

Niord System User Manual for Sysadmins

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Chapter 1. Introduction

Niord (Nautical Information Directory) is a system for producing and publishing Navigational Warnings (*NW*) and Notices to Mariners T&P (*NM*).

It was originally developed as part of the [EfficienSea2](#) EU project and subsequently implemented as a production system for the [Danish Maritime Authority](#).



Some of the main features of Niord area:

- Niord provides an advanced and highly customizable production system for NW and NM T&P.
- It includes a plug-in architecture for NW and NM message promulgation via e.g. mailing lists and Twitter.
- Niord also integrates with the [Maritime Cloud](#) by defining a Maritime Cloud Service Specification and making NW & NM messages accessible via a [Public REST API](#)
- The [combined NW & NM message model](#) adopted by Niord has been devised to make data future-compatible with the upcoming IHO S-124 specification.

Chapter 2. System Administrators Manual

A user in Niord always works in the context of a *current domain*. Domains are used to separate NW & NM messages into more manageable lists - you could e.g. have a domain for NW messages, a domain for NM messages, a domain for firing exercises (also NWs), or indeed domains for separate regions with separate time-zones, etc.

A user has separate roles in each domain. The available roles are:

- *User*: The *user* role can be assigned to e.g. case officers that should have access to see, proof-read and comment on un-published NW and NM messages.
- *Editor*: Editors compose and manage the life cycle of an NW or NM message.
- *Admin*: An administrator of a domain will have additional access to e.g. manage the base data (sea charts, publications, etc.) of the Niord system.
- *Sysadmin*: A very special role that should be held only by the person(s) actually setting up and managing the Niord system.

The roles listed above are hierarchical in the sense that a *sysadmin* can do anything an *admin* can do, who in turn can do anything an *editor* can do, and so forth.

This document serves as a user manual for *system administrators* of a domain.



Please use a newish Chrome, Safari or Firefox browser when using Niord.

Chapter 3. Sysadmin Page

The *Sysadmin* page of Niord only become available if you log in as a system administrator.

The screenshot shows a web browser window for the Niord application at the URL niord-dma.e-navigation.net. The browser interface includes standard controls like back, forward, and search. The main header has tabs for 'Messages', 'Editor', 'Admin', and 'Sysadmin', with 'Sysadmin' being the active tab. A top right corner shows a network status icon ('NM'), a user profile icon, and a language switch ('EN'). The main content area has a title 'Overview'. Below it, a text block states: 'The System Admin pages are used to administer system data and settings for the Niord application. It has been divided into the following sections:'. A detailed list follows:

Message Series	Manage the message series used for message series identifier.
Domains	Manage the domains.
Promulgation Types	Manage message promulgation types.
Firing Schedules	Manage the list of firing schedules.
Dictionaries	Manage the dictionaries.
Parameter Types	Manage the parameter types used for executing message templates.
Script Resources	Manage the script resources (Freemarker & JavaScript) used for message templates, print reports and mails.
Categories	Manage the list of categories used for grouping NW and NM messages and used for message templates.
Print Reports	Manage the PDF print reports.
Mail Queue	Search all pending and sent e-mails.
Integration	Handle integration with the legacy systems.
Settings	Manage the system settings.
Batch Jobs 0	Monitor and manage batch jobs.

At the bottom of the page, there is a footer bar with the text '© 2017 Danish Maritime Authority' on the left, the 'DANISH MARITIME AUTHORITY' logo in the center, and links for 'Disclaimer' and 'Cookies' on the right.

The *Sysadmin* page allows system administrators to manage and configure the Niord system.

In general a user that is system administrator in one domain should be system administrator in all domains, since all the setup and configuration they can manage on the Sysadmin pages applies to all domains.

Chapter 4. Message Series

The *Message Series* page allows a system administrator to manage the list of message series used throughout Niord. A message series define the types of messages that can be assigned to the message. It also defines how messages are numbered and the format of their IDs.

Message Series

Add, modify and manage message series.

ID	Type	Sequence	Short Format	Next Number (2017)	
dma-nw	NW (Coastal)	yearly	NW-\${number-3-digits}-\${year-2-digits}	1	
dma-nw-local	NW (Local)	none			
dma-legacy-nw	NW	yearly	NW-\${number-3-digits}-\${year-2-digits}	1	
dma-legacy-nw-local	NW	none			
dma-nm	NM	yearly	NM-\${number-3-digits}-\${year-2-digits}	522	
dma-fe	NW (Local)	none			
dma-fa	NM (Misc.)	manual			
dma-nm-almanac	NM	manual	A/\${number} \${year}		
dma-nm-annex	NM	manual	B/\${number} \${year}		
ako-nw	NW (Coastal)	manual	GL-\${number-3-digits}-\${year-2-digits}		

The sysadmin may filter the list of message series by typing a term into the *Filter* input field above the message series list. The term is matched against the ID of the message series.

4.1. Adding or Editing a Message Series

The sysadmin can add a new message series by clicking the "New Message Series" button, or edit an existing message series by clicking the pencil symbol next to the series.

This will open the *Message Series Edit Page*:

Message Series

Add, modify and manage message series.

Message Series ID

Main Type Navigational Warnings Notices to Mariners

Restrict Types Local Coastal Subarea Navarea

Number Sequence Type Yearly Continuous Manual None

Short Format

Next number (2017)

Additional Editor Fields

NAVTEX Preamble

The message series attributes:

Series Attribute	Description
Message Series ID	A unique ID for the message series. Should be globally unique.
Main Type	The main type, i.e. <i>Navigational Warnings</i> or <i>Notices to Mariners</i> , of the messages assigned to the message series.
Type	Optionally, the sysadmin may specify the specific types (sub-types of the main type) of the messages assigned to the message series. If the current main type is <i>Navigational Warnings</i> , the possible types include <i>Local</i> , <i>Coastal</i> , <i>Subarea</i> and <i>Navarea</i> . If the main type is <i>Notices to Mariners</i> , the possible types include <i>Preliminary</i> , <i>Temporary</i> , <i>Permanent</i> and <i>Miscellaneous</i> . If none of the types have been selected, all types are valid for the given messages series.
Number Sequence Type	The <i>Number Sequence Type</i> defines how numbers get assigned (or not) to a message when the message is published. If the type is <i>Yearly</i> , the first message published every year will be assigned the number "1", and subsequent message will be numbered consecutively from that. If the type is <i>Continuous</i> , the first message published will be assigned the number "1", and subsequent message will be numbered consecutively from that. If the type is <i>Manual</i> , the editor will get to assign a number manually to a message in the message editor. Please refer to the Editor Guide . If the type is <i>None</i> , no number will be assigned to the messages belonging to this message series.

Series Attribute	Description
Short Format	The <i>Short Format</i> attribute defines the format of the <i>short ID</i> that gets assigned to a message upon publication (except if the <i>Number Sequence Type</i> is <i>None</i>). The format will typically contain <i>replacement tokens</i> that gets substituted with real values. Valid <i>replacement tokens</i> can be inserted into the field via the <i>insert</i> menu, and include tokens such as "\${number}", "\${number-3-digits}", "\${year}", "\${year-2-digits}", etc.
Next Number	The <i>Next number</i> field allows the sysadmin to manually specify the next number to assign to a message upon publication. This can be used for all message series with a <i>Number Sequence Type</i> of <i>Yearly</i> or <i>Continuous</i> .
Additional Editor Fields	As described in the Editors Manual , the set of <i>editor fields</i> used by default when editing a message depends on e.g. the main type of the message, the category, etc. It is also possible to enable non-standard editor fields per message series using the <i>Additional Editor Field</i> . As an example, if a message series is used exclusively for firing exercise navigational warnings, the sysadmin could enable the "Signals" editor field for that message series.
NAVTEX Preamble	The <i>NAVTEX Preamble</i> field is only enabled for Navigational Warnings-related message series. It allows for the specification of a standardized NAVTEX preamble to be used for NAVTEX promulgations associated with the message. Please refer to the Editors Guide about promulgations.

4.2. Deleting a Message Series

A message series can be deleted by clicking the trash icon next to them. However, this only works if the message series being deleted has never been assigned to a message.

If a message series has indeed been assigned to a message, the sysadmin should instead remove the message series from the relevant domain.

Chapter 5. Domains

The *Domains* page allows a system administrator to manage the list of domains in Niord.

As described in the [System Administrators Manual](#) section, a Niord user always works in the context of a *current domain*. Domains are used to separate NW & NM messages into more manageable lists - such as a specific domain for NW messages, a domain for NM messages, a domain for firing exercises (also NWs), or indeed domains for separate regions with separate time-zones, etc.

Domains also play a central role in [Keycloak Integration](#). Each domain is created as an application client in Keycloak.

Domains

Add, modify and manage domains.

