

# NATIONAL RESEARCH UNIVERSITY HIGHER SCHOOL OF ECONOMICS

Faculty of Computer Science

Bachelor's Programme "HSE University and University of London Double Degree  
Programme in Data Science and Business Analytics"

## Software Project Report

on the topic

Development of a contract approval application

(interim, first stage)

carried out by Student:

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8

grade on a 10-point scale

signature



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## Abstract

### Key words

- Workflow
- Automation
- BPMS (Business Process Management Suit)
- NDA (non-disclosure agreement)
- Web application

In this software project an application based on a modern BPMS (business process management suit) platform is going to be developed in order to improve the process of approving contracts in the company. The main goal of our work is creation of a data model, electronic forms (application interface), and workflow that satisfies the set of operations inside the company and to transfer all its key stages to an online system that will automate the documents approval process. The scope of this project also includes development of a fully functional information system that automates a part of the work of contractual department in the company related to NDA (non-disclosure agreement) documents approval and gives an ability to review, accept and sign the attached documents and contract metadata. It should be constructed in a user-friendly mode with clear interface using corporate colors and operate as a Web application (with access using HTTPS protocol). For development and execution of the project K2 BMPS system will be used. All application data should be stored in MS SQL database. The system should have a workspace that the end user will be using to access the application in a Web browser. Also, our solution should be integrated into the Contract Approval Management System that is actually implemented in Commercial Energy Solutions GmbH (former Gazpromneft Austria).

As a result, we expect to develop a fully operational system that satisfies all the customer requirements and follows the internal business processes of Commercial Energy Solutions GmbH. This system should contain all the specified details and completely fit the company's needs. The final product would be tested by the company in a pilot (test) mode.

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## Key terms, definitions, and abbreviations

Number	Term	Definition
1.	BPM Suite (BPMS)	Business Process Management Suite is a class of information systems designed to optimize and manage business processes.
2.	K2	BPM-system, produced by K2 Software Inc./Nintex, version K2 Five 5.4.
3.	SharePoint	A collection of software products and components by Microsoft designed to create web portals for storing and managing organizational content and collaboration.
4.	Customer	Commercial Energy Solutions GmbH.
5.	ITS	Information security.
6.	Initiator	The user who has the right to create an application.
7.	IS	Information system.
8.	Executor	The user who has the right to execute the application.
9.	Software	Programming product.
10.	Portal	A set of information services, systems and their modules, presented in the form of a single information window, built on the basis of web technologies as a collection of sites, united by a common interface and navigation.
11.	System	Information system/administrative services portal, developed on the K2 platform.
12.	Coordinator	The user who has the right to approve the application.
13.	Workflow	One of the components of the BPM-system, responsible for the transfer of information between participants in the process in accordance with certain business rules.
14.	NDA/Non-disclosure agreement	Type of agreement between the Parties, usually containing the obligations and responsibilities of the Parties in the field of non-proliferation of commercial information, materials, information containing trade secrets, which may become known to the Parties in the process of their interaction in the framework of commercial contracts.

Table 1 - Terms and definitions

## Introduction

The project is targeted at implementing an information system that allows companies to automate the work of contract departments and ensure the process of reviewing and approving documents (contract, attachment, supplementary agreement, etc.) digitally. The project is being executed using the K2 BPMS system (currently used by the Higher School of Economics - Vyshka BPM system), which is one of the global leaders in the segment of business process automation systems (according to Gartner's iBPMS Magical Quadrant reports). In addition, the scope of project includes developing a data model, building data sources in MS SQL database, creating system interfaces and a customer workplace with access to the application via the Web. The system should be integrated into the information environment of the organization and provide integration with its organizational and personnel structure.

The end customer of the solution is Commercial Energy Solutions GmbH (former Gazpromneft Austria) with its principal place of business at Schwarzenbergplatz 5/5<sup>th</sup> floor, 1030 Vienna, Austria.

## 1. Overview and comparative analysis of sources and methods

### Overview of the challenges to automate processes and digitally transform operations.

Most of the companies are under extreme pressure to improve efficiency in their business processes. Digital transformation, the leveraging of digital technologies to remake a process to become more efficient or effective, is a critical focus area for many businesses. Despite efforts to digitally transform, most companies are still heavily reliant on manual processes - often using paper, email, and spreadsheets for their processes. A significant portion of processes in the enterprise remain manual even today.

More than ever, companies are looking for ways to automate the manual processes that can slow business cycles – all in an effort to stay competitive. Organizations like Commercial Energy Solutions GmbH identify several reasons they look to Automation:

- **REDUCE COSTS.** Automation allows identify and remove unnecessary steps of the business processes of entire organization, making them more transparent, easy to execute and efficient. It helps to optimize resource allocation, involving right people in the right place at the right time. Also, it brings standardization and repeatability whenever is possible to easily maintain the processes and make changes in multiple processes with just one click. Finally, it reduces or completely eliminates the paperwork, brining all the advantages of the electronic forms.
- **MINIMIZE RISKS and MAINTAIN COMPLIANCE,** which are especially important for business in highly regulated industries. Human errors, delays in operations in the Oil & Energy market may affect the company with sensitive losses and penalties. Therefore, it is extremely important to identify late actions, non-approvals, to keep an eye on tasks and compliance violations, having enhanced visibility and accountability and reduce human errors by digital transformation.
- **INCREASE PRODUCTIVITY** within their organization by execution tasks with speed and agility, elimination of repetitive and manual processes, empower employees to streamline processes and have improved communications.
- Least but not the last, **IMPROVE** customer service and remove friction from the **CUSTOMER EXPERIENCE.** Automation helps here to improve customer communications, reduce friction and frustration, empower employees to better meet customer needs.

## Overview of the risks to digitally transform

There are 3 main factors that can make automation unsuccessful and need to be considered before starting the digital transformation project (see Picture №1).



**Picture №1 – Three key factors of unsuccessful automation**

1. They lack alignment on the automation goals and visibility of the core, manual business processes. Indeed, without understanding company' processes it is difficult to actually automate them. (75% of enterprises feel their business processes aren't well understood or analyzed). Therefore, before starting the automation, capturing business goals and demands are required, as well as an AS-IS analysis of the current NDA approval process. Next, the TO-BE process specification should be created and aligned with the customer, so all involved parties clearly understand the goals of the automation and keep expectations the same way.
2. A lot of automation technology historically available was targeted at helping developers be more productive, given its reliance on coding, it only answers the needs of the most complex processes. Resources within the business to build complex automation solutions tends to be non-existent. It is vitally important criteria to find a low-code tool that may be utilized by the power users without special IT skills and still be able to develop and maintain parts of the NDA Approval solution and build add-ons by themselves if necessary.
3. Many of the tools available are too lightweight and lack capability and power, relegating their usage to only the simplest processes. NDA Approval solution has data layer, plain and table forms, a workflow, email notifications, roles, integrations (MS SQL Server, Active Directory). It means the development tool should have no limitations to create all these objects and do it without any coding.

## Product selection and alternatives

The most popular and dedicated class of the software to automate business processes is Business Process Automation Tools. First tools appeared on the market at early 2000's causing a revolution in business application development. The Business Process Automation Tools market is the natural evolution of the earlier Intelligent Business Process Management Suites (iBPMS) market, adding more capabilities for greater intelligence within business processes. The Business Process Automation Tools have enhanced their core offerings by acquiring or building adjacent capabilities such as low-code application development, process mining, task mining, document management, AI/ML and process analytics.

There are a lot of independent agencies which make special analysis of Business Process Automation Tools. The most popular and well-known report is annual iBPMS Magical Quadrant by Gartner. It analyses the most popular iBPMS products and ranks them based on several criteria, including technical capabilities, functionality, cloud support, low-code tools, integrations, service and support, customer reviews and feedbacks, etc. (see Picture №2).



**Picture №2 – Gartner's iBPMS Magical Quadrant 2019**

The customer (Commercial Energy Solutions GmbH) is using Microsoft technology stack and selected the top BPMS platform – Nintex K2 (K2) and its major competitors to compare – Bizagi Modeler, Appian and Pipefy tools.

The comparison criteria and marks are shown in the Table №.2.



Despite the fact, that Nintex K2 has the lowest overall rating among the other selected competitors, the customer has selected it as a primary tool for many reasons that sometimes goes beyond the report criteria or because some of the criteria are too important for the customer and make significant impact on the customer business.

Key factors leading Nintex K2 to win:

- Visual design truly means “visual design and configuration”. No code, including script, is ever required to build out a K2 experience.
- Common process requirements like rework, parallel approvals, calling subprocesses, escalations, etc. are all easily configured in the designer without code or script and in just a few clicks. Many competitors require complex configuration and many, many steps to accomplish the same thing.
- Real-time workflow validation and SmartAssist enable “on-the-go” learning by surfacing best practices and design tips to help build more efficient processes
- Built-in version control, including the ability to rollback to previous process versions enables more efficient process lifecycle management
- Stable and continuous work without crashes
- Free and unlimited licenses for sandbox environments
- Nintex K2 can be easily extended with other platform tools like Robotics Process Automation Tool (Nintex Foxtrot or Nintex Kryon), Process Mining tool, e-Signature tool, Document Creation tool, BI & Analytics, etc.

