geologiedatengesetz”)**.⁴ The procedure entails a comparison of incoming data with the data prescribed by law, a verification of these data, different escalation levels including reminder writing and sanctioning as well as a manual access to the data.

According to the requirements prescribed in this regulation, the tracking process will **be initiated if the prescribed drilling data are not complete**. Hence, this tracking process takes place largely simultaneously with the completeness check (Phase IIa) as these activities are deeply intertwined.

In case the completeness check reveals that data is missing, W3 initiates the tracking process. In the workflow management, a reminder letter will be created that is sent to the reporting party (applicant) indicating a deadline for the provision of the missing information. With the **deadline tracking** function an automated comparison of the data be received within this deadline is performed.

In case the reporting party does not reply in due time, W3 initiates the **escalation process** that includes various levels of reminder letters and sanctioning via the workflow management.

⁴ See City of Hamburg, Geologisches Landesamt, Geologiedatengesetz (GeolDG), [Geologiedatengesetz - hamburg.de](http://Geologiedatengesetz-hamburg.de), for more information.

As soon as the missing data is sent via mail, **W3 can add the data manually into the BohrIS database**. In case the reporting party enters the missing data via NoBo, W3 will be **notified via the workflow management**.

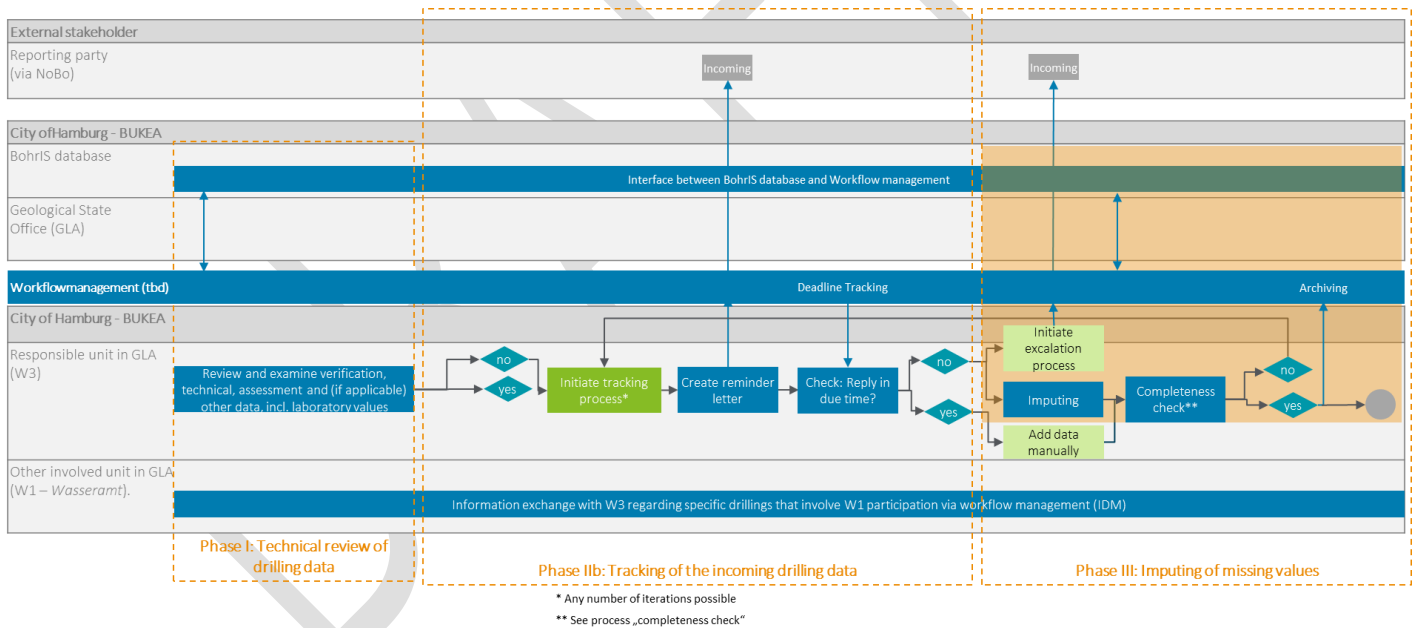
Phase III: Imputing of missing values and archiving

In parallel (or after a certain number of unsuccessful requests to the reporting party), the **missing data can be imputed**. A popular approach to imputing data is to calculate a statistical value for each column (e.g., a mean) and replace all missing values for that column with that statistical value. The imputed values can be an estimate or an implicitly derived value with no uncertainty. This module would be introduced as an **“assisted module”**. This means that suggestions for the missing data are displayed, which must be checked and accepted by a responsible person. The **plausibility check** module provides the possibility to check the delivered data for plausibility. This can be done either on the basis of a rule-based approach or an AI module. Which approach is more suitable must be checked in the context of the supplied data. Both methodologies can also be used simultaneously side by side for different checks. The data will be checked manually for correctness in terms of content.