Filter		+ New domain		Keycloak...		⚙️	
Active	Order	Keycloak ID	Name	Time Zone	Areas	Categories	Message Series
<input type="checkbox"/>	1	<input checked="" type="checkbox"/> niord-nw	NW	Europe/Copenhagen		dma-nw dma-nw-local	
<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/> niord-legacy-nw	Legacy NW	Europe/Copenhagen		dma-legacy-nw dma-legacy-nw-local	
<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/> niord-nm	NM	Europe/Copenhagen		dma-nm	
<input checked="" type="checkbox"/>	5	<input checked="" type="checkbox"/> niord-fa	Firing Areas	Europe/Copenhagen		dma-fa	
<input checked="" type="checkbox"/>	6	<input checked="" type="checkbox"/> niord-fe	Firing Exercises	Europe/Copenhagen		dma-fe	
<input checked="" type="checkbox"/>	7	<input checked="" type="checkbox"/> niord-almanac	NM Almanac	Europe/Copenhagen		dma-nm-almanac	
<input checked="" type="checkbox"/>	8	<input checked="" type="checkbox"/> niord-annex	NM Annex	Europe/Copenhagen		dma-nm-annex	
<input type="checkbox"/>	10	<input type="checkbox"/> niord-gl-nw	NW Greenland	UTC	Greenland	ako-nw	

The sysadmin may filter the list of domains by typing a term into the *Filter* input field above the domain list. The term is matched against the ID and name of the domains.

5.1. Adding or Editing a Domain

The sysadmin can add a new domain by clicking the "New domain" button, or edit an existing domain by clicking the pencil symbol next to the domain.

This will open the *Domain Edit Page*:

Domains

Add, modify and manage domains.

Keycloak ID	niord-nm
Active	<input checked="" type="checkbox"/> Domain is active
Sort Order	3
Keycloak Status	Client "niord-nm" exists in Keycloak
Name	NM
Time Zone	Europe/Copenhagen
Map Center	Latitude - Longitude Zoom Level
Message Sort Order	
HTML Color	#5a5 ●
Areas	Select areas <input type="button" value=""/> <input type="button" value=""/>
Categories	Select Category <input type="button" value=""/> <input type="button" value=""/>
Message Series	dma-nm <input type="button" value="X"/> <input type="button" value=""/>
Publish	<input checked="" type="checkbox"/> Promulgate messages by default
AtoNs	<input type="checkbox"/> Integrate with AtoN module
Templates	<input type="checkbox"/> Support message template execution

Cancel Save Domain

The domains attributes:

Domain Attribute	Description
Keycloak ID	A unique ID for the domain. The ID is also used as an application client in Keycloak.
Active	Only active domains are available in the domain selector in the main menu of Niord.
Sort Order	The domain sort order. Controls the order of the domains in the domain menu.
Keycloak Status	If the corresponding Keycloak client does not exist in Keycloak, there will be a button to create it.

Domain Attribute	Description
Name	The human readable name of the domain.
Time Zone	The time-zone of the domain. The domain time zone will be used at various places where the editor specifies dates, such as the publication dates of a message.
Map Center	Optionally, a map center and zoom level can be specified. This will be used whenever a map is opened with empty contents, such as when opening the Position Editor .
Message Sort Order	The default sort order of messages in the domain. The sort order may be either by message area, ID or event dates, in ascending or descending order.
HTML Color	If an HTML color is defined for the message, this color will be displayed in the main menu of Niord when the domain is the currently selected domain. Any valid HTML color code can be used, such as "red", "#ff0000", etc.
Areas	The <i>Areas</i> field can be used to restrict the areas that may be assigned to messages of that domain. If e.g. "Denmark" is selected, then only "Denmark" or any of the sub-areas of "Denmark" can be assigned to a message of that domain.
Categories	The <i>Categories</i> field can be used to restrict the categories that may be assigned to messages of that domain. If e.g. "Firing Exercises" is selected, then only "Firing Exercises" or any of the sub-categories of "Firing Exercises" can be assigned to a message of that domain.
Message Series	The <i>Message Series</i> field must define the valid message series to use in the domain.
Publish	If the <i>Publish</i> flag is checked, then the messages of the domain is included by default, when using the public Niord REST API to fetch messages. In effect, this means that third party clients will receive messages of the domain by default.
AtoNs	If the <i>AtoNs</i> flag is checked, then the "AtoN" domain will be turned on when the domain is the currently selected domain. The AtoN module is a prototype module, that integrates an AtoN registry with Niord. Since it is not complete, it is not yet documented, and not turned on by default.
Templates	If the <i>Templates</i> flag is checked, then the message template mechanism described in the Message Template Execution chapter will be enabled.

5.2. Deleting a Domain

A domain can be deleted by clicking the trash icon next to them. However, this only works if there is not related data associated with the domain.

Instead the system administrator can choose to in-activate the domain.

5.3. Importing and Exporting Domains

The system administrator can export and import domains from the action menu.

The export/import file format is based on a JSON representation of the [DomainVo](#) class.

Example:

```
[  
  {  
    "domainId": "niord-nw",  
    "active": true,  
    "sortOrder": 1,  
    "name": "NW",  
    "timeZone": "Europe/Copenhagen",  
    "messageSeries": [  
      {  
        "seriesId": "dma-nw",  
        "mainType": "NW",  
        "shortFormat": "NW-${number-3-digits}-${year-2-digits}",  
        "navtexFormat": "${publish-date}\nDANISH NAV WARN ${number-year-id}",  
        "numberSequenceType": "YEARLY"  
      },  
      {  
        "seriesId": "dma-nw-local",  
        "mainType": "NW",  
        "numberSequenceType": "NONE"  
      }  
    ],  
    "publish": false,  
    "templates": true  
  },  
  ...  
]
```

Importing a domain JSON file will trigger the *domain-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a domain import JSON file on the *Domains* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/domain-import/in` folder.

Chapter 6. Promulgation Types

The *Promulgation Types* page allows a system administrator to manage the list of promulgation types in Niord.

Promulgation Types

Manage message promulgation types.

An instance of a message promulgation type will add a new tab in the message editor with promulgation-specific field.



Active	Service ID	Type ID	Name	Priority	Language	Domains	Types	Actions
<input checked="" type="checkbox"/>	navtex	navtex	NAVTEX	1	en	NW	Coastal	 
<input checked="" type="checkbox"/>	audio	audio	Audio	50	da	NW		 
<input type="checkbox"/>	twitter	twitter	Twitter	100	en	NW		 

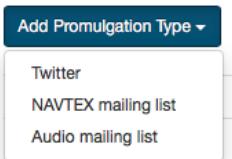
For Navigational Warnings in particular, there may be a need to promulgate specialized versions of a message to external channels. Niord has a plug-in architecture for adding new promulgation types. By default, it supports distributing *NAVTEX* versions of navigational warnings via mailing lists, and support for posting messages at Twitter upon publication.

Furthermore, the Danish version of Niord supports generating an *Audio* promulgation for navigational warnings. This will promulgate a verbose textual version of the messages, suitable to be read up on radio by non-maritime personal, to a mailing list.

The integration of promulgation types in the message editor is detailed in the [Promulgation Editor Field](#) chapter of the Editors Manual.

6.1. Adding or Editing a Promulgation Type

The sysadmin can add a new instance of a promulgation type by clicking the "Add Promulgation Type" button, which will allow the sysadmin to select which promulgation type to add:



Similarly, an existing promulgation type can be edited by clicking the pencil symbol next to the promulgation type.

Adding or editing a promulgation type will open the *Promulgation Type Edit Page*:

Promulgation Types

Manage message promulgation types.

An instance of a message promulgation type will add a new tab in the message editor with promulgation-specific field.

Active

Promulgate by default If this promulgation should be turned on by default for qualifying messages.

Type ID navtex

Name NAVTEX

Priority 1

Language en

Domains NW

Restrict Types NW types: Local Coastal Subarea Navarea

Script Resource Paths templates/tmp/navtex.ftl

Transmitters

All editable attributes, except the bottom-most one, are common to all promulgation types:

Promulgation Type Attribute	Description
Active	Only active promulgation types are used when creating a new message.
Promulgate by Default	Use this checkbox to flag if the promulgation type should be turned on by default for qualifying messages.
Type ID	The unique ID of the promulgation type.
Name	The name of the promulgation type.
Priority	The sort order of the promulgation type in the message editor.
Language	Some promulgation types may be tied to one of the message model languages. For instance, the <i>NAVTEX</i> promulgation type should always be tied to English.
Domains	The list of domains for which the promulgation type will be included in the message editor.
Restrict Types	Depending on the <i>Domains</i> selection above, the messages that will be assigned promulgations of the promulgation type can be either <i>NW</i> (navigational warnings) or <i>NM</i> (notices to mariners), or both. The <i>Restrict Types</i> field will allow the sysadmin to restrict the promulgation type to a selection of <i>NW</i> or <i>NM</i> sub-types. As an example, <i>NAVTEX</i> should be associated with <i>Coastal Warnings</i> , not <i>Local Warnings</i> .