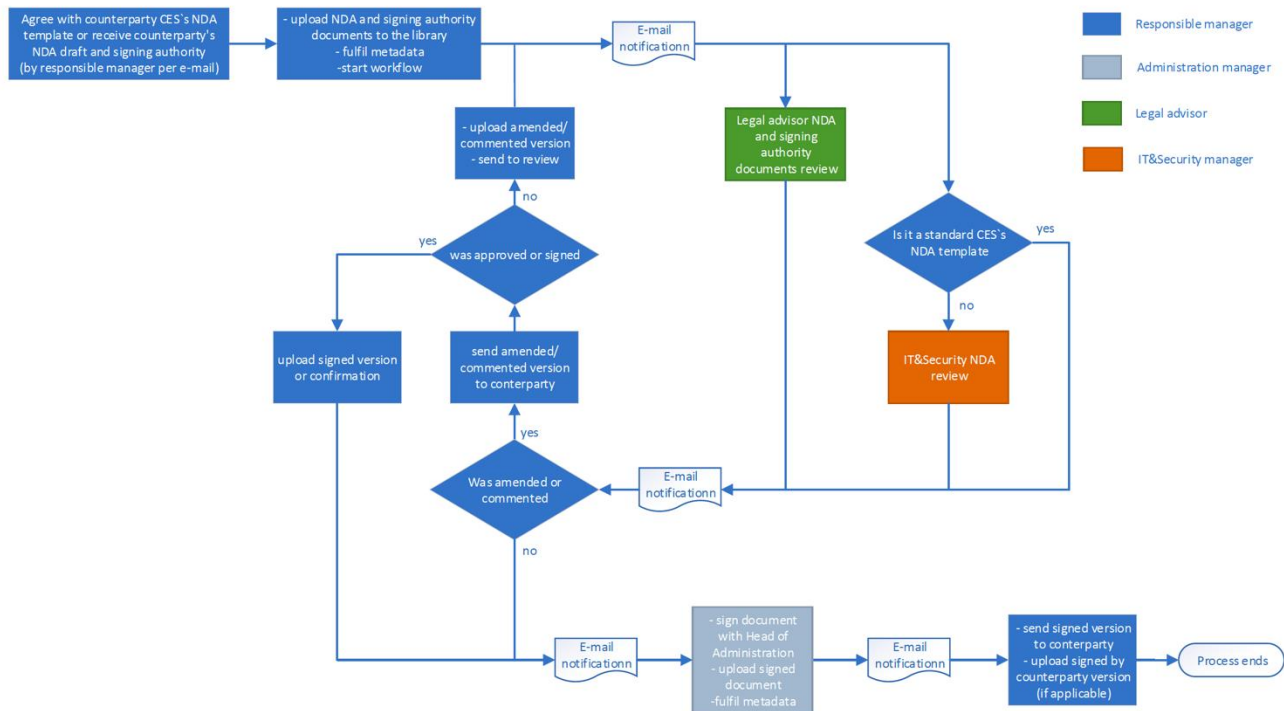
iBPMS Tool Name	Nintex K2	Bizagi Modeler	Appian	Pipefy
Overall rating	4.2	4.6	4.5	4.6
Pricing Flexibility	4.0	4.5	3.8	4.0
Ability to understand needs	4.2	4.5	4.3	4.6
Easy of Deployment	3.9	4.5	4.4	4.7
Quality of End-User Training	4.0	4.6	4.2	4.5
Ease of Integration using Standard APIs and Tools	4.1	4.4	4.3	4.3
Availability of 3rd-Party Resources	3.3	4.4	4.1	4.3
Timeliness of Vendor response	4.4	4.4	4.6	4.7
Quality of Technical Support	4.0	4.5	4.5	4.5
Quality of Peer User Community	3.7	4.5	4.3	4.6

Key disadvantages	Production innovation is slow	The software shows many crashes and slowly operation	Time-consuming development	The integration between pipes is tough to visualize and maintain. The lack of essential features to make Databases more powerful, such as advanced querying and more specific events to observe for integration purposes. Lack of sandbox environment.
Build on Microsoft platform	Yes	No	No	No

**Table 2 - Comparison of BPMS Systems**

## 2. Description of functional and non-functional requirements for the software project

The scheme of the workflow process is presented below (see Picture №3).



**Picture №3 – Workflow initial scheme**

All employees can submit applications, and there is no need for applicants to enter the responsible role. The Executor only sees his/her own tasks; tasks assigned to other Executors are not available to him/her. The Executors see their completed requests in the registry.

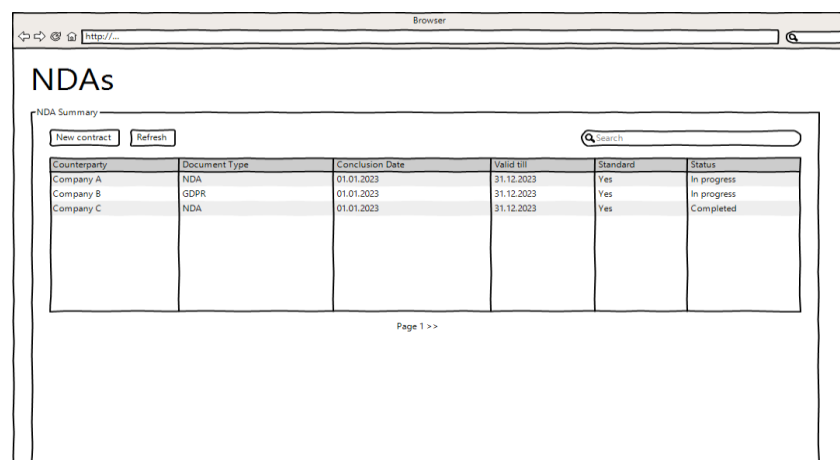
**Table №3 Table of requirements to the ND**

Stage	Condition	Application status	Participants	Commentaries
0. Sending and editing an application		New draft / Creation	All employees	Creating / Editing and sending an application form on the Portal.  Actions: 1. Send, 2. Cancel.

0.1. E-mail notification of the applicant, Legal advisor and (if necessary) IT&Security	Creating an application on step 0		Applicant, Legal advisor and (if necessary) IT&Security	Applicant can see his application, Legal advisor and IT&Security receiving the notification.
1.1. NDA and signing authority documents review by Legal advisor	After the e-mail to applicant's immediate supervisor was sent.	On review	Legal advisor	Legal advisor checks and makes remarks if required, and then completes the review of documents. If it is not a standard CES's NDA template, step 1.2 starts before step 2. If it is standard, go to step 2
1.2. NDA review	If NDA template is not standard	On review	IT&Security manager	After review is done, IT&Security manager completes reviewing template, and the application goes next by its route to the step 2.
2. Email notification after NDA and signing authority documents review and template review	All the necessary reviews are done		Applicant's immediate supervisor	After email was sent, if the document was amended or commented, the next step is 3.1, if not – the next step is 4.
3.1. Send amended/commented version to the counterparty	Document was amended or/and commented.	In progress	Counterparty	If approved by counterparty, go to 3.1.1, if not: go to 3.1.2
3.1.1. Upload signed version of confirmation	Approved/signed by Counterparty	On Counterparty's review	Counterparty	After uploading the next step is 4.

3.1.2. Upload amended/commented version and sent for review	Rejected by Counterparty	Counterparty's review	Personnel	After the rejection the application returns to step 0.1.
4. Email notification to the Head of Administration	Application was not amended/commented or signed version of confirmation was uploaded by Counterparty		Head of Administration	Email notifies the Head of Administration about necessity to sign documents. The next step is 5.
5. Sign document with Head of Administration, upload signed document and fulfill metadata	Email was sent to the Head of Administration	The Head of Administration review	Counterparty	After signing the document and filling all the necessary data, the next step for the application is 6.
6. Send signed version to the Counterparty	The Head of Administration signed the document and fulfilled all the necessary data		Counterparty	The process would end on the step 7.
7. The end of process	Signed version is sent to the Counterparty	Completed		

From the main page (see Picture №4) the User can observe a list of applications that are already signed or in the process of signing. The applications are presented in the table by 6 columns: Counterparty, Document Type, Conclusion Date, Valid till, Standard (yes/no for whether the NDA's template is standard or not) and Status. Button Refresh is used to update the table, button New Contract is used for opening a special form for creating a new application. The Search textbox provides a searching tool for the table; it can find an application by the Counterparty's name.



**Picture №4 – Sketch of NDA list form**

After clicking the New Contract button, a form for creating an application opens (see Picture №5). It consists of two blocks: Document Details and Additional Document List. In the first block the User has to fill the fields according to the relevant data: Counterparty name, Document type, Date of conclusion, Standard (checkbox), Status, Valid till. Also, the User should attach the contract draft to the special field called Draft of Contract. In the Additional Document List section, the User can attach other documents from the previous ones to his own application by choosing them from the table. The button Submit for Approval finishes editing the draft of application and the route of the application starts. Button Go back saves the draft for the User, but the application is not sent, and nobody can access it except the User himself/herself. Necessary fields: Counterparty name, Document type, Date of conclusion, Valid till, Draft of Contract.

The form is titled "NDA submit form" and is divided into two main sections: "Document Details" and "Additional Documents List".

**Document Details:**

- Counterparty name:** A text input field with a dropdown arrow.
- Document type:** A dropdown menu with options: NDA, GDPR, Administrative Contract.
- Status:** A dropdown menu with the option: Draft.
- Date of conclusion:** A date picker showing 01.02.2020.
- Valid till:** A date picker showing 01.02.2020.
- Standard:** A checkbox labeled "Yes".
- Draft of Contract:** A large text area with a placeholder "image not specified".

**Additional Documents List:**

Below the "Document Details" section, there is a table with the following structure:

Document name	Document type	Comments
Some text file	Additional document	Some text comment...
Some text file	Additional document	Some text comment...
Some text file	Additional document	Some text comment...

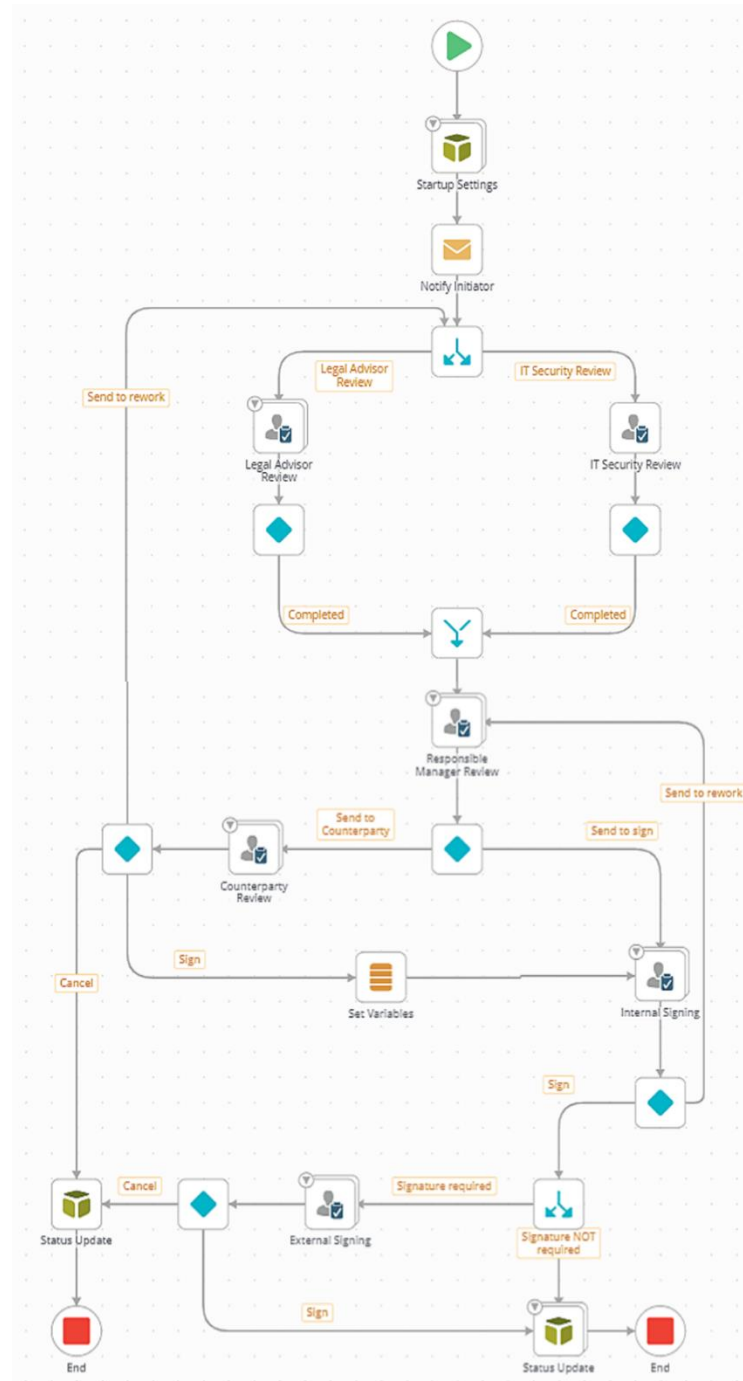
Below the table, there is a "Comments" section with a text input field and a "Confirmation" checkbox.

At the bottom right of the form, there are two buttons: "Submit for Approval" and "Go Back".

**Picture №5 – Sketch of NDA submit form**

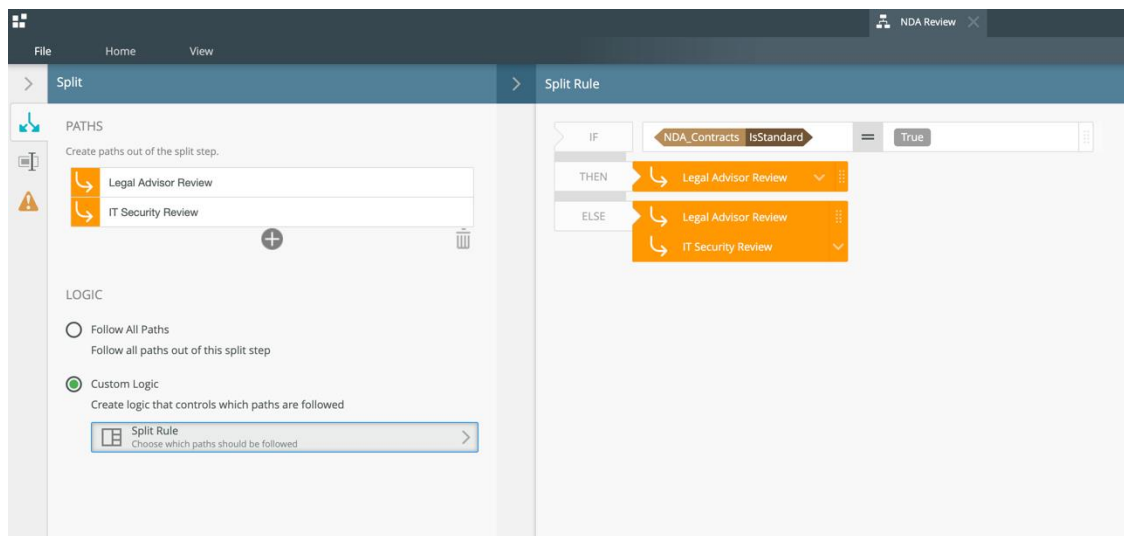
## Project implementation

The scheme of workflow was implemented in K2 Designer according to the given scheme of the process.



**Picture 6 – Workflow diagram in K2 Designer**

Built-in capabilities of K2 BPMS system allow to create workflow logic in no-code mode.

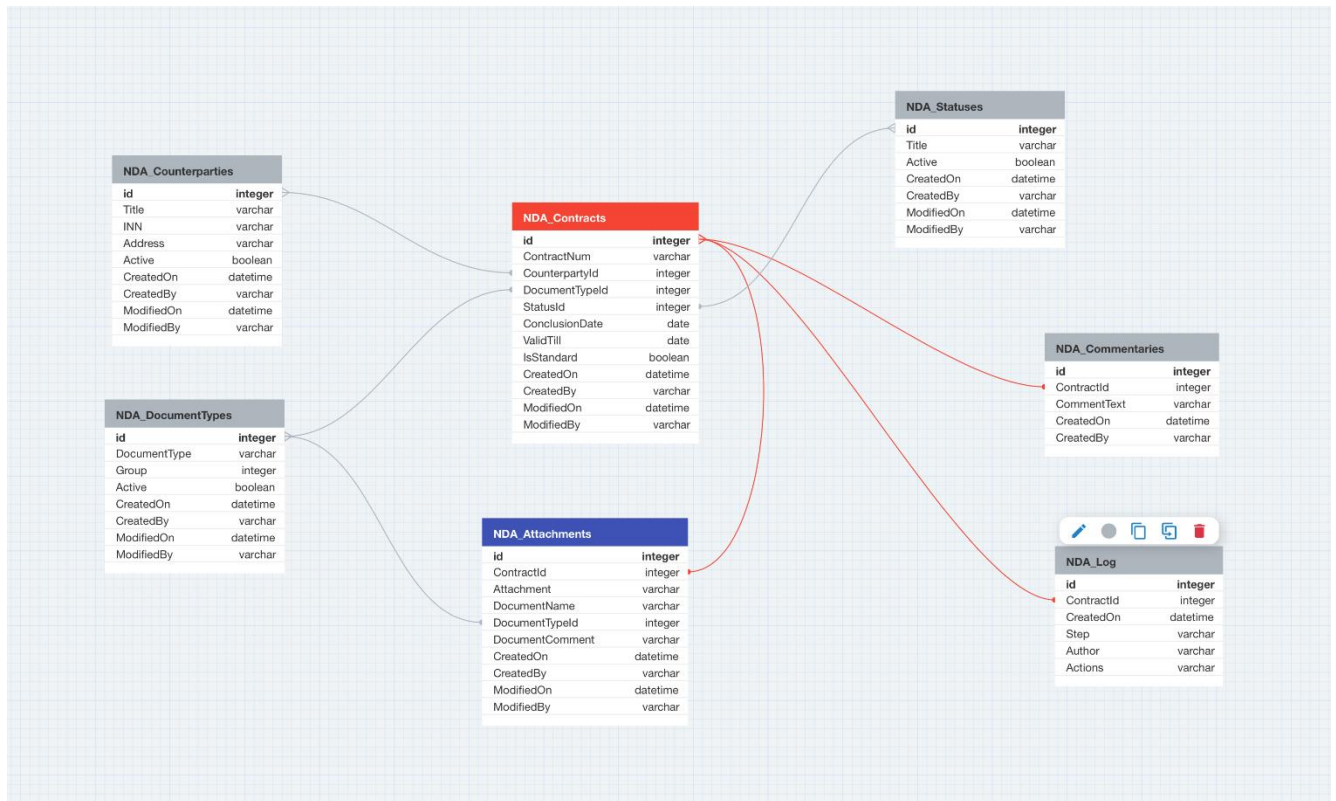


**Picture 7 - Example of a business rule implementation.**



## Database design

Our data is stored in a set of tables (K2 SmartObjects): NDA\_Attachments, NDA\_Commentaries, NDA\_Contracts, NDA\_Counterparties, NDA\_DocumentTypes, NDA\_Log, NDA\_Statuses.



**Picture 8 - Database diagram**

NDA\_Attachments – this object contains the data about attachments to the contracts.

NDA_Attachments parameter	K2 data type	MS SQL data type	Purpose
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular attachment.
ContractId	Number	int	Foreign key. An ID of a contract to which the attachment file is attached.
Attachment	File	nvarchar(max)	An attachment file itself. Contains the document in Base64String format that has been uploaded by the user.
DocumentTypeId	Number	int	Foreign key. An ID key of a document type in the SmartObject NDA_DocumentTypes. By this key we can obtain a type of attached document.
DocumentComment	Text	nvarchar(max)	A text field that contains a commentary that was written by the Originator.

CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the creator of this contract.
ModifiedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been modified.
ModifiedBy	Text	nvarchar(100)	A data variable that saves the name of the modifier of this contract.

NDA\_Commentaries – this SmartObject stores a data about commentaries that are written to every particular contract during the workflow process.

<b>NDA_Commentaries parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular comment.
ContractId	Number	int	Foreign key. An ID of a contract to which the attachment file is attached.
CommentText	Memo	nvarchar(max)	A parameter that is purposed for containing long typed text. It stores the commentary itself.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the creator of this contract.

NDA\_Contracts – this object stores the information about the contracts, data is collected from the NDA\_F\_SubmitContract form (a form that Originator fills when creating a new contract).

<b>NDA_Contracts parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular contract.
ContractNum	Text	nvarchar(100)	Contract number, that contains digits and Latin letters. It might be used in the future versions of the system.
CounterpartyId	Number	int	Foreign key. The ID number of a counterparty in a NDA_Counterparties SmartObject.
DocumentTypeId	Number	int	Foreign key. An ID key of a document type in the SmartObject NDA_DocumentTypes. By this key we can obtain a type of attached document.
StatusId	Number	int	Foreign key. The ID number of a status in a NDA_Statuses SmartObject.
ConclusionDate	Date	date	The parameter that stores the date of contract conclusion.

ValidTill	Date	date	The parameter that stores the date till the contract is valid.
IsStandard	Yes/No	bit	Bool variable for checking whether the contract is standard or not.
ContractDraft	File	nvarchar(max)	The parameter that holds a draft file of the contract in Base64String format.
ContractFinal	File	nvarchar(max)	The parameter that holds a final file of the contract in Base64String format.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the creator of this contract.
ModifiedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been modified.
ModifiedBy	Text	nvarchar(100)	A data variable that saves the name of the modifier of this contract.
ProcessId	Number	int	An ID of the process of the particular contract in the workflow.

**NDA\_Counterparties** – This object stores the data about counterparties with which the contract is going to be signed. It is important to note that the list of counterparties is not predefined and can vary due to the appearance of new counterparties or disappearance of the older ones.

<b>NDA_Counterparties parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular counterparty.
Title	Text	nvarchar(100)	Contains the text with name of the counterparty.
INN	Text	nvarchar(100)	Contains the text with INN of the counterparty.
Address	Text	nvarchar(100)	Contains the text with address of the counterparty.
Active	Yes/No	bit	Boolean variable that states whether the counterparty is actually active or not. Counterparties that are no more actual are not deleted from the database but marked as nonactive to avoid data loss in the old contract agreement forms where the nonactive counterparty was mentioned.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the creator of this contract.
ModifiedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been modified.

ModifiedBy	Text	nvarchar(100)	A data variable that saves the name of the modifier of this contract.
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NDA\_DocumentTypes – this table holds the names of all document types that are allowed for the contract. The number of document types is not fixed and could be changed due to the need of new document types or lack of need in old ones.

<b>NDA_DocumentTypes parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular attachment.
DocumentType	Text	nvarchar(100)	Contains the text with type of document.
Group	Number	int	This variable divides the document types into two groups: first could be selected in the Document Details, and the second one could be selected while adding a document in Additional Document List.
Active	Yes/No	bit	Boolean variable that states whether the document type is actually active or not. Document types that are no more actual are not deleted from the database but marked as nonactive to avoid data loss in the old contract agreement forms where the nonactive document type was mentioned.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the creator of this contract.
ModifiedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new contract has been modified.
ModifiedBy	Text	nvarchar(100)	A data variable that saves the name of the modifier of this contract.

NDA\_Log – this object stores the audit for every contract in the workflow. For every contract it saves the step, its author, and its actions.

<b>NDA_Log parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular audit.
ContractId	Number	int	Foreign key. An ID of the contract to which the audit belongs.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new log has been created.
Step	Text	nvarchar(100)	The text variable that contains the particular step of the contract in the workflow.
Author	Text	nvarchar(100)	The text variable that contains the name of the user who did the step.
Actions	Text	nvarchar(100)	The text variable that contains actions that user performed on the step.

NDA\_Statues – this object contains different statuses that a contract could have during the workflow.

<b>NDA_Statues parameter</b>	<b>K2 data type</b>	<b>MS SQL data type</b>	<b>Purpose</b>
ID	Autonumber	int	Primary key. Automatically iterated parameter. A key for our database, by which we can get a particular status.
Title	Text	nvarchar(100)	The text parameter that holds the name of the status.
Active	Yes/No	bit	A bool variable for showing whether the status is actual or not. It is necessary because otherwise deleting not required statuses from the list of statuses would cause problems with data loss for the old contracts.
CreatedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new status has been created.
CreatedBy	Text	nvarchar(100)	A data variable that saves the name of the status of this contract.
ModifiedOn	Date/Time	datetime	A data variable that saves the data (in dd.MM.yyyy format) when the new status has been modified.
ModifiedBy	Text	nvarchar(100)	A data variable that saves the name of the modifier of this status.

## Interfaces (Forms)

## List of NDA documents

The implemented version of NDA documents list form is presented below:

**NDA Summary**

+ New Contract   Refresh   ☐ Show Completed   Search...   Filter

COUNTERPARTY	DOCUMENT TYPE	CONCLUSION DATE	VALID TILL	STANDARD	STATUS
Company 2	Administrative Contract	31.05.2023		Non-stand...	Internal review
Company 3	Administrative Contract	11.05.2023		Non-stand...	Under sign by Counterparty
Company 1	Administrative Contract	11.05.2023		Non-stand...	Initiated
Company 2	GDPR	06.05.2023	02.06.2023	Standard	Initiated
Company 5	GDPR	12.05.2023	03.06.2023	Standard	Initiated
Company 1	GDPR	10.05.2023		Non-stand...	Initiated
Company 4	Administrative Contract	12.05.2023	02.06.2023	Standard	Initiated

Navigation: << < 1 > >>

**Picture 9 – Implemented NDA list form**

Control/Attribute	Type	Read Only	Mandatory
New Contract	Toolbar button	-	-
Refresh	Toolbar button	-	-
Show Completed	Checkbox	No	No
Search Textbox	Textbox	No	No
Filter	Toolbar button	-	-
Counterparty	Label	Yes	No
Document Type	Label	Yes	No
Conclusion Date	Label	Yes	No
Valid Till	Label	Yes	No
Standard	Label	Yes	No
Status	Label	Yes	No

## New contract form

Button “New Contract” navigates us to the form for creating a new contract:

The screenshot shows the 'New NDA Submission' form. At the top, there's a header with the Gazprom logo and 'NDA Contracts' text, and a user profile 'Роман Холинов'. The main title is 'New NDA Submission'. Below it, the 'Document Details' section contains several fields: 'Counterparty name' with a dropdown 'Select counterparty...', 'Document type' with a dropdown 'Select document type...', 'Date of conclusion' with a calendar icon and 'Select a date', 'Status' set to 'Draft', 'Valid till' with a calendar icon and 'Select a date', 'Standard' with a checkbox 'Yes', and 'Draft of Contract' with a file upload area 'Click here to attach a file'. Below this is the 'Additional Documents List' section, which has a toolbar with 'Add document' and 'Delete' buttons, and a table with columns 'ATTACHMENT', 'DOCUMENT TYPE', and 'DOCUMENT COMMENT'. The table currently shows 'No items to display.' At the bottom right, there are two buttons: 'Submit for Approval' and 'Go Back'.

**Picture 10 – Implemented submit form**

Control/Attribute	Type	Read Only	Mandatory
Counterparty name	Lookup	No	Yes
Document type	Drop-Down List	No	Yes
Date of conclusion	Calendar	No	Yes
Status	Drop-Down List	Yes	No
Valid till	Calendar	No	No
Standard	Check Box	No	No
Draft of Contract	File Attachment	No	Yes
Add document	Toolbar button	-	-
Delete	Toolbar button	-	-
Attachment	Label	No	Yes
Document Type	Label	No	Yes
Document Comment	Label	No	No

## Contract display form

Clicking the particular contract in the list of contracts will navigate the user to the display form of the contract:

The screenshot displays the 'NDA Contracts' application interface. At the top, there are tabs for 'Contract Information' and 'Comments'. The user 'Роман Холлинов' is logged in. The main section is titled 'NDA Details' and contains a 'Contract details' form. The form fields are as follows:

Counterparty name:	Company 3		
Document type:	GDPR	Status:	Internal review
Date of conclusion:	01.06.2023	Valid till:	07.06.2023
Standard:	<input checked="" type="checkbox"/> Yes		
Draft of Contract:			
Signed version:	The contract has not been signed yet		

Below the contract details is an 'Attachments' table with the following columns: ATTACHMENT, DOCUMENT TYPE, DOCUMENT COMMENT, CREATED ON, and CREATED BY. The table is currently empty, displaying 'No items to display.' at the bottom. A 'Go back' button is located at the bottom right of the form.

**Picture 11 – Implemented display form**



## Approval form

When the document is in the process of approval, the controls on the form are changed this way:

The screenshot shows the 'Contract Information' tab of the 'NDA Contracts' application. The user 'Роман Холинов' is logged in. The form is titled 'NDA Contract Review'. It contains the following fields:

- Counterparty name: Company 3
- Document type: GDPR
- Status: Internal review
- Date of conclusion: 01.06.2023
- Valid till: 07.06.2023
- Standard: ☒ Yes
- Draft of Contract: Resume.pdf (PDF File)
- Signed version: The contract has not been signed yet

Below the form is a table with the following columns: ATTACHMENT, DOCUMENT TYPE, DOCUMENT COMMENT, CREATED ON, and CREATED BY. The table is empty, with the text 'No items to display.' and pagination controls (1 item). At the bottom right, there are two buttons: 'Review completed' and 'Close'.

**Picture 12 – Implementation of approval form. The application adapts the control buttons according to the particular state in workflow.**

While approving, the user can see the tabs with comments and logs:

The screenshot shows the 'Comments' tab of the 'NDA Contracts' application. The user 'Роман Холинов' is logged in. The form is titled 'NDA Contract Review'. It contains the following elements:

- Comments List
- + Add comment
- Table with columns: COMMENT TEXT, CREATED ON, and CREATED BY. The table is empty, with the text 'No items to display.' and pagination controls (1 item).

**Picture 13 – Implementation of comments tab**

The screenshot shows the 'Audit' tab of the 'NDA Contracts' application. The user 'Роман Холинов' is logged in. The form is titled 'NDA Contract Review'. It contains the following elements:

- Table with columns: CREATED ON, STEP, AUTHOR, and ACTIONS. The table is empty, with the text 'No items to display.' and pagination controls (1 item).

**Picture 14 – Implementation of audit tab**

For the comments:

<b>Control/Attribute</b>	<b>Type</b>	<b>Read Only</b>	<b>Mandatory</b>
Add comment	Button	-	-
Add New Comment	Button	No	Yes
Save	Button	-	-
Cancel	Button	-	-
Comment Text	Label	Yes	No
Created On	Label	Yes	No
Created By	Label	Yes	No

For the logs:

<b>Control/Attribute</b>	<b>Type</b>	<b>Read Only</b>	<b>Mandatory</b>
Created On	Label	Yes	No
Step	Label	Yes	No
Author	Label	Yes	No
Actions	Label	Yes	No

## Results

The process of approving NDA contracts has been completely automated according to the customer's business process. The digitalization of the process has reduced the required execution time by an average of 20%, completely eliminated human error, provided continuous process status monitoring and identification of so called 'bottlenecks', ensured fast and convenient search and analytical reporting capabilities.

During the implementation of the project, there was created an electronic document repository and facilities for maintaining historical data with back-up capability, which increases the reliability and security of data storage.

The implemented version of the process ensures that it is 100% compliant with corporate rules and customer policies for NDA document approvals, eliminating the need for manual routing, errors in the composition of approvers and consistency of approvals. The customer plans to integrate the system into its corporate portal, allowing users to access and use the system without the need for additional training.

## Reference list

- K2 Five User Guide - <https://help.nintex.com/en-US/k2five/userguide/5.4/default.htm>
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- DBTA, “How Data Silos Prevent Digital Transformation” – October 2019
- Gartner’s Business Process Automation Tools reviews and ratings - <https://www.gartner.com/reviews/market/business-process-automation-tools>