As soon as the completeness check succeeds (all drilling data completed), the process follows as described under phase III: technical assessment of the drilling data and archiving: W3 starts with the **technical assessment**, i.e., the correctness and the technical examination of the drilling data (see also Aris flowchart “Bohranzeigen bearbeiten”). After having completed the technical assessment, W3 can **archive** the drilling data via the workflow management.

The figure below describes the to-be process steps of the tracking of the incoming drilling data as part of the process “Bohranzeigen bearbeiten”.

Figure 7: To-be process BohrIS – tracking of the incoming drilling data



Source: Deloitte (2022)

Operational implications

On a process level, the implementation of the to-be process model of the BohrIS process (“Bohranzeigen bearbeiten”) would have the following operational implications:

- Given the fact that the BohrIS process would be processed from the beginning in the workflow management tool, the process allows for a **central and clear overview and transparency**, especially regarding the **interface to the BohrIS database** via the workflow management tool, the **archiving functionality**, and the **status overview** regarding drillings to be processed.
- The implementation of the to-be process would lead to a **reduction of media breaks** as both the BohrIS database and e-mails from external stakeholders (the reporting parties) can be accessed and processed via the workflow management, thereby increasing efficiency of the overall process.

- The **access of both units W3 and W1 to the workflow management** leads to a quicker information exchange, thereby leading to an **earlier and more prompt initiation of the processing of drillings**. Moreover, any information exchange regarding a particular drilling can be reported and communicated via the workflow management, thereby ensuring **traceability**.
- The **automated comparison of data**, e.g., regarding whether data is handed in in due time or whether drilling data is complete, **substantially increases the efficiency of the overall process and accelerates the workflow**, thereby significantly reducing manual administrative work and freeing up resources for technical assessments and reviews of drilling data.
- Via an access management (assigning different rights to different involved authorities/departments/units), **sensitive information and personal data can be restricted** to those officers in charge.
- The use of imputing can **significantly reduce iterations with the reporting party** (i.e. request for missing values and data) and thereby contributes to facilitate the workflow and reduce overall workload.
- The more the imputing procedures will be used, the better the Machine Learning model, in this case the iterative imputer based on a multivariate imputation by chained equations (MICE) or the KNN Imputer (see descriptions in Deliverable 6) will be trained and the **more effective the imputing results** will be, thereby even more contributing to reduce the overall organisational workload.

Info boxes (Infoboxen)

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 e-mail inbox. The assignment and forwarding usually takes place on the same day.

To-be process model

The to-be model for the info boxes process corresponds to the alternative 3 presented in deliverable 5 ("Business Case"). This includes the following elements:

- IDM workflow management system (IDM)
- assignment of responsibilities (assisted)
- a central access channels
- a monitoring and deadline tracking dashboard
- a comment and communication function
- archiving
- inter-authority access
- interface to e-mail