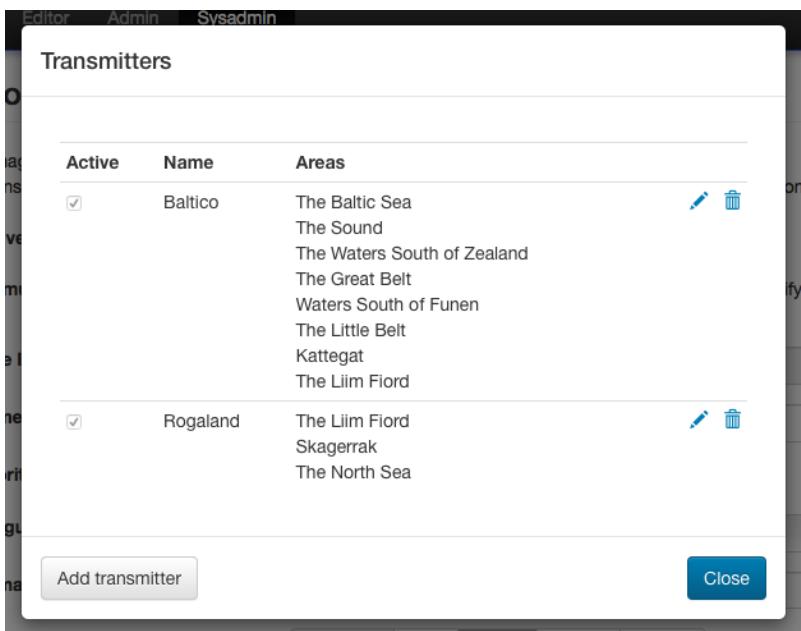
Promulgation Type Attribute	Description
Script Resource Paths	Optionally, the sysadmin can specify one or more script resources that will be enacted when an editor chooses to generate promulgations by executing message templates. As an example, the NAVTEX promulgation type runs a Freemarker script that adds the currently selected message area as a preamble NAVTEX line. Script Resources is an advanced topic detailed in the Script Resources chapter.

6.1.1. Promulgation Type Specific Editor Fields

Each promulgation type may have custom editor fields at the bottom of the *Promulgation Type Edit Page*. This may be used for editing promulgation type-specific settings.

NAVTEX

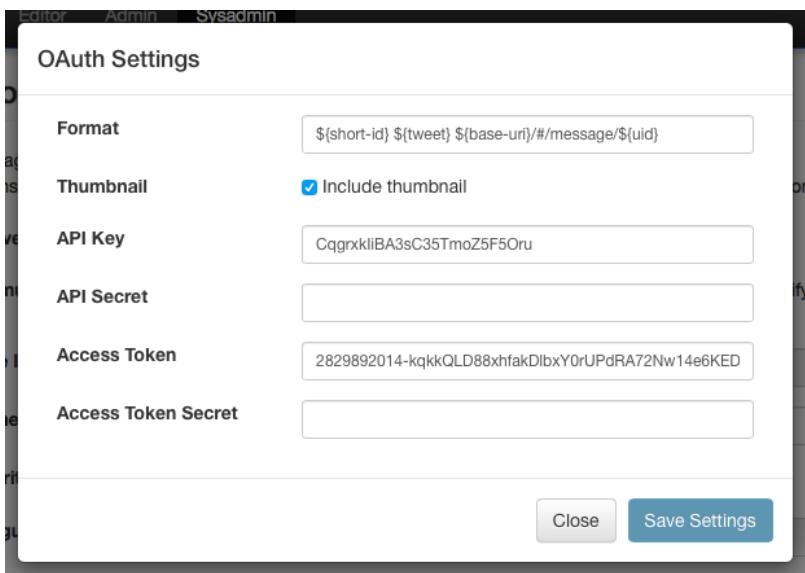
The NAVTEX promulgation type has a button for managing the available transmitters (NAVTEX stations). Clicking the button will open the *Transmitters* dialog:



For each transmitter added via this dialog, the sysadmin can specify which areas the transmitter covers. This will facilitate automatic selection of the correct transmitters when a new message is created by executing a message template.

Twitter Settings

The Twitter promulgation type has an "Update Settings" button that opens a dialog used for managing the format of the generated tweets, and the OAuth credential used when submitting a tweet to Twitter:



The *Format* field may contain *replacement tokens* such as "\${short-id}", "\${tweet}" "\${base-uri}" and "\${uid}". The tokens will be replaced with real values when a message is published.

As a example, the format "\${short-id} \${tweet} \${base-uri}/#/message/\${uid}" will generate a tweet similar to the example below, that contains the message short id, the actual message-specific tweet (title line of the message), and a link to open the full message in Niord:



When the *Thumbnail* option is turned on, as in the example above, a thumbnail image will be generated and submitted with the tweet.

The *API Key* and *Access Token* fields must be filled out with the corresponding values defined at <https://apps.twitter.com>.

6.2. Deleting a Promulgation Type

A promulgation type can be deleted by clicking the trash icon next to them. However, this only works if there is not related data associated with the promulgation type.

Instead the system administrator can choose to in-activate the promulgation type.

6.3. Importing and Exporting Promulgation Types

The system administrator can export and import promulgation types from the action menu.

The export/import file format is based on a JSON representation of the [PromulgationTypeVo](#) class.

Example:

```
[  
 {  
   "active": true,  
   "domains": [  
     { "domainId": "niord-client-nw" }  
   ],  
   "language": "en",  
   "messageTypes": [  
     "COASTAL_WARNING"  
   ],  
   "name": "NAVTEX",  
   "priority": 1,  
   "promulgateByDefault": false,  
   "scriptResourcePaths": [  
     "templates/tmp/navtex.ftl"  
   ],  
   "serviceId": "navtex",  
   "typeId": "navtex"  
 },  
 ...  
 ]
```

Please note, this data format does *not* include support for the promulgation type-specific attributes such as the NAVTEX transmitters. These attributes must be handled manually.

Importing a promulgation type JSON file will trigger the *promulgation-type-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a promulgation type import JSON file on the *Promulgation Types* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/promulgation-type-import/in` folder.

Chapter 7. Firing Schedules

The *Firing Schedules* page allows a system administrator to configure one or more firing schedules in Niord.

Firing Schedules

Add, modify and manage firing schedules.

Active	Domain	Target Domain	Target Series	
<input checked="" type="checkbox"/>	Firing Areas	Firing Exercises	dma-fe	 

7.1. Firing Exercises System Setup

Before configuring a schedule on the *Firing Schedules* system admin page, the Niord system must be configured with the proper firing areas base data and the domains for firing areas and exercises.

The overarching idea is as follows:

1. Firing areas must be defined as base data on the Admin [Areas](#) page. Each firing area implicitly has an associated firing schedule.
2. In a separate domain, "Firing Areas", editors will create a *Miscellaneous NM* message for each firing area, which provides details about the firing area, contact information, signals, prohibition, etc.
3. The "Firing Areas" domain also has a special "Schedule" sub-page that provides a UI for easily scheduling firing exercises per firing area.
4. The firing area messages and firing area schedule will be combined to create firing exercise *Local Warning* messages in a separate domain, "Firing Exercises".

The schedules configured on the *Firing Schedules* system admin page provide the underlying engine that generates firing exercise message based on firing areas and firing area schedules.

The steps outlined above are described in more details below.

7.1.1. Configuring Firing Area Base Data

Areas

The screenshot shows the 'Admin Areas' page. On the left, there is a tree view of geographical areas under 'Denmark'. On the right, a detailed view of a specific area is shown:

- Active:**
- Name:** ES D 138 Bornholm N. (with UK flag)
- MRN:** urn:mrn:ihofa:dk:es-d-1
- Type:** Firing area (highlighted with a red box)
- Additional Editor Fields:** Select editor fields (with a trash icon)
- Extent:** A map of Denmark with a pink polygon representing the extent of the area. Labels include 'Baltic Sea' and 'Edit' button.
- Save:** Save button

Administrators must define all firing practice areas in the country on the Admin [Areas](#) page. Each of these areas should have their type set to "Firing area". This will trigger that a firing schedule can be associated with the areas.

7.1.2. Create a Firing Areas Domain

There should be a separate domain, e.g. "Firing Areas", where editors should create *Miscellaneous NM* messages for each firing area.

The screenshot shows the Niord software interface. On the left, there's a sidebar with a tree view of messages categorized by domain (e.g., Denmark - T, Denmark - K) and year (e.g., 2017). A central map shows the Baltic Sea with a specific firing area highlighted in pink. The area is bounded by four points: 1 (top right), 2 (bottom), 3 (top left), and 4 (top right). The label 'ES D 138 Bornholm N.' is placed within the polygon. Below the map, there's a legend with 'WMS' and 'Labels' options. To the right of the map, there's a vertical column of icons for managing firing areas. A detailed message card is open for 'FA/ES-D-138 2017'. It contains the following information:

- Denmark. The Baltic Sea. ES D 138 Bornholm N.**
- Details**: In connection with firing practices, a temporary danger area is established around position:
 - 55° 20'N - 015° 30'E.
 Mariners are requested to pass with caution.
- Note**: Information about firing practices is available from Joint Operations Centre, tel. +45 7285 0000.
- Charts**: 188.
- Publication**: [J. no. 2015025999].

(DC DNK November 2016. Published 2 January 2017)

At the bottom of the message card, there are navigation buttons (back, forward, star, settings) and a 'Close' button.

The messages should provide details about the firing areas, contact information, signals, prohibition, etc.



A common task for Notices to Mariners departments is to publish a yearly publication with firing practice areas. The message list of the "Firing Areas" domain is ideally suited to form the basis for one such publication. The publication can be defined as described in the [Publications](#) chapter of the administrator manual. Indeed, Niord ships with a report, "fa-list", that can be used for this publication.

7.1.3. Maintain Firing Exercise Schedule

Once everything has been configured, a new sub-page, "Schedule", will become available in the "Firing Areas" domain:

Name	Time
EK D 352 Lysegrend N.	
EK D 353 Lysegrend S.	
EK R 18 Jaegerspris	8:00 AM - 11:59 PM CEST
11 Bredetved	
EK R 11 Sjaellands Odde W.	7:00 AM - 8:00 AM CEST
EK R 12 Gniaben	
EK R 13 Sjaellands Rev	
EK R 14 Sjaellands Odde E.	
EK D 350 Yderflak	
EK D 351 Schultz Grund	
13 Seden	
EK R 45 Herring	8:00 AM - 4:00 PM CEST
EK R 15 Sejeroe E.	8:00 AM - 10:00 PM CEST
EK R 16 Sejeroe W.	
EK R 17 Isefjord	
EK R 19 MULTEX	7:00 AM - 8:00 AM CEST
EK R 20 Yderby	7:00 AM - 8:00 AM CEST

Editors can maintain the firing exercise schedule on this page. Firstly, they select a date in the *Schedule Date* field. The firing practice schedule of that date will be displayed below for all available firing areas.

The editor can add and modify the firing period for a given area by clicking the pencil symbol next to the area.

Clicking the "Update Firing Exercises" button will directly update firing exercise messages from the updated schedule. This operation is also called periodically by the system.

7.1.4. Generating Firing Exercises

Once everything has been configured, the firing area messages and firing exercise schedule maintained in the "Firing Areas" domain will be combined to created firing exercise messages in a new domain, e.g. "Firing Exercises".

No editor should have access rights to edit messages in the "Firing Exercises" domain, since these are generated by the system.

7.2. Adding or Editing a Firing Schedule

A prerequisite for the firing exercise-generating mechanism to work, and for the schedule page to become available in the "Firing Areas" domain, is that a firing schedule has been defined on the *Firing Schedules* system admin page.

The sysadmin can add a new schedule by clicking the "New Firing Schedule" button, or edit an existing schedule by clicking the pencil symbol next to the schedule.

This will open the *Firing Schedule Edit Page*:

Firing Schedules

Add, modify and manage firing schedules.

Domain	Firing Areas
Target Domain	Firing Exercises
Target Message Series	dma-fe
Scheduled Days	<input type="text"/>
Active	<input checked="" type="checkbox"/> Generate firing exercises

[Cancel](#) [Save Firing Schedule](#)

The schedule attributes:

Schedule Attribute	Description
Domain	The domain that is used for maintaining the firing area messages. The domain selected in this field will automatically sport a "Schedule" page, used for maintaining the firing schedule as described above.
Target Domain	The target domain, where the generated firing exercise messages will be created.
Target Message Series	The message series of the target domain, that will be assigned to the generated firing exercise messages.
Schedule Days	The number of days into the future that will be included in the generated firing exercises.
Active	Firing exercise messages will be created automatically only when the <i>Active</i> flag is checked.

7.3. Deleting a Firing Schedule

A firing schedule can be deleted by clicking the trash icon next to them.

Chapter 8. Dictionaries

The *Dictionaries* page allows a system administrator to manage the named dictionaries used in Niord. The dictionaries contain translatable text used in the Niord website, in PDF reports, e-mails, template parameter lists, etc.

Dictionaries

Manage system dictionaries.

Key	Value	
editor.auto_generate	DK Auto-generér EN Auto generate	  
editor.back_to_list	DK Tilbage til listen EN Back to list	  
editor.clear	DK Nulstil EN Clear	  
editor.hide_subject	DK Skjul emne EN Hide subject	  
editor.new_nm	DK Ny NM EN New NM	  
editor.new_nm_template	DK Ny NM fra skabelon EN New NM from Template	  
editor.new_nw	DK Ny NW EN New NW	  
editor.new_nw_template	DK Ny NW fra skabelon EN New NW from Template	  
editor.recently_edited	DK Nyligt redigerede klædder EN Recently edited drafts	  
editor.reload_msg	DK Genindlæs meddelelse EN Reload Message	  
editor.save_msg	DK Gem meddelelse EN Save Message	  

The topmost menu is used to select the currently selected dictionary.

The sysadmin may filter the list of dictionary entries, displayed for the currently selected dictionary, by typing a term into the *Filter* input field. The term is matched against the key of the dictionary entries.

8.1. Standard Dictionaries

Niord defines a set of standard dictionaries, that are initially loaded from *resource bundles* in the Niord distribution. The standard dictionaries are:

Dictionary	Description
web	The "web" dictionary contains much of the text actually displayed on the Niord website.

Dictionary	Description
message	The "message" dictionary contains many of the terms used for NW and NM messages, and is used in the Niord website, PDF reports, e-mails, etc.
mail	The "mail" dictionary contains additional translatable terms used in e-mails.
pdf	The "pdf" dictionary contains additional translatable terms used in PDF reports.
template	The "template" dictionary contains additional translatable terms used when executing message templates.

8.2. Extended Dictionaries

Niord also supports importing *extended dictionaries*, as detailed in the [Importing and Exporting Dictionaries](#) section.

The entries of these dictionaries have an extra translatable *long value* field, which can be viewed and edited by checking the "Show Extended" option, next to the dictionary menu:

Dictionaries

Manage system dictionaries.

aton	<input checked="" type="checkbox"/> Show Extended		
Filter	<input type="button" value="+ New Entry"/> <input type="button" value="Settings"/>		
Key	Value	Long Value	
aton.bearing.e	DK E UK E	DK øst UK east	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.bearing.n	DK N UK N	DK nord UK north	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.bearing.s	DK S UK S	DK syd UK south	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.bearing.w	DK W UK W	DK vest UK west	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.aton	DK flydende afmærkning UK buoy	DK den flydende afmærkning UK the buoy	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.beacon	DK båke UK beacon	DK båken UK the beacon	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.beacon.cable	DK kabelbåke UK cable beacon	DK kabelbåken UK the cable beacon	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.beacon.front	DK forbåke UK front beacon	DK forbåken UK the front beacon	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.beacon.front_rear	DK for- og bagbåke UK front and rear beacon	DK for- og bagbåken UK the front and rear beacon	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.beacon.rear	DK bagbåke UK rear beacon	DK bagbåken UK the rear beacon	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.buoy	DK dagsømærke UK buoy	DK dagsømærket UK the buoy	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>
aton.function.buoy.east_cardinal	DK østkardinal UK east cardinal buoy	DK østkardinalen UK the east cardinal buoy	<input type="button" value="Edit"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/>

One such dictionary is the "aton" dictionary, which contain parameter list entries used in the

message template function - please refer to the [Message Template Execution](#) chapter.

8.3. Adding or Editing a Dictionary Entry

The sysadmin can add a new dictionary entry to the currently selected dictionary by clicking the "New Entry" button, or edit an existing dictionary entry by clicking the pencil symbol next to the entry.

This will open the *Dictionary Entry Edit Page*:

Dictionaries

Manage system dictionaries.

Key	msg.copy.include_reference				
Values	<table border="1"><tr><td>Include reference to copied message</td><td></td></tr><tr><td>Tilføj reference til kopieret meddelelse</td><td></td></tr></table>	Include reference to copied message		Tilføj reference til kopieret meddelelse	
Include reference to copied message					
Tilføj reference til kopieret meddelelse					
<div style="text-align: right;">Cancel Save Entry</div>					

The standard dictionary entry attributes:

Entry Attribute	Description
Key	A unique key for the dictionary entry
Values	The textual values for all supported languages.

For extended dictionaries - i.e. when the "Show Extended" option is checked - there are a couple of additional attributes. These entries are typically used in parameter lists when executing message templates - please refer to the [Message Template Execution](#) chapter.

Dictionaries

Manage system dictionaries.

Key	aton.function.buoy.north_cardinal
Values	north cardinal buoy nordkardinal
Long Version	the north cardinal buoy nordkardinalen
AtoN filter	aton.kv('seamark:buoy_cardinal:category', 'north') && !aton.k('seamark:light.*')

[Cancel](#) [Save Entry](#)

Entry Attribute	Description
Long version	A secondary version of the dictionary entry for all supported languages.
AtoN filter	The <i>AtoN</i> filter is not currently used in production, but it ties in with the <i>Aids to Navigation</i> module of Niord. There, you can start by selecting an AtoN and then execute a message template based on the AtoN data. The <i>AtoN filter</i> attribute can be used to facilitate pre-selection of the correct parameters in the message templates. For instance, in the example above the "north cardinal buoy" entry matches AtoNs according to the filter: <code>"aton.kv('seamark:buoy_cardinal:category', 'north') && !aton.k('seamark:light.*')".</code> AtoNs are defined in an OpenStreetmap (OSM) Seamount format, and thus, the filter states that the AtoN should be a north cardinal buoy, but not a light buoy.

8.4. Deleting a Dictionary Entry

A dictionary entry can be deleted by clicking the trash icon next to them.

Be careful that the dictionary entry is not used in one of the [Parameter Types](#) definitions.

8.5. Importing and Exporting Dictionaries

The system administrator can export and import dictionaries from the action menu.

The export/import file format is based on a JSON representation of the [ExportedDictionaryVo](#) class.

Example:

```
[
  {
    "name": "mail",
    "entries": [
      {
        "descs": [
          {
            "lang": "da",
            "value": "K\u00e6re {0}"
          },
          {
            "lang": "en",
            "value": "Dear {0}"
          }
        ],
        "key": "mail.dear.user"
      },
      ...
    ],
  }
]
```

Importing a dictionary JSON file will trigger the *dictionary-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a *dictionary import JSON file on the _Dictionaries sysadmin* page, the file can be copied to the `$NIORD_HOME/batch-jobs/dictionary-import/in` folder.

8.6. Reloading Standard Dictionaries

As mentioned in the [Standard Dictionaries](#) section, the standard dictionaries are initially loaded from *resource bundles* in the Niord distribution.

These dictionaries can be re-loaded from the resource bundles by enacting the "Reload from system" function in the action menu.

Chapter 9. Parameter Types

The *Parameter Types* page allows a system administrator to manage named parameters that may be used for user input when executing message templates - please refer to the [Message Template Execution](#) chapter.

Parameter Types

Add, modify and manage parameter types used when executing message templates.

[+ New Parameter Type](#) [⚙️](#)

Name	Type	Values	
ais	composite	AtoN Type AtoN name Status	
aton_name	standard		
beacon_by_function	composite	Beacon Type Beacon Name	
beacon_function_list	list	beacon front beacon rear beacon cable beacon front and rear beacon	
boolean	standard		
bouy_by_function	composite	Buoy Type Buoy Name	
bouy_by_type	composite	Buoy Type Buoy Name	
bouy_function_list	list	north cardinal buoy south cardinal buoy east cardinal buoy west cardinal buoy port hand buoy starboard hand buoy preferred channel to starboard hand buoy preferred channel to port hand buoy safe water buoy special buoy isolated danger buoy buoy buoy	

There are three categories of parameter types:

Category	Description
standard	There is a fixed set of <i>standard</i> parameter types, such as "text", "number", "boolean", "date", etc. These types cannot be modified or deleted. When executing a message template, parameters of the <i>standard</i> type will be represented via standard input widgets such as an input field for "text", a checkbox for "boolean", etc.
list	A <i>list</i> parameter type is a named and ordered collection of dictionary entries - please refer to the Dictionaries chapter.

Category	Description
composite	A <i>composite</i> parameter type is a named collection of <i>standard</i> and <i>list</i> parameter types.

Example: When executing the "Marked Wreck" message template, one of the parameters the user is asked to fill out, is the "Wreck" parameter:

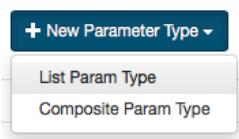
The screenshot shows a form for configuring a "Wreck" parameter. It includes three input fields: "Vessel Type" (dropdown menu showing "fishing vessel"), "Depth over wreck (m)" (dropdown menu showing "2,5"), and "Visible above sea surface" (unchecked checkbox).

The "Wreck" parameter is really just a *composite* parameter made up of a *list* parameter type ("vessel_type_list") for specifying the wreck type, a *standard* parameter type ("number") for specifying the wreck depth, and a *standard* parameter type ("boolean") for specifying if the wreck is visible above sea surface.

The "vessel_type_list" *list* parameter type in turn includes the "aton" dictionary entries for "vessel", "fishing vessel" and "sailing vessel".

9.1. Adding or Editing a Parameter Type

The sysadmin can add a new parameter type by clicking the "New Parameter Type" button, and then select either "List Parameter Type" or "Composite Parameter Type":



Similarly, the sysadmin can edit an existing *list* or *composite* (but not *standard*) parameter type by clicking the pencil symbol next to the entry.

This will open either the *List Parameter Type Edit Page* or the *Composite Parameter Type Edit Page*:

9.1.1. List Parameter Type Edit Page

Parameter Types

Add, modify and manage parameter types used when executing message templates.

The screenshot shows the 'Parameter Types' configuration interface. At the top, there is a search bar labeled 'Name' containing 'beacon_function_list'. Below it are two main panels: 'Selected Values' and 'Available Values'.

Selected Values: This panel lists dictionary entries with their keys and values. It includes a 'Clear All' button and a 'Save Parameter Type' button at the bottom.

Key	Value
aton.function.beacon	beacon
aton.function.beacon.front	front beacon
aton.function.beacon.rear	rear beacon
aton.function.beacon.cable	cable beacon
aton.function.beacon.front_rear	front and rear beacon

Available Values: This panel lists dictionary entries from a selected dictionary. It includes a 'Filter' input field set to 'aton'.

Key	Value
aton.bearing.e	E
aton.bearing.n	N
aton.bearing.s	S
aton.bearing.w	W
aton.function.aton	buoy
aton.function.buoy	buoy
aton.function.buoy.east_cardinal	east cardinal buoy
aton.function.buoy.isolated_danger	isolated danger buoy
aton.function.buoy.north_cardinal	north cardinal buoy
aton.function.buoy.port_bifurcation	preferred channel to port hand buoy
aton.function.buoy.port_hand	port hand buoy
aton.function.buoy.safe_water	safe water buoy
aton.function.buoy.south_cardinal	south cardinal buoy

At the bottom of the interface are 'Cancel' and 'Save Parameter Type' buttons.

The sysadmin specifies a unique name for the parameter list, and assigns the relevant dictionary entries to the list. For a discussion of dictionaries, please refer to the [Dictionaries](#) chapter.

The sysadmin can select the relevant dictionary using the dictionary menu in the top of the "Available values" panel. She can also filter the entries of the currently selected dictionary using the *Filter* input field.

Dictionary entries are added to the list by clicking the plus icon next to the entries. Similarly, dictionary entries are removed from the parameter type list by clicking the trash icon next to the entries in the "Selected Values" panel. Lastly, selected dictionary entries can be re-ordered by dragging an entry to its proper position using the drag handle.

9.1.2. Composite Parameter Type Edit Page

Parameter Types

Add, modify and manage parameter types used when executing message templates.

The screenshot shows the 'Composite Parameter Type Edit Page'. At the top, there is a search bar labeled 'Name' containing 'wreck'. Below it is a table titled 'Parameters'.

Param ID	Param Name	Param Type	+ Add
wreck_type	Vessel Type	vessel_type_list (list)	
wreck_depth	Depth over wreck (m)	number (standard)	
wreck_visible	Visible above sea surface	boolean (standard)	

At the bottom of the interface are 'Cancel' and 'Save Parameter Type' buttons.

The sysadmin specifies a unique name for the composite parameter, and assigns the relevant nested parameters.

The sysadmin adds a new nested parameter by clicking the "Add" button, and edits the nested parameters by clicking the pencil icon next to the parameters. This will open the *Nested Composite Parameter Edit Dialog*:

Admin Sysadmin

Template Parameter

Parameter ID

Name

Vessel Type		Skibstype	
-------------	--	-----------	--

Type

Mandatory

Position List

Cancel **OK**

The nested parameter must be assigned a unique *Parameter ID*, a *Name* in all supported languages, a *Type* which can be any of the defined *standard* or *list* parameter types.

Furthermore, the sysadmin must decide whether the parameter should be mandatory, and if the parameter is tied to a position list.

Tying a nested parameter type to a position list will ensure the following effect: When executing a message template, the parameter will be repeated for each position defined for the message. In the example below, the "Buoy" parameter is repeated for both positions selected in the *Positions* editor.

Buoy off station

Positions

Edit **Edit as text** **1 decimal**

Buoy

📍1	Buoy Type *	north cardinal buoy
	Buoy Name	
📍2	Buoy Type *	east cardinal buoy
	Buoy Name	

Nested parameters can be deleted from the *composite* parameter type by clicking the trash icon next to the parameters.

Lastly, the nested parameters can be re-arranged by dragging a parameter to its proper position

using the  drag handle.

9.2. Deleting a Parameter Type

A parameter type can be deleted by clicking the trash icon next to them. However, the sysadmin should first check that the parameter is not used in either message template definitions (see the [Categories](#) chapter) or in *composite* parameter types.

9.3. Duplicating a Parameter Type

A parameter type can be duplicated by clicking the copy icon next to them.

9.4. Importing and Exporting Parameter Types

The system administrator can export and import parameter types from the action menu.

The export/import file format is based on a JSON representation of the [ParamTypeVo](#) class and its sub-classes: [StandardParamTypeVo](#), [ListParamTypeVo](#) and [CompositeParamTypeVo](#).

Example:

```
[  
  {  
    "name": "ais",  
    "type": "COMPOSITE"  
    "templateParams": [  
      {  
        "descs": [  
          {  
            "lang": "da",  
            "name": "Af\u00f8rsk. type"  
          },  
          {  
            "lang": "en",  
            "name": "AtoN Type"  
          }  
        ],  
        "mandatory": false,  
        "paramId": "aton_type",  
        "positionList": false,  
        "type": "radio_navigation_aton_list"  
      },  
      ...  
    ]  
  },  
  ...  
]
```

Importing a parameter type JSON file will trigger the *param-type-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a parameter type import JSON file on the *Parameter Types* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/param-type-import/in` folder.

Chapter 10. Script Resources

The *Script Resources* page allows a system administrator to manage the list of *script resources* in Niord.

Script Resources

Add, modify and manage script resources.

The script resources, either Freemaker Templates or JavaScript Files, are used for print reports, mails and message templates.

The screenshot shows the Niord 'Script Resources' management interface. On the left, a list of script resources is displayed in a table with columns for Path, Type (fm for Freemaker, js for JavaScript), and actions (Edit, Preview, Delete). One resource, 'templates/aton/telephony-codes.ftl', is selected and shown in a detailed view on the right. The right panel has tabs for 'Freemaker Path' (selected) and 'JavaScript Path'. The 'Freemaker Path' tab shows the file content:

```
1 | <#macro formatTelephonyCode code separator="-">
2 |   <#assign result="" />
3 |   <#list $code?length as i>
4 |     <if !(i?_first)>
5 |       <#assign result=$result + separator>
6 |     </if>
7 |     <#assign result=$result + formatTelephonyCharacter(code?substring(i, i+1)?upper_case)>
8 |   </list>
9 |   ${result}
10 | </macro>
11 |
12 | <#function formatTelephonyCharacter code>
13 |   <#assign result="" />
14 |   <#switch code>
15 |     <#case "A"><#assign result="Alpha"/><#break>
16 |     <#case "B"><#assign result="Bravo"/><#break>
17 |     <#case "C"><#assign result="Charlie"/><#break>
18 |     <#case "D"><#assign result="Delta"/><#break>
19 |     <#case "E"><#assign result="Echo"/><#break>
20 |     <#case "F"><#assign result="Foxtrot"/><#break>
21 |     <#case "G"><#assign result="Golf"/><#break>
22 |     <#case "H"><#assign result="Hotel"/><#break>
23 |     <#case "I"><#assign result="India"/><#break>
24 |     <#case "J"><#assign result="Juliet"/><#break>
25 |     <#case "K"><#assign result="Kilo"/><#break>
26 |     <#case "L"><#assign result="Lima"/><#break>
27 |     <#case "M"><#assign result="Mike"/><#break>
```

Below the code editor are buttons for 'History...', 'Cancel', and 'Save Resource'.

Script resources are always associated with a path, and come in two flavours; *Freemaker templates* (with an ".ftl" path extension) and server-side Nashorn *JavaScript* files (with a ".js" path extension).

System administrators wishing to work with script resources, should acquaint themselves with these technologies, which are detailed further in the [Server-Side JavaScript](#) and [Freemaker Templates](#) sections.

The Freemaker templates are typically, but not exclusively, used for generating HTML, whereas the server-side JavaScript files are typically used for looking up or manipulating data.

The *Script Resources Page* displays the list of script resources currently persisted to the database. The system administrator can type a term into the *Filter* input field above the list, to filter the script resources by their paths.

10.1. Script Resource Usage

The script resources are used throughout Niord for operations such as generating PDF print reports, generating mails, etc. An overview of functions using script resources is found in the table below:

Function	Description
Print Reports	Print Reports are maintained on the Print Reports sysadmin page. There are a couple of standard and draft reports, along with domain-specific reports, such as the weekly Notices to Mariners digest. In order to generate PDF files, Niord will first use Freemarker templates to generate HTML, and then convert the HTML into PDF (CSS 2 has extensions for <i>paged media</i>). Print Report Freemarker templates are typically found under the "templates/messages/" sub-path.
Message Templates	The single most extensive usage of script resources is for <i>Message Templates</i> - please refer to the subsequent Intermediate Message Template Format section. Message Templates use JavaScript file for data-manipulation and Freemarker templates for generating an intermediate template XML-format, used for generating messages. Message Template script resources are typically found under the "templates/tmpl/" sub-path.
Mailing Lists	Mailing lists also use script resources for generating the actual HTML e-mails - please refer to the [Mailing Lists] chapter. Mailing List script resources are typically found under the "templates/mailnglist/" sub-path.
Miscellaneous	Freemarker templates are used for quite a few discrete functions, such as formatting a light character (e.g. "Al.Bu.Y 3s") as human text, and formatting message positions in various formats - please see the Insert Locations section of the Editors manual.

10.2. Script Resource Extensions

Niord has added some extensions to both types of the script resources.

Firstly, the script resources are *always* loaded from the database, not the file system. However, if a script resource, as given by its path, does not exist in the database, then Niord will check to see if the resource can be loaded from the class-path and persisted to the database, thence commencing operations.

This means that Niord developers can develop and maintain the initial batch of script resources as project files and use a professional code editor for editing the scripts.

Another Niord extension has to do with *script resource inclusion*. File system-based Freemarker Templates can include other Freemarker templates, and similarly for JavaScript files; a trait that facilitates code reuse and libraries. Niord has extended the *script resource inclusion* concept, so that it works with the database-backed scripts as well. Subsequent sections will give examples of script resource inclusion.

10.3. Server-Side JavaScript

An introduction to Nashorn JavaScript can be found at <http://winterbe.com/posts/2014/04/05/java8-nashorn-tutorial/>.

The scripts are executed server-side, which means that you can e.g. call Java Enterprise Beans and load and manipulate data.



Executing JavaScripts server-side is clearly a security issue, since you can e.g. create a script that deletes data. However, all access to create and update JavaScripts is strictly restricted to system administrators, a role reserved to the person(s) that set up and configure the entire system, and who can wreck it anyway, should they so decide...

The following example illustrates how to perform a message search for published firing exercises:

```
var messageService = CdiUtils.getBean(org.niord.core.message.MessageService.class);
var seriesIds = java.util.Collections.singleton('dma-fe');
var statuses = java.util.Collections.singleton(org.niord.model.message.Status
.PUBLISHED);
var searchParams = new org.niord.core.message.MessageSearchParams();
searchParams.seriesIds(seriesIds)
    .statuses(statuses);
var searchResult = messageService.search(searchParams);
```

10.3.1. Inclusion in JavaScript

As mentioned in the [Script Resource Extensions](#) section, JavaScript files are persisted in the database, and may include other JavaScript files.

Hence, the "templates/tmpl/common.js" JavaScript file contains a collection of common JavaScript functions which is often included by other JavaScript files using the syntax:

```
/** Always load using full path and a "niord:" prefix */
load('niord:templates/tmpl/common.js');
```

10.4. Freemarker Templates

The documentation for Freemarker templates are found at <http://freemarker.org>.

The Freemarker Templates are typically used to convert a data model, such as a message list, into HTML, and sometimes into plain text or XML.

The following simple example, "templates/geometry/text.ftl", is instantiated with a "geometry" (position list) and a "format", and formats the positions as a comma-separated list of lat-lon positions.

```

<#assign formatPos = "org.niord.core.script.directive.LatLonDirective"?new()>

<#if geometry?has_content>
    <#list geometry as feature>
        <#if feature.coordinates?has_content>
            <#list feature.coordinates as coord>
                <@formatPos lat=coord.coordinates[1] lon=coord.coordinates[0]
format=format />
                <#if coord?has_next>,&nbsp;</#if>
            </#list>
        </#if>
        <#if feature?has_next>,&nbsp;</#if>
    </#list>
</#if>

```

10.4.1. Inclusion in Freemarker Templates

As mentioned in the [Script Resource Extensions](#) section, Freemarker templates are persisted in the database, and may include other Freemarker templates.

Hence, the "templates/tmpl/common.ftl" and "templates/messages/message-support.ftl" Freemarker templates contain a collection of common Freemarker functions and macros used by other Freemarker templates, using the syntax:

```

<!-- From same path level -->
<#include "common.ftl"/>

<!-- Include from a different path level -->
<#include "../tmpl/common.ftl"/>

```

10.4.2. Language-Specific Freemarker Templates

When loading the main Freemarker template path, or any of the included templates (see above), the actual template path loaded is subject to a language-specific selection.

If e.g. "templates/aton/light-character.ftl" is loaded in the context of a Danish locale, then the actual template being loaded is the "templates/aton/light-character_da.ftl" template (if it exists).

10.4.3. Dictionaries in Freemarker Templates

As described in the [Dictionaries](#) chapter, dictionaries are also used in Freemarker Templates. As an example, the "message" and "mail" dictionaries are available to mailing-list Freemarker templates, the "message" and "pdf" are available to print report Freemarker templates, and so forth. The following examples demonstrate how to emit a dictionary term:

```

<!-- Emitting the "pdf.toc" dictionary entry -->
<h2>${text("pdf.toc")}</h2>

<!-- Emitting a parameterized dictionary entry which contains a {0} placeholder -->
${text('cancellation.this_message',cancelDate)}

```

10.5. Intermediate Message Template Format

Freemarker templates are used for generating an intermediate XML-based *Message Template Format*. Message templates are used so extensively, that the format merits its own description below. Please also refer to the [Categories](#) and [Message Template Execution](#) chapters.

The data passed along to the Freemarker template being executed is

Data	Description
message	A template NW or NM message instantiated from input fields in the template execution dialog.
params	A map of other parameters instantiated from input fields in the template execution dialog.
template	The message template (executable category) being executed.
languages	The list of model languages to generate data for.

The output of the Freemarker templates should be an intermediate XML format, which contain a list of <field-template> elements for each field that should be updated of the message. The snippet below illustrates what the resulting XML may look like:

```

<field-template field="part.getDesc('en').subject" format="text">
    Denmark. Kattegat. Randers Fjord. Light unlit.
</field-template>

<field-template field="part.getDesc('da').subject" format="text">
    Danmark. Kattegat. Randers Fjord. Fyr slukket.
</field-template>

<field-template field="part.getDesc('en').details" format="html">
    <p>The light Voer Brohoved in pos. 56° 31.2'N - 010° 13.8'E is unlit.</p>
</field-template>

<field-template field="part.getDesc('da').details" format="html">
    <p>Fyret Voer Brohoved på position 56 grader 31,2 min. nord 10 grader 13,8 min. øst  
er slukket.</p>
</field-template>

<field-template field="message.promulgation('audio').text" update="append">
    Fyret Voer Brohoved på position 56 grader 31,2 min. nord 10 grader 13,8 min. øst  
er slukket.
</field-template>

<field-template field="message.promulgation('navtex').text" update="append">
    LIGHT VOER BROHOVED 56-31.2N 010-13.8E
    UNLIT.
</field-template>

```

The "field" attribute (which is actually a JavaScript expression), is used to point out which message attribute to update with the contents of the <field-template>.

The "update" attribute indicates whether to replace or append the content to the attribute.

The "format" attribute indicates the format of the <field-template> contents. If the format is e.g. "text", then the contents is cleaned up as a single line of text.

Unlike most other types of script resources, which gets instantiated with a specific language and locale, the ones used for message templates should handle multiple languages themselves. The currently used language can be changed using the following snippet:

```
<#setting locale='da'>
```

10.6. Adding or Editing a Script Resource

The sysadmin can add a new Freemarker Template or JavaScript file by clicking the "Add Script Resource" button, and select the type to add:

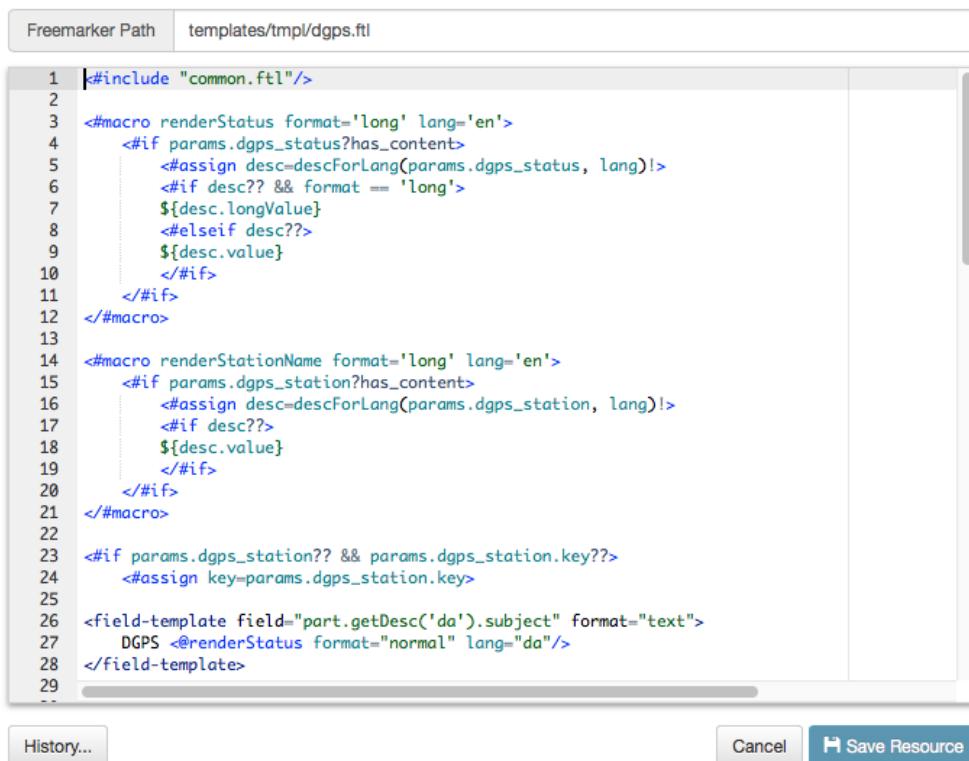
+ Add Script Resource ▾

Freemarker Template

JavaScript File

Similarly, the sysadmin may edit an existing script resource by clicking the pencil icon next to the script resource.

The editor for the script being added or edited, contains two fields; the script resource path and the actual script:



The screenshot shows a script editor interface. At the top, there is a header bar with a 'Freemarker Path' field containing 'templates/tmp/dgps.ftl'. Below this is a large text area displaying Freemarker template code. The code includes several macros and conditional statements. At the bottom of the editor are three buttons: 'History...', 'Cancel', and 'Save Resource'.

```
1  [#include "common.ftl"/>
2
3  <#macro renderStatus format='long' lang='en'>
4      <if params.dgps_status?has_content>
5          <assign desc=descForLang(params.dgps_status, lang)!>
6          <if desc?? && format == 'long'>
7              ${desc.longValue}
8          <elseif desc??>
9              ${desc.value}
10         </if>
11     </if>
12 </macro>
13
14 <#macro renderStationName format='long' lang='en'>
15     <if params.dgps_station?has_content>
16         <assign desc=descForLang(params.dgps_station, lang)!>
17         <if desc??>
18             ${desc.value}
19         </if>
20     </if>
21 </macro>
22
23 <if params.dgps_station?? && params.dgps_station.key??>
24     <assign key=params.dgps_station.key>
25
26 <field-template field="part.getDesc('da').subject" format="text">
27     DGPS <@renderStatus format="normal" lang="da"/>
28 </field-template>
29
```

The script editor has syntax coloring to aid and facilitate the editing process.

10.7. Script Resource Revisions

Script resources are versioned, in the sense that every time the sysadmin edits and saves a script resource, a new revision is stored. The revisions of a script resource can be inspected by clicking the "History" button, which opens the *Script Resource History* dialog:

The screenshot shows a 'Script Resource History' dialog box. On the left, a table lists script revisions with columns for Revision Number, Date, and User. Two rows are selected: revision 13 (Apr 5, 2017) and revision 10 (Mar 31, 2017). On the right, a code editor displays the FTL template 'cable-operatations.ftl'. The code includes color-coded differences between the two selected revisions. A 'Close' button is at the bottom right.

Rev.	Date	User
13	Apr 5, 2017 9:31 AM	System Admin
12	Mar 31, 2017 11:43 AM	System Admin
11	Mar 31, 2017 11:35 AM	System Admin
10	Mar 31, 2017 9:58 AM	System Admin
9	Mar 29, 2017 10:49 AM	System Admin
8	Mar 28, 2017 12:55 PM	System Admin
7	Mar 28, 2017 12:39 PM	System Admin
6	Mar 28, 2017 12:38 PM	System Admin
5	Mar 28, 2017 12:35 PM	System Admin
4	Mar 28, 2017 12:34 PM	System Admin
3	Mar 28, 2017 12:34 PM	System Admin
2	Mar 28, 2017 11:03 AM	System Admin
1	Mar 28, 2017 10:46 AM	System Admin

An earlier revision of the script can be inspected by clicking the checkbox next to the revision. If two revisions are selected (as above), the dialog will display the differences using color coding.

10.8. Deleting a Script Resource

A script resource can be deleted by clicking the trash icon next to them. However, the sysadmin should first carefully check if the script resource is referenced in mailing lists, print reports, message templates, or indeed included in other script resources.

10.9. Reloading Script Resources

As described in the [Script Resource Extensions](#) chapter, script resources may originate from files in the Niord class-path, before being loaded into the database. Any subsequent changes to a script resources will (naturally) only update the version in the database, which may thus come out of sync with the class-path file.

If the sysadmin enacts the "Reload files" function from the action menu, all script resources in the database will be overridden with any corresponding version in the class-path.

10.10. Importing and Exporting Script Resource

The system administrator can export and import script resources from the action menu.

The export/import file format is based on a JSON representation of the [ScriptResourceVo](#) class.

Example:

```
[  
 {  
   "content": "\n<#macro formatLightCharacterPhase phase multiple=false >\n    ...",  
   "path": "templates/aton/light-character.ftl",  
   "type": "FM"  
 },  
 ...  
 ]
```

Importing a script resource JSON file will trigger the *script-resource-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a script resource import JSON file on the *Script Resource* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/script-resource-import/in` folder.

Chapter 11. Categories

The *Categories* page allows a system administrator to manage the hierarchical tree of categories in Niord. Lists of categories may be associated with notices to mariners and navigational warnings, and can be used for filtering message search results.

Furthermore, categories may be executable, in which case they can be used to generate messages from user input, as described in the [Message Template Execution](#) chapter. Hence, executable categories are synonymously known as *message templates*, or just *templates*, throughout the Niord documentation.

Categories

The screenshot shows the Niord Categories management interface. At the top, there are buttons for Reload, Add, Delete, Sort, and Filter. A sidebar on the left contains a 'Filter Categories' input field and a tree view of categories under 'Seamark Types'. The tree includes nodes for Light, Light buoy, Buoy, Beacon, Obstruction, and several sub-categories like 'Light unlit', 'Light unreliable', etc. The 'Light buoy' node is selected. On the right, a detailed edit form is displayed for the 'Light buoy' category. It includes fields for 'Name' (with English and Norwegian labels), 'MRN', 'Additional Editor Fields' (with a 'Select editor fields' dropdown and a trash icon), 'AtoN filter' (containing the query `aton.kv('seamark:type', 'buoy.') && aton.k('seamark:light.')`), 'Type' (with tabs for 'Category' and 'Template' - the latter is selected), and a 'Save' button.

The category tree is navigated like a file system directory. Additionally, the user may filter the categories by typing a term into the *Filter Categories* input field above the category tree. The term is matched against the name of the categories.

11.1. Adding or Editing a Category

The user can add a new category by clicking the "Add" button, or edit a category by selecting it in the category tree.

When adding a new category, it will be a child-category of the currently selected category in the category tree. If no category is selected, the new category will become a new root category.

The details of the new or edited category will be present in the *Category Editor Panel* next to the category tree (see screenshot above).

The common editable attributes for both types of categories are listed below:

Category Attribute	Description
Active	Only an active category can be assigned to a message or executed as a message template.
Name	The name of the category in all supported model languages.
MRN	Optionally, specify a <i>Maritime Resource Name</i> (a unique URN) for the category. Defining MRNs for categories will facilitate better integration between Niord systems of different countries.
Additional Editor Fields	Can be used to enable extra fields in the message editor when the category is assigned to the message. As an example, if a "Firing Exercises" category is assigned to a navigational warning, it might make sense to show the "Signals" editor field, not normally enabled for navigational warnings, in the message editor.
AtoN filter	<p>The <i>AtoN</i> filter is not currently used in production, but it ties in with the <i>Aids to Navigation</i> module of Niord. There, you can start by selecting an AtoN and then execute a message template based on the AtoN data. The <i>AtoN filter</i> category attribute can be used to filter which templates should be available for a given AtoN. For instance, in the example above the "Light Buoy" category and all its sub-categories, are only available to AtoNs matching the filter: <code>"aton.kv('seamark:type', 'buoy.*') && aton.k('seamark:light.*')".</code></p> <p>AtoNs are defined in an OpenStreetMap (OSM) Seamount format, and thus, the filter states that the AtoN should be of type "buoy" and also have an associated light.</p>
Type	Optionally, specify the category type. Currently, "Category" and "Template" are the only supported types. A Category of the "Category" type has no more attributes. However, a "Template" category has a few more attributes detailed in the next section.

11.2. Adding or Editing a Template

A category of type "Template" is *executable*, as described in the [Message Template Execution](#) chapter.

This section will detail the attributes that may be edited for templates in addition to the common attributes editable for all categories and detailed in the previous section.

Active

Name

Light buoy unlit		Lystønde slukket	
------------------	--	------------------	--

MRN

MRN

Additional Editor Fields

Select editor fields	
----------------------	--

AtoN filter

AtoN filter

Type

Category	Template
----------	----------

Domains

NW	
----	--

Standard Template Fields

type	promulgation	areas	positions	
------	--------------	-------	-----------	--

Template Parameters

Param ID	Param Name	Param Type	
aton	Light buoy	light_buoy_by_function (composite)	

Script Resources

templates/tmpl/light-buoy-unlit.ftl	
templates/tmpl/compute-affected-radius.js	

Example Template Message

NW-251-16	
-----------	--

Save

11.2.1. Domains Attribute

Most of the executable templates only really make sense for Navigational Warnings (NW), not e.g. Notices to Mariners (NM), since NWs tend to be short and concise and must follow various international standards. NM messages on the other hand, tend to be more *free style* messages, not easily handled by a template system.

The *Domains* attribute can thus be used to restrict templates to specific NW-related domains.

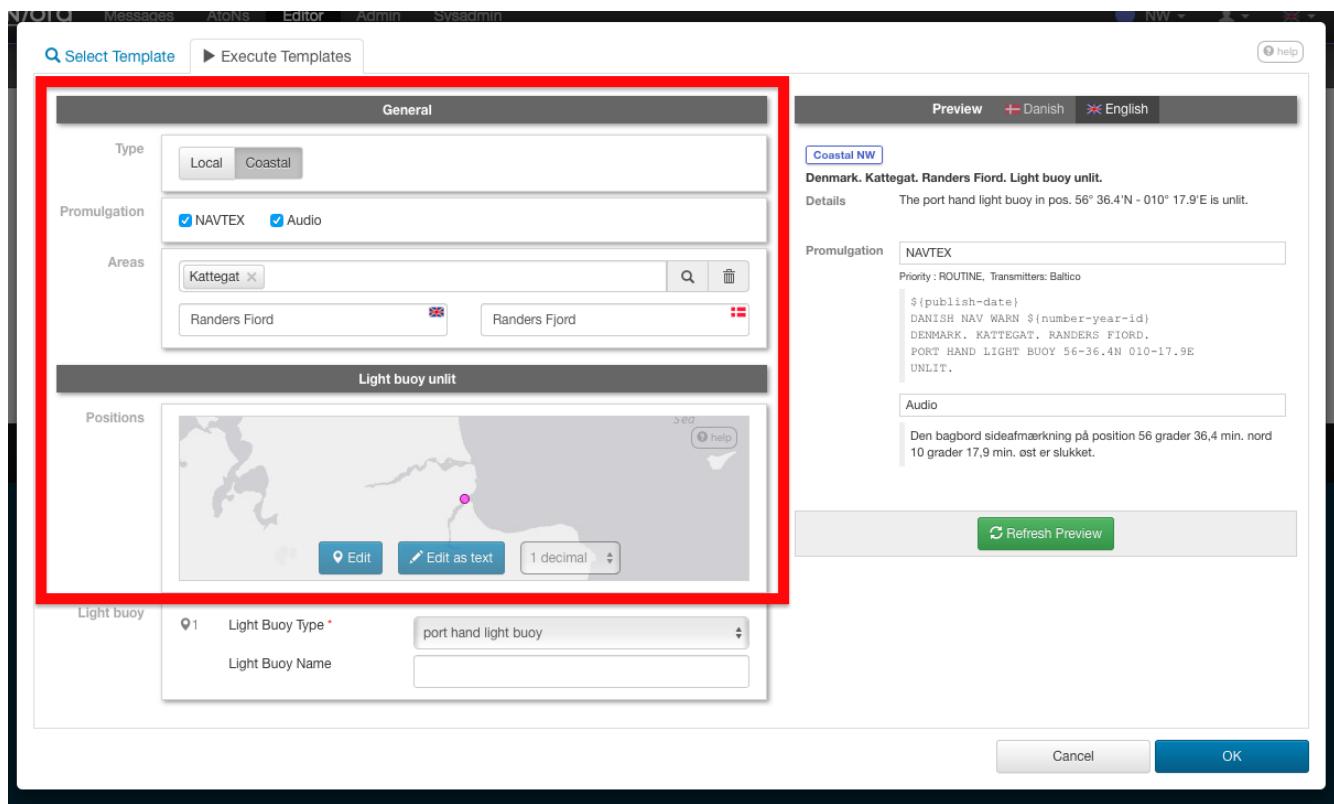
11.2.2. Standard Template Fields Attribute

The *Standard Template Fields* attributes can be used to specify a list of standard template editor

fields, which mostly constitutes simplified versions of the corresponding message editor fields - see the [Editor Page](#) chapter. The supported template fields are:

Template Field	Description
type	Used for selecting the NW or NM sub-type of the message.
promulgation	Used for enabling and disabling the supported promulgation types.
id	Can be used for selecting the message series of a message.
publish_date	Allows the user to specify a publication date interval.
areas	Used to specify the areas and vicinity of the messages.
positions	Used for defining the positions of the message.
event_dates	Allows the user to specify a list of event date intervals.
work_vessel	Used for specifying work vessels, e.g. for cable operations.
markings	Used for specifying a list of markings, e.g. used for marking a wreck.

As an example, the "light buoy unlit" message template displays the "type", "promulgation", "areas" and "positions" standard template fields:



