Document Flow Navigator

SOLUTION DESCRIPTION INTENDED FOR SYSTEM ADMINISTRATORS

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Contents

Introduction

Document Flow Navigator (or **DFN**) is intended for existing Microsoft Dynamics 365 Business Central users and is aimed to increase their satisfaction of working with these products.

When developing this solution, we focused not on software development (changing system objects) but on customizations that can be applied by customer's DB system administrator who doesn't even have competences or licenses for software development.

DFN is an add-on that can be installed into existing customer's ERP system – both into standard functionality or customized ERP.

This solution was developed based on identical requirements from customers belonging to various verticals.

DFN Functionality

1. Approvals of any documents, journals or registers
2. Responsible for all approval stages
3. Approval deadlines for each stage
4. Temporarily delegating user rights from one user to another
5. Approvals record list
6. Create new registers based on templates (fields, dimensions)
7. Print out documents based on user role and approval stage
8. Prepare documents pack (amount of copies, printer name)
9. Send out documents to external recipients
10. Check if documents are correctly filled-in
11. Dimensions control
12. Block all document or its parts depending on user's role and approval stage
13. Send out notifications to user via email or other method
14. Manage attachments, their versions, control attachments of certain type
15. Remote approval via email
16. Monitor all tasks within business process for a user
17. Get analytics for historical data related to approvals deadlines
18. Develop proprietary (Customize) functions and corrections

DFN is in fact a designer of business processes: it helps to customize all scenarios of documents approval correlated with document contents. It also creates various controls, blocks and notifications.

Terms and definitions

Business process – is a document, journal or register that is used by company's employees

Stage – current state of the business process that has its responsible salesperson, deadline and planned implementation percentage (100% - fully completed)

Jump – changing from one stage of business process to another

Functional role – certain user's role

Sequential approval – approving document from the initial stage till 100% completed stage

Parallel approval – is a stage within sequential approval stage. It includes signatures of various users in random order.

Rule – is a general term that means any customization of DFN solution.

History – information related to stages changes, requests, signs, attachments, sending out notifications, etc. This information is available to any user that has rights to work with this business process.

DFN structure

Every business process has two or more stages: initial stage right after a new business process is created, and completion stage (100%) when a document can be posted, and register can be used in various documents.

There might be random amount of stages between these two. DFN provides matrix customization that identifies connections between roles and stages: which role can allow jump to another stage.

We recommend creating Issue stage with mandatory Comment field, jump to this stage is available from any stage but not initial. Jump from Issue stage will in general lead to the initial stage available for document edit and re-start its approval cycle.

DFN limitations

All company's employees shall be presented at 13 Salesperson table (managers), email address field should be filled-in, all users should be matched with managers from 91 User Setup table (User settings).

General information about system settings

This article contains general information about system settings and rules. All settings have similar interfaces.

Activity / enabled

"Enabled" on the left from settings is a default parameter for all rules. If its disabled when the system is online, then this rule can't be used (switched off). This tick is very useful when you need to urgently switch-off incorrect settings.

Conditions

On the right side of every setting you can define conditions when this setting is active. All conditions use AND operator. You can use «!» operator that will return the inverse value, in addition to familiar ">", "<", "<>" .

Conditions customization example:

OBJECT TYPE	OBJECT	OBJECT NAME	FILTER VALUE
General Information	8	Current Time	..16
General Information	2	Firm Name	*CRONUS*
General Information	9	Has role	SUPER
General Information	9	Has role	!SUPER
DocFlow Document	13	Comment	<>''
Jump Parameters	20	Stage From	NEW
Execute Parameters	34	Executor Role	_DFN_99_TEST
System	24	Due Date	>=^6^
System	32	Currency Code	''

Lines description

- current time is earlier than 4pm
- CRONUS exists in company's name
- user has SUPER role
- user doesn't have SUPER role
- last stage jump was commented
- document stage changed from NEW
- _DFN_99_TEST is now responsible salesperson
- payment deadline equals or is older than current date
- currency code is empty

Priority

For some rule's priority is the key factor, e.g. define responsible salesperson. For other rules it will affect the sequence of processing, e.g. fields control or print out documents. Each new rule is automatically created in the bottom but can be moved up or down.

Stages and jumps settings

Rules alike might be run when changing document itself (stage setting), as well as when jumping from one document stage to another. Some rules e.g. edit document disabled, are applicable only at stages. Jump settings for such rules is not applicable.

Numeric filter

Each stage and each role can have numeric ratio. E.g. stage NEW=10, stage OK-100, role _DFN_00_ADMIN = 100. You might not include stages and roles at settings but use their numeric filters. Such settings will allow you making changes into business process flow structure (adding roles and stages) without changing settings.

Examples of settings on the transfer

Description of settings by lines (each even line duplicates the previous one):

- Document's translation from stage NEW to stage STAGE1 for all but _DFN_00_SUPER;
- Translation from stage NEW to stage STAGE1, STAGE2 or PARALLEL for any user;
- Translation from the NEW stage anywhere, a classic example of control of the primary design of the document;
- Translation of the document from any stage to the final (OK), a classic example of setting for the final control of the document design before posting.

Examples of settings on certain stage

Description of settings

- the rule will only work if the document is in the NEW stage;
- same with the use of numeric filter
- the rule will trigger at stages STAGE1 and PARALLEL
- the rule will work from STAGE1 to PARALLEL, even if an intermediate stage is added
- only on STAGE2 if the user is not _DFN_00_SUPER
- same with the use of numeric filter
- the rule will always work when the Posting date is changed
- only at the stage NEW, if you change the Location code from MAIN to EAST

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- if the user with the _DFN_99_TEST role deletes ("–two single quotes) the Payment terms code field

Error processing

Each control in the system can cause either an error or a warning

This example shows that some controls work as a ban, while others work as warnings (see Action Type field).

If you fail in the "Error text ML" field, you can write different error texts for users who selected a different application language.

General setting

The "Enable" flag allows you to completely disable DFN functionality.

The field "Role Filter" allows you to set a filter on the codes of functional DFN roles for the convenience of subsequent configuration

The "Feedback e-mail " field specifies the mailbox that will receive a service message on the approval of the document, with use of the "Approval via e-mail" functionality.

Business process settings

General tab

On the General tab, you can define a unique business process ID and its description. Tick "Enable" allows you to set up a new business immediately in the working database. Without the inclusion of a tick "Enable" there will be no change in the behavior of the system.

The checkbox "Delete DFN history when deleting or posting" is recommended to be set only during the work with directories. Deletion of directory record will automatically remove the history of its approved, attachment, etc. Posted document should not result in the removal of information, the DFN Log, the requested signatures, attachments, notifications sent will be available for viewing from the posted document.

Integration tab

The field "Primary table No." specifies the number of the table on which the document is based, for example, for a Sales Order, the number of table is 36. In addition to the Sales Order, this table contains

Credit notes, Returns, Invoices, etc. To indicate that the business process only applies to orders, you must fill in the "table filter" (Order is Document Type = 1).

The fields "Current Stage Field No." and "DFN ID" indicate codes of the fields, added during the process of integration with the module.

The field "Card form No." specifies the number of the form that will open when you click on the hyperlink.

Most documents, such as a sales order, contain not only the header, but also lines, that can also be checked or blocked during the approval. Setting up lines is similar to setting up the header. In the filter, you must link the lines to the header table.

Key fields tab

Key Fields		Show less
Code 1 · · · · · · · · · · · · · 3 ···	Date 1 · · · · · · · · · · · · · 20 ···	
Code 1 Caption · · · · · · · No.	Date 1 Caption · · · · · · · Posting Date	
Code 2 · · · · · · · · · · · · · 2 ···	Date 2 · · · · · · · · · · · · · 21 ···	
Code 2 Caption · · · · · · · Sell-to Customer No.	Date 2 Caption · · · · · · · Shipment Date	
Code 3 · · · · · · · · · · · · · 28 ···	Date 3 · · · · · · · · · · · · · 24 ···	
Code 3 Caption · · · · · · · Location Code	Date 3 Caption · · · · · · · Due Date	
Code 4 · · · · · · · · · · · · · 43 ···	Bool 1 · · · · · · · · · · · · · 0 ···	
Code 4 Caption · · · · · · · Salesperson Code	Bool 1 Caption · · · · · · ·	
Code 5 · · · · · · · · · · · · · 29 ···	Bool 2 · · · · · · · · · · · · · 0 ···	
Code 5 Caption · · · · · · · Shortcut Dimension 1 Code	Bool 2 Caption · · · · · · ·	
Text 1 · · · · · · · · · · · · · 13 ···	Dec 1 · · · · · · · · · · · · · 61 ···	
Text 1 Caption · · · · · · · Ship-to Name	Dec 1 Caption · · · · · · · Amount Including Tax	

In the current tasks monitor functionality, DFN displays all business processes that require user approval in a single list. To identify each document, it is necessary to get the basic information from this document in this single list. For example, in the "Sales order", we will be interested in the "ship date", in the "Contract" - in the "expiration date", in the "Purchase order" - in the "expected delivery date". On the "Basic fields" tab there must be selected such information in the fields, that facilitates the identification of the initial document to the user as much as possible.

Stages tab

The "Stages" tab lists all possible stages of the document. Buttons up and down can change the sequence of stages (this is only for clarity, the actual passage may be different). It is important that the new created document, will automatically receive the highest stage, and it will be completed (ready for record or use in other places of the system) only at the stage (stages), having a numerical percentage of 100.

In the "Code" field, you must enter a unique stage code for this business process; this code must be informative, it will be visible in the document.

In the "Description" field you must enter a description of the stage; the description will be displayed when the document is moved.

The "Notes" field is for reference, it can be filled in with commenting text.

The "Filter Number" field shows the percentage of completion of the document approval. In further settings, it can be used as follows: only print the document if the numeric filter stage is > 30, for example. This approach allows you to create new stages without thinking about copying or overwriting existing settings.

In the "Font Style" field, you can choose one of the options. The "Current stage" field in the card and the list of documents will be painted in this style.

If you select "Needed" in the "Comment" field, you will not be able to transfer to this stage without specifying a comment. It is advisable to indicate on the problem stages.

The "Parallel approval" tick determines that signatures will be requested at this stage. For more information, see Parallel approval.

Roles tab
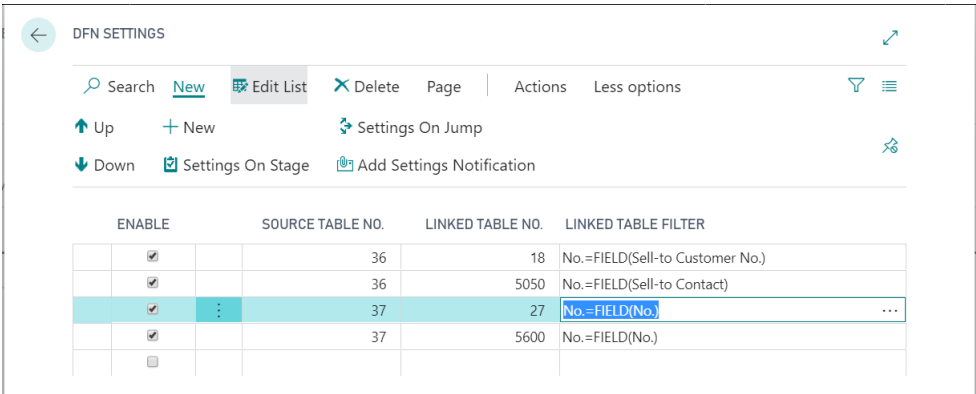
In the "Role Code" field, we select a role from the existing ones under the filter from the General setting.

"Description" is filled in automatically.

"Filter Number" can be used later in the rules settings. Sometimes there are different settings for the user ("the Role of Numerical filter" <>100) and for the administrator ("the Role of Numerical filter" = 100).

The priority, "up" and "down" buttons in the role configuration are critical. If a user is assigned several functional roles, then in each business process he will work from one, "best" role, the one that is higher. In our example, if a user has the _DFN_99_TEST and _DFN_00_SUPER roles configured at the same time, in business process 1 he will be running the _DFN_00_SUPER role.

Integration – Linked tables

This setting allows you to control the design of not only the current document, but also related directories. In this example, the sales order is linked to Customer, Contact; and the sales order lines are linked to the Item and Fixed Asset. The priority in this setting is irrelevant.

Stages and Roles matrix

This is the basic setup of document routes.

The left part lists the roles that work with this document, at the top are all possible stages of the document, at the intersection – the number of possible transitions of this role from this stage.

Jumps settings
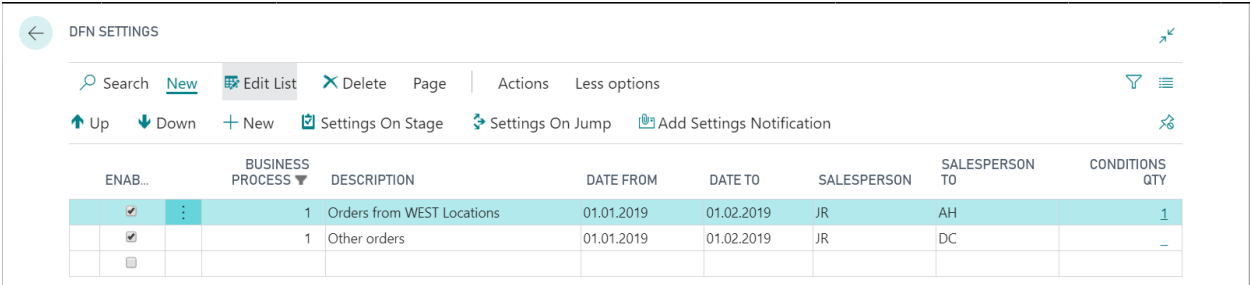
When you click on assist edit button (the button with three dots) the transition settings window opens. It specifies the stage to which this role can transfer the document and the conditions under which this transition is available. There can be several conditions, they are formed according to the "AND" logic (the first condition is fulfilled AND the second condition is fulfilled). In complex processes, there may be cases where the availability of a transition must be configured by the "OR" logic (the first condition is met OR the second condition is met). This can be done by re-specifying the assignment stage in the list. In the setup there will be several lines with the same stage, each with its own conditions. Priorities, "up" and "down", allow to make the most popular transition the top one; it will be selected by default.

DFN Rules setup

Delegation

Delegation is the granting of the rights of the head to the employee for the period of the absence of the head. We are talking about the functional roles of DFN.

And also redirection of all notifications sent to the head.

In this example, the head (JR) in January 2019 transfers his authority to approve the sales orders with location WEST to the employee AH, and all others - to the employee DC. Pay attention to the critical impact of the priority: the DC will receive extended rights on the order only if the AH does not receive them. If we change the sequence of rows in places, AH will never receive additional rights, since no condition is specified in the DC, and the DC will always be selected as a deputy.

From the general setting, you can install a deputy for all business processes at once. For this, in the Business Process ID field must be 0.

Important: The delegation mechanism is suitable for substitution, but not suitable for combination.

Example 1, substitution:

The employee has the role FIN_MANAGER. At its head FIN_CHIEF. FIN_CHIEF has extended rights and the role FIN_CHEIF is configured ABOVE the role of the FIN_MANAGER (see the impact of priorities in setting up Roles). When the system starts, the employee is granted both roles and the one that takes priority, FIN_CHIEF. Everything is OK.

Example 2, the combination:

The employee has the role FIN_MANAGER. His colleagues have the role LAWYER. A friend asks him to help at the time of his absence. But FIN_MANAGER and LAWYER are engaged in completely different in the process of approving! When the system starts, the employee is granted both roles and the one that takes priority. And he turns out to be either a FIN_MANAGER or a LAWYER, but not both.

In this case, it is necessary to create the role LAWYER- FIN_MANAGER and its separate setting.

Groups

The groups allows you to optimize settings. Groups are used to determine who is responsible for the document at the stage and for organizing notifications.

In this example, when transferring the Sales Order to the "PREPARE IN LOCATION" stage, we must send notification to the storekeepers, whose competence includes the location specified in the document.
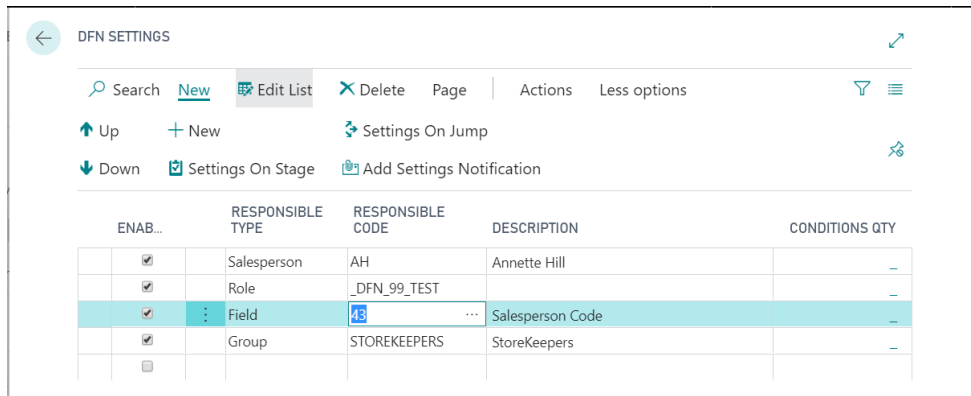
DC is a senior stockman. When shipped from the MAIN Location, notification will be received by AH (see Condition QTY) and DC, from EAST Location BD and DC.

Responsible

In this setting, the responsible business process is defined at a certain stage.

Setting options, "Responsible Type":

- specific salesperson;
- the role, all users having this role will be responsible;
- salesperson, specified in the field of the document;
- group, all salespersons, included in the group specified in the group settings.

Setting the responsible allows you to send notifications and display the business process, if it is in the area of responsibility.

Do not confuse rights and obsessions. Rights are configured in the "Stage and Role matrix", and responsibilities are in charge of the stage. The DFN administrator can transfer any document to the OK stage, but he is not required to do this.

Deadlines

Setting allows set one or more deadlines of the document in this stage. If the deadline is one, the code can be left blank. If there are several deadlines it is better to indicate the deadline code in the setting.

There are the options for setting deadlines:

EN...		CODE	DESCRIPTION	DATE FORMULA	ON... WO... DA...	BASE CALENDAR CODE	DATE FROM FIELD NO.	DATE FIELD DESCRIPTION	TIME ABSOLU...	DURATION
☑		PLAN	Plan Date	2D	☐		0	_	12:00:00	
☑		PLAN	Plan Date	3D	☑	STANDARD	0	_	12:00:00	
☑		PLAN	Plan Date	-2D	☐		21	Shipment Date	12:00:00	
☑		PLAN	Plan Date		☐		0	_		30 minutes
☑		PLAN	Plan Date	1D	☐		0	_	18:00:00	
☑		DELAY 1	Delay Date 1	5D	☐		0	_	12:00:00	
☑	⋮	DELAY 2	Delay Date 2	2W	☐		0	_	12:00:00	
☐					☐					

Description of the setting, the document should be approved:

• within two days from the date of transfer;

• within three working days according to the STANDARD calendar;

• two days before the shipment date;

• within thirty minutes;

• the next day to 6 o'clock

• the first delay (with messages) will take place in 5 days

• the second delay - in two weeks

Templates

This setting is intended to facilitate the creation of cards (Customer, Item, etc), filling in fields and dimensions.

In the list of templates it is enough to indicate the name of the template.

In the setting - list the fields and their values, or dimensions and their values. In this setting, priority is important because changing one field can cause other fields to change.

When working with a document at any time, you can call the function "Apply template." If there are several suitable templates, the system will offer a choice. All specified fields and dimensions will be filled out (redefined).

Reports

This setting specifies all reports that can be generated from the document. If some reports are to be available only at a certain stage or for a specific role, this must be specified in the details.

If the report is specific to the shipment method, location or customer, this can be configured in the Conditions.

The "Printer option" field works as follows: if "Default Printer" or "Printer Name" is specified, the report will be immediately sent to print. When the "Choose printer" option opens a dialog for defining a printer and possible additional report parameters.

Report packages

In the settings, report packages are indicated and from which reports they are composed. You can specify the number of copies of each report and the printer on which it will be printed. The available report packages may depend on the information in the document. To do this, you must configure the "Conditions QTY". In this setting, the priority determines the sequence of reports send to the printer.

Notifications

This setting provides various options for sending notifications for system events.

For the type of event "jump", additional jump settings are required: from what stage to which and role.

For other types of events, settings are required at the stage: at what stage, for what role, when field changes, etc.

The event type "Reporting" is used when sending a report package send by e-mail and does not require additional settings.

The subject and text of the mail may contain any information from the document. For details, see "Add Setting Notification".

Event Types:

- Send Reports - message text templates when sending a report package to an external contact;
- Jump - text templates of messages sent when transfer a document;
- Modify - message text templates when the document is changed, after text which field will be automatically added, from which value to which one was changed;
- Deadline - text templates for messages sent when deadlines are reached
- Sign - message text templates when requesting or installing signatures for parallel approving.

Send Types:

- E-mail - the message will be sent by e-mail
- Notification - the message will be sent through the built-in system alerts

Recipient Types:

- Author - the salesperson who created the document (jump into first stage).
- All previous executors - all salespersons that participated in transferring this document in stages
- Previous executor - is the salesperson who last transferred the document to the current stage
- Responsible - employee (role, group) appointed by the responsible at the current stage
- Team - a group of salespersons united in a team

- Salesperson - a specific salesperson
- Field – salesperson or e-mail specified in a document, for example, in the "Salesperson Code" field
- E-mail - specific e-mail to which the message will be sent.
- Role - all employees with this role, for example, "Lawyers"
- Group - the employees listed in the group, see the Groups settings.
- Customization - the programmatic definition of one or more recipients of the message.

Add Settings Notification

This is an additional setting of the message text and other parameters:

In this setting, the text of the message is entered, which can contain any information from the document, its system parameters, etc., as well as any HTML tags, such as <br>, for line breaks.

A checkmark "Self Notification" indicates whether the message will be sent to the person who initiates it. For example, in recipients of the message is the role _DFN_00_SUPER. The administrator sets up a new message and wants to receive it, because it has this role, but without the tick " Self Notification" it will not receive. It is advisable to set a tick either for test purposes or in messages of the deadline, if there is a need to warn oneself about the end of the term.

"Subscription Denied" - an employee who has no direct relation to this business process can subscribe to the notification (see Subscription). The tick "Subscription Denied " excludes a specific notification from the possibility of subscription.

"Add Jump Ability" - when checked, a block is added to the end of the message for remote transfer of the document (see. Approval by e-mail)

"Save in Log" - allows you to see the created notification in the DFN history.

Setup Notification in Parallel Approval

When using parallel approval, you can send messages at the following events: Signature request, Signature delivered, Signature rejected, Sign complete (All signed).

Control Fields

This setting indicates which fields should be checked, and for what values, when transferring a document into stages or changing some field of the document.

In the control setting we can check the header of document, its lines (each) linked tables.

The priority in this directory is the sequence of checks only.

Control Dimensions
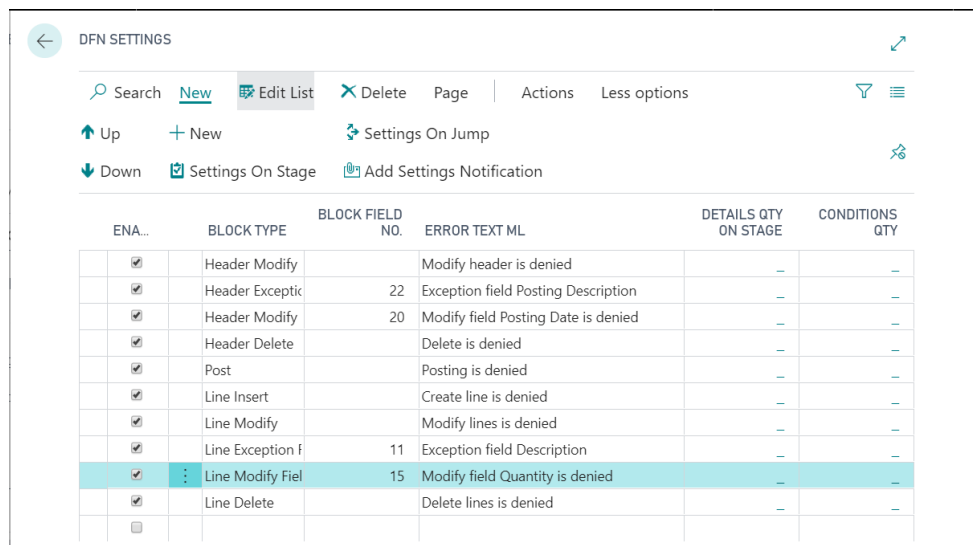
This setting checks both the presence of the dimension (if the dimension value is not specified) and the specific dimension value.

The check can be carried out while transferring the document or when changing the document field.

Block

The solution allows at any stage or for any role to configure the block of the document and document lines:

Settings Description

- The Header of the document is blocked from modify;
- Modify header blocked except field…
- The change of a specific field of the document header is blocked
- Blocked document deletion
- Document post blocked
- Blocked the creation of new document lines
- Blocked document line modify
- Modify line blocked except field
- The change of a specific field of the document line is blocked
- The deletion of the document line is blocked

Change Log

This setting allows you to log changes to the document header. You can log either any change in a field, or a change from a specific value to a specific one.
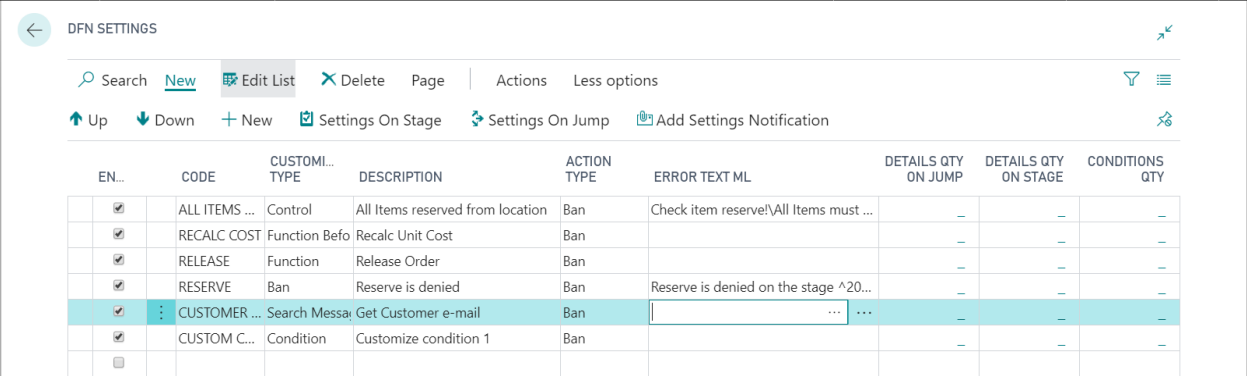
So in this example is logged:

- Set Payment Term if it was empty
- Setting the Shipment Date
- Change Location Code
- Set status Released

Customize

Despite the huge number of settings for the DFN solution, some things cannot be implemented with the same settings. Using the example of a Sales Order, the settings will not work:

- Check that all items are reserved and reserved from location.
- Recalculate the unit cost
- Release order
- Restrict reservation items to the role stage.
- Find message recipients among all customer contacts.
- Allow transfer only if a salesperson is registered as a warehouse employee

For this cases, the system has a special codeunit, in which you can program all the missing functions, and they will be included according to all the rules of the Document Flow Navigator: at a certain stage, for a specific role, with conditions, etc.
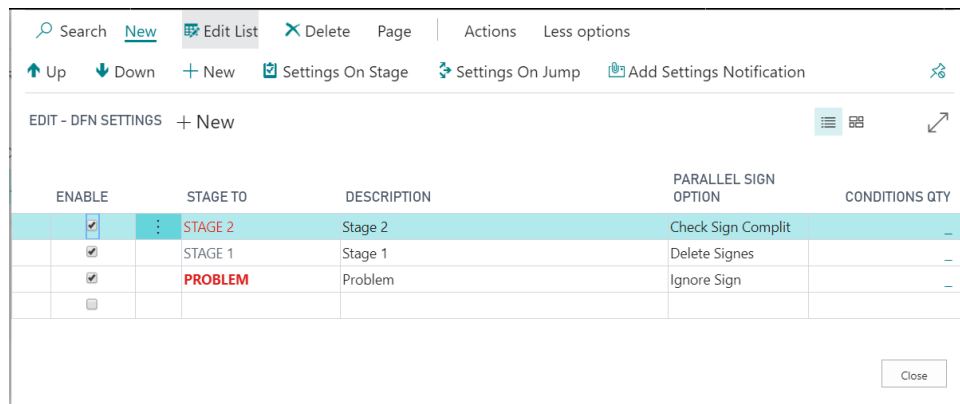

This setting provides examples of customization of the application. Each customization is launched with its own unique code and table-header.

Important: The function before jump (COMMIT) will be executed and saved regardless of whether the jump is successful.

Parallel approve

At some stages is possibly "Parallel approval", when different employees place their visas in a random order.

When setting up transfer from the parallel stage, it is necessary to fill in the "Parallel sign option" field:

The options "Check sign complete" will be offered if all the required signatures are available. To go to this stage in the absence of all the necessary signatures is impossible.

The "Delete" and "Ignore" options allow you to transfer the document to another stage without checking the presence of all signatures, and the "Delete" option will delete all signatures obtained at this stage.

Also, it is for parallel approve that notifications are developed that are created when requesting a signature, installing and removing a signature, installing all signatures.

Subscription

Subscription functionality allows any user to independently subscribe to messages from a specific business process instance.

Case: The sales manager is not interested in what is happening in the purchasing department. But for his sale, he is waiting for the receipt of the Purchase Order No. 989845, for example. He finds this order, opens a subscription, and puts ticks on messages that interest him. And now only on this order he receives notifications whether he is stuck in the sea or at customs, accepted it at the warehouse or not, etc.

Approve by e-mail

Document Flow Navigator solution provides the ability to approve a document without logging into the system. Approve by e-mail.

To do this, you must specify the feedback e-mail address in the general setup, and in the message itself, for approval, set the checkbox "Add Jump Ability".

The received letter will look as follows:

Text of the letter

You can transfer document to the stages:

New
Parallel
Ok
Problem

Document link

When you click on the link, a new letter will be automatically generated, in the subject of which you can write a comment:

AutoApprove - BPID: 1 From: STAGE1 To: OK Comment:

Where

BPID - the unique identifier of the document

From - the stage where the document is transfer from

To - the stage where the document must be transferred

Comment - comments for approval

The generated e-mail must be sent.

Approval will be successful only if:

- • Document detected
- • Current stage is From
- • Comments are needed, and they are. Or comments are not needed.

The system checks the service mailbox, automatically detects the user from e-mail address of the sender and on his behalf transfers the document to a new stage.

If a comment is necessary, and it was forgotten to be indicated in the subject of the letter, the transfer will not be successful.