Phase I: Inbox and forwarding

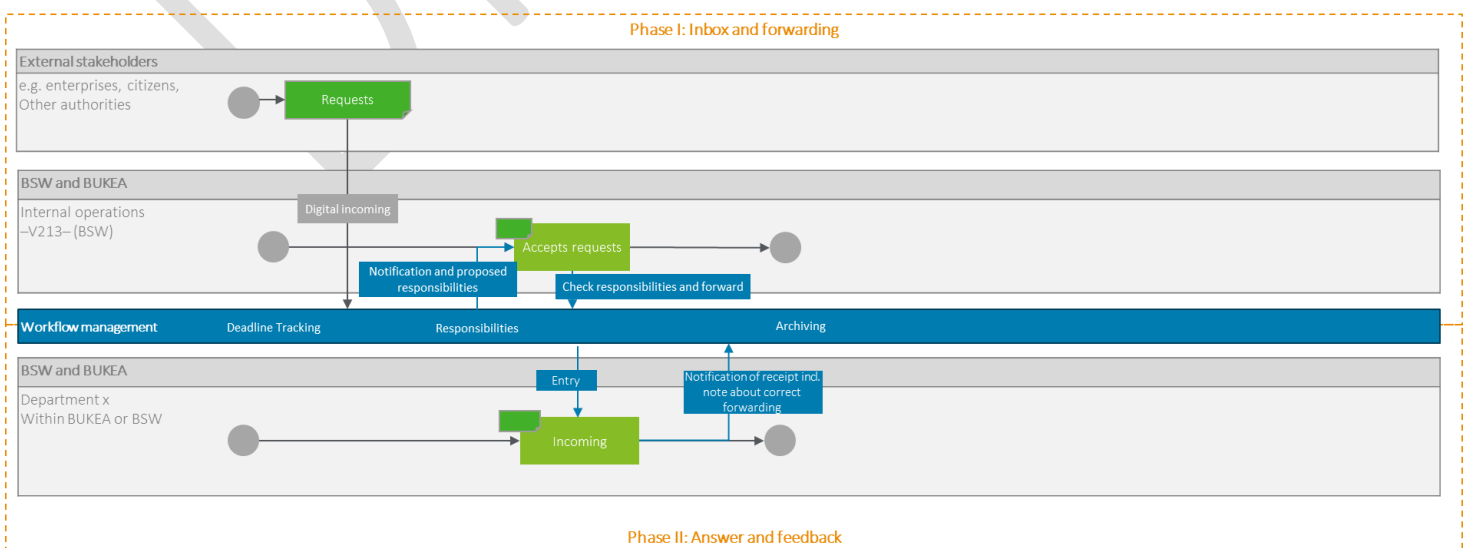
Incoming inquiries and requests are sent to a general e-mail inbox and transmitted to the IDM tool. The IDM tool notifies the administrator of the email inbox in the department V213 with a suggestion for a responsible person to answer the request. The department V213 accepts the request and check the suggested responsibilities. After a responsible department has been identified, the request or inquiry is forwarded to the department via the IDM tool. This offers the possibility of deadline tracking and archiving, as well as facilitating the use of the IDM tool for the upstream process of responding to the request within the department.

Phase II: Answer and feedback

The IDM tool notifies the responsible department of a new incoming request via e-mail. From this point on, the responsible authority can process the request with the help of the IDM tool. In addition, it can be stored in the IDM tool whether the request was forwarded correctly and archive this information together with the request.

Note: Currently, the received and forwarded requests are not archived, which makes it unfeasible to train such a module. The first step would therefore be to create a sufficient database by storing the forwarded emails (see Deliverable 8).

Figure 8: To-be business process model Info boxes



Source: Deloitte (2022)

Operational implications

On a process level, the implementation of the to-be process model of the Info Boxes (*“Infoboxen”*) would have the following operational implications:

- Given the fact that the info boxes process would be processed from the beginning in the workflow management tool – the IDM tool – , the process allows for a **clear overview and transparency**, in particular related to the notification of the correct forwarding and the archiving of forwarded incoming requests.
- The central storage of documents and information as well as their access via the IDM tool allow for a **better and easier cross-authority and cross-department information exchange and coordination**. The IDM tool further allows to easily integrate additional authorities/departments/units.
- The to-be process model foresees a facilitated forwarding, thereby **streamlining the as-is process for more efficient procedures** (e.g., internal research will be discontinued).
- Via an access management (assigning different rights to different involved authorities/departments/units), **sensitive information and personal data can be restricted** to those officers in charge.
- In the best-case scenario and as far as legally possible, forwarded incoming requests from external stakeholders could be archived in a central storage, thereby **creating a labelled database** which, in turn, can improve the AI model for the assisted assignment of responsibilities. This labelled database can have, as a consequence, **synergy effects on an organisational level given its relevance for other processes** with assisted assignment (e.g. the process Brief Written Inquiries).

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. 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.

To-be process model

The to-be model for the knowledge management process corresponds to the alternative 3 presented in deliverable 5 ("Business Case"). This includes the following elements:

- Dashboard
- Intelligent search
- archiving
- Inter-authority access

It includes a Dashboard and an intelligent search module. The adapted process steps are shown in blue in the following flowchart and phases, with the dashboard as the intermediate point and the intelligent search module.

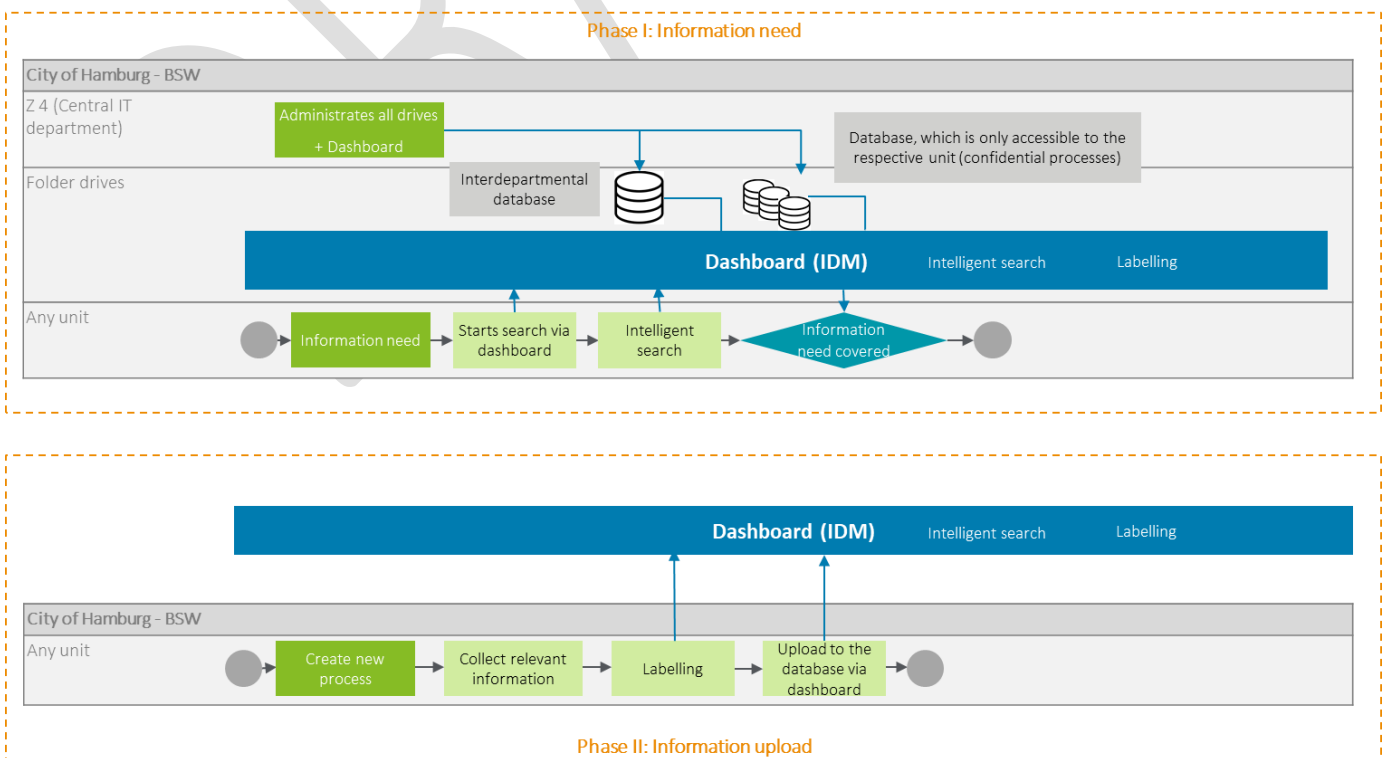
Phase I: Information need

The database and dashboard are administered by Z4. The database allows the processing of all relevant data formats, the modification of data as well as the import and export of data. For confidential processes or information various authorizations and accesses can be assigned. All other information and files can be accessed cross-departmental. In the event of a need for information, the searcher can start the search via the dashboard and the intelligent search, which facilitates and accelerates the search.

Phase II: Information upload

When new data or information is to be provided by any department, the department initiates the process, compiles the relevant information, and uploads it to the database via the dashboard. An important step in this process is the labeling of the data, which allows the intelligent search to be further expanded. This step is done in a specialized labelling environment (see Deliverable 6), where the label can be easily added.

Figure 9: To-be business process model knowledge management



Source: Deloitte (2022)

Operational implications

On a process level, the implementation of the to-be process model of the Knowledge Management (“*Wissensmanagement*”) would have the following operational implications:

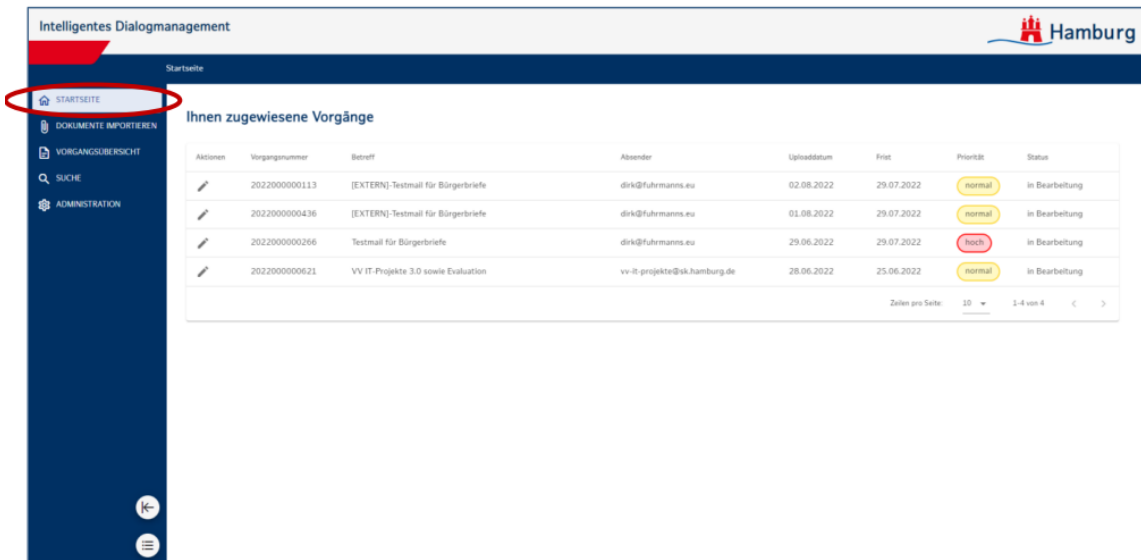
- Given the fact that the knowledge management process would be processed from the beginning in the workflow management tool – the IDM tool –, the process allows for a **clear overview and transparency**, especially regarding the **central access to the database** via the IDM tool.
- The central storage of documents and information – with different levels of access management rights – as well as their access via the IDM tool allow for a **better and easier cross-authority and cross-department information exchange and coordination**. The IDM tool further allows to easily integrate additional authorities/departments/units and their respective databases.
- The intelligent search allows for a **faster and improved access (in terms of quality and quantity) to required information**, thereby expecting to reduce overall workload of employees that use the intelligent search functionalities.
- Via an access management (assigning different rights to different involved authorities/departments/units), **sensitive information and personal data can be restricted** to those officers in charge.
- It is expected that given the fact that the existing database must be labelled, an **initial one-off workload, depending on the amount of data to be labelled**, would occur.
- Regarding the procedure of labelling, **additional one-off coordination efforts** are expected as departments/units must furthermore **agree internally on the way and modus operandi of labelling** data and documents, e.g., regarding the terminology used, the scope, the quantity of terms used per document.
- When storing new documents, **recurring additional time-efforts related to the labelling** of these documents occur for those employees that create and store these documents.
- The more units/departments use the intelligent search and label their documents/data, the better the AI model will be trained and the more effective the search results will be, thereby even more contributing to reduce the overall organisational workload. In the best-case scenario and as far as legally possible, data from different departments could be stored in a central storage, thereby **creating step by step a labelled database** which, in turn, can improve the AI model (see Deliverable 6).

Annex

Screenshots of the IDM tool

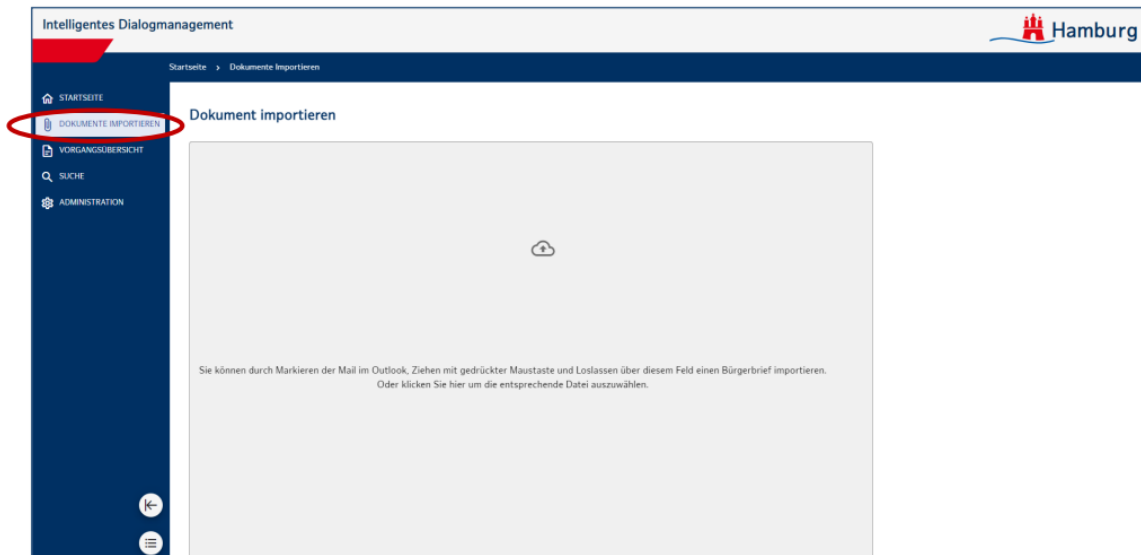
The following screenshots provide an overview of the functions of the IDM tool, which are currently developed. Due to the fact that the application language of the IDM tool is German, the screenshots are only available in the German language.

Figure 10: IDM tool: Main menu - home page



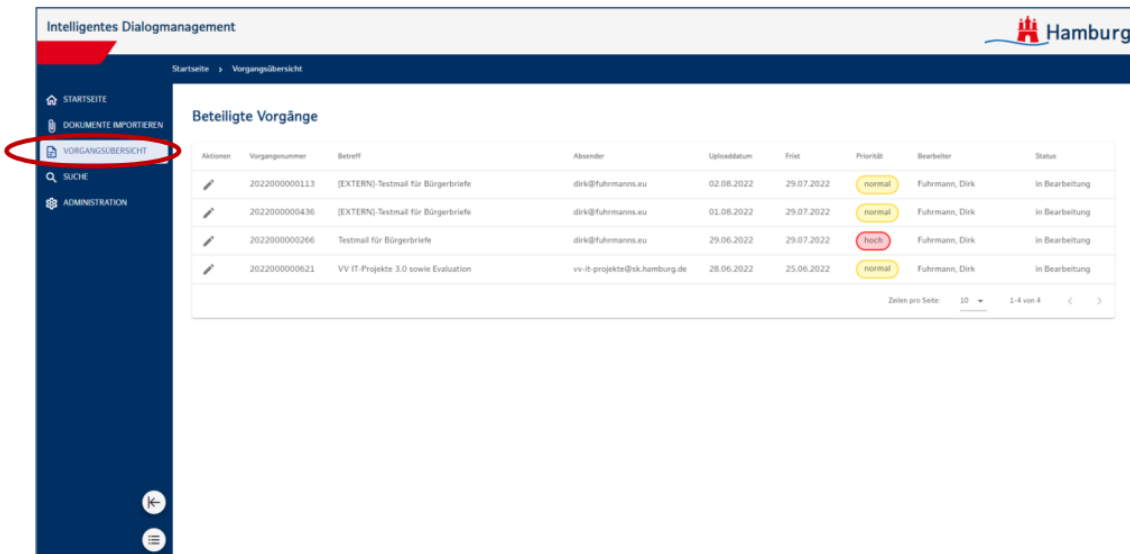
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 11: IDM tool: Main menu - import documents



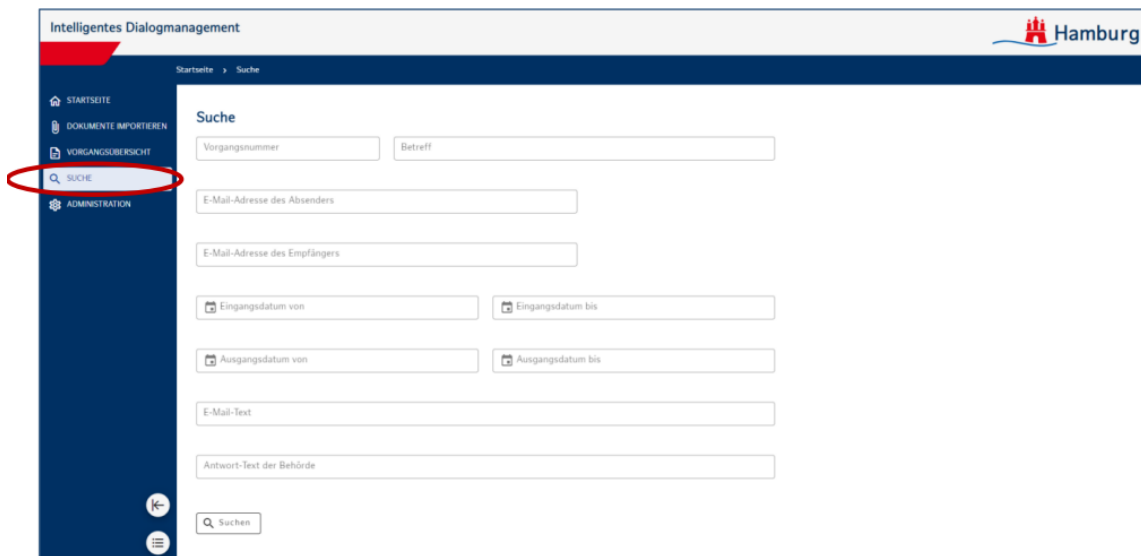
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 12: IDM tool: Main menu - process overview



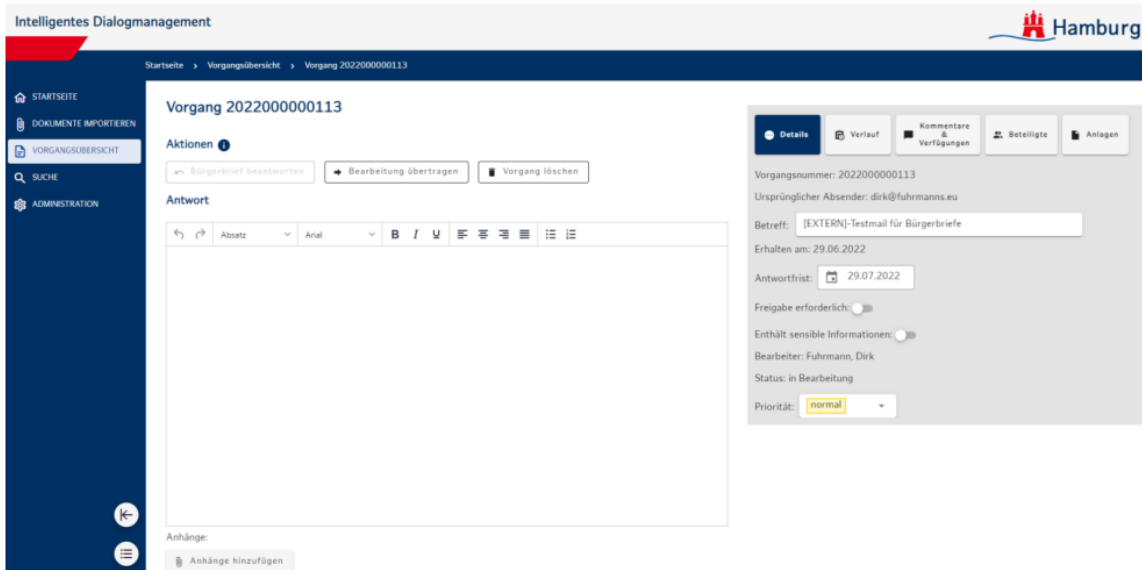
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 13: IDM tool: Main menu - search



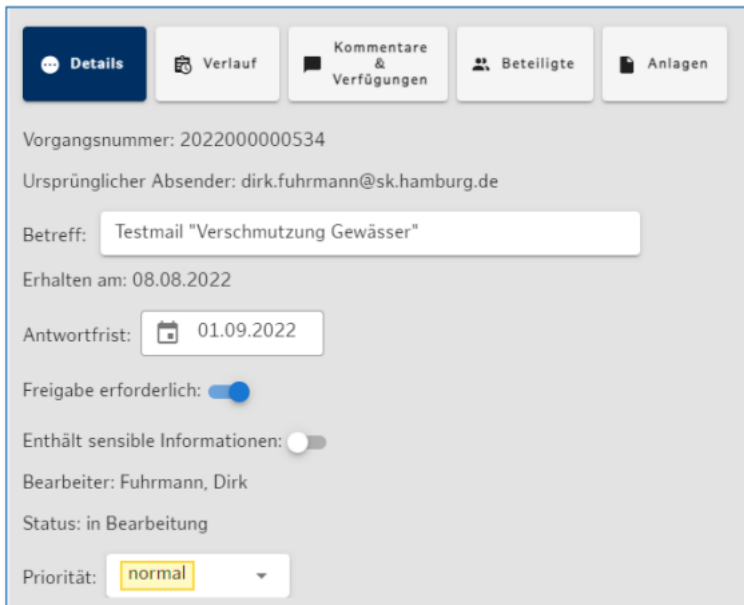
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 14: IDM tool: Create new process - edit view (1/2)



Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 15: IDM tool: edit view - details



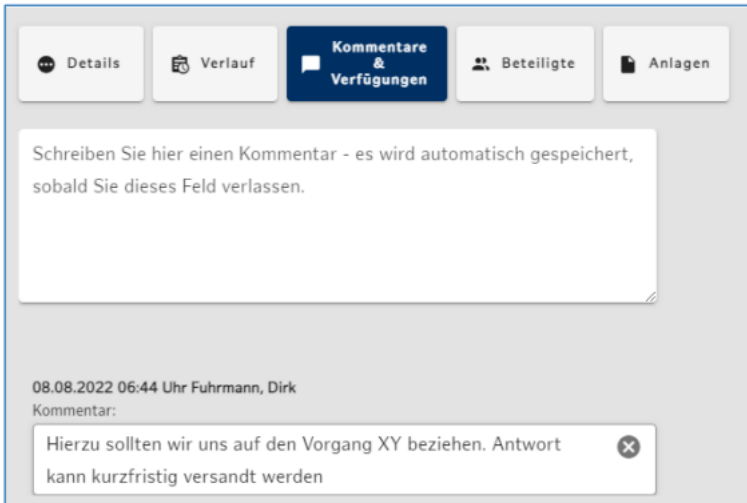
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 16: IDM tool: edit view - history



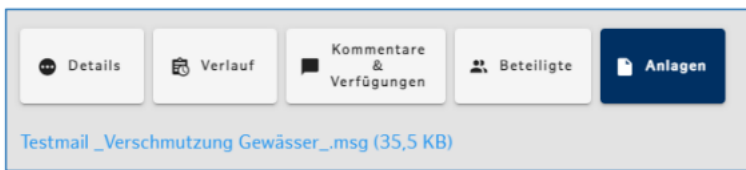
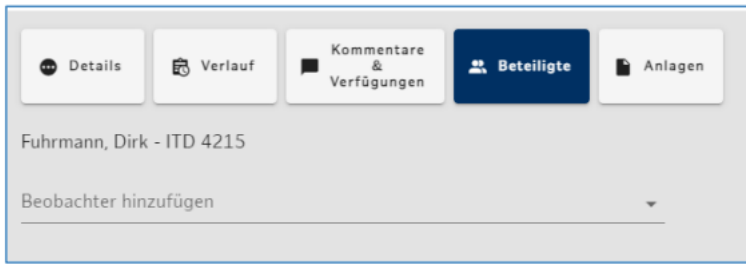
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 17: IDM tool: edit view - comments & availabilities



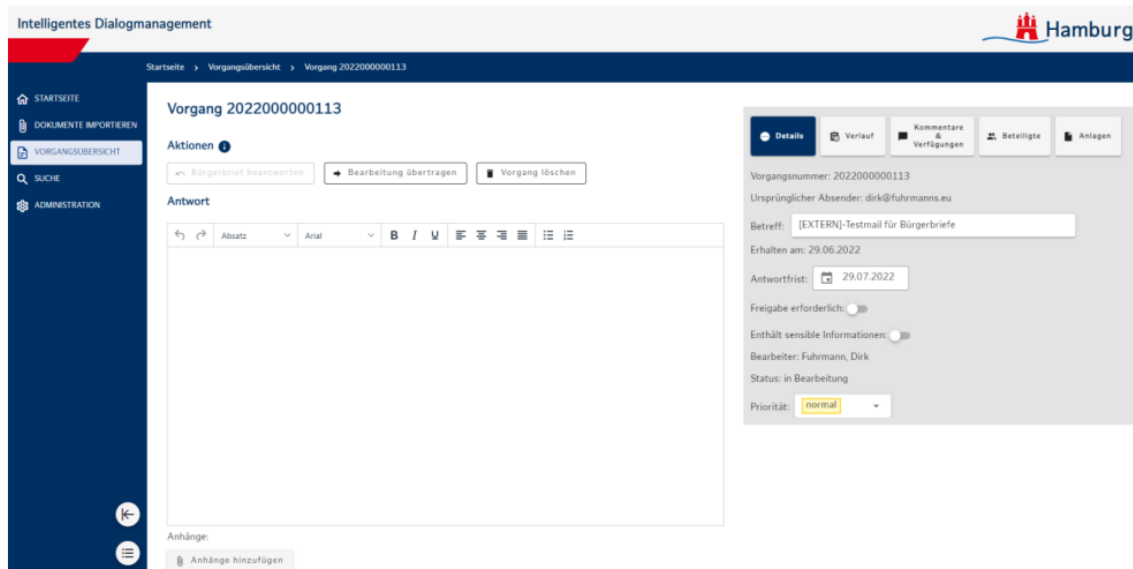
Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 18: IDM tool: edit view - participants & appendices



Source: Screenshots IDM, provided by the City of Hamburg (2022)

Figure 19: IDM tool: Create new process - edit view (2/2)



Source: Screenshots IDM, provided by the City of Hamburg (2022)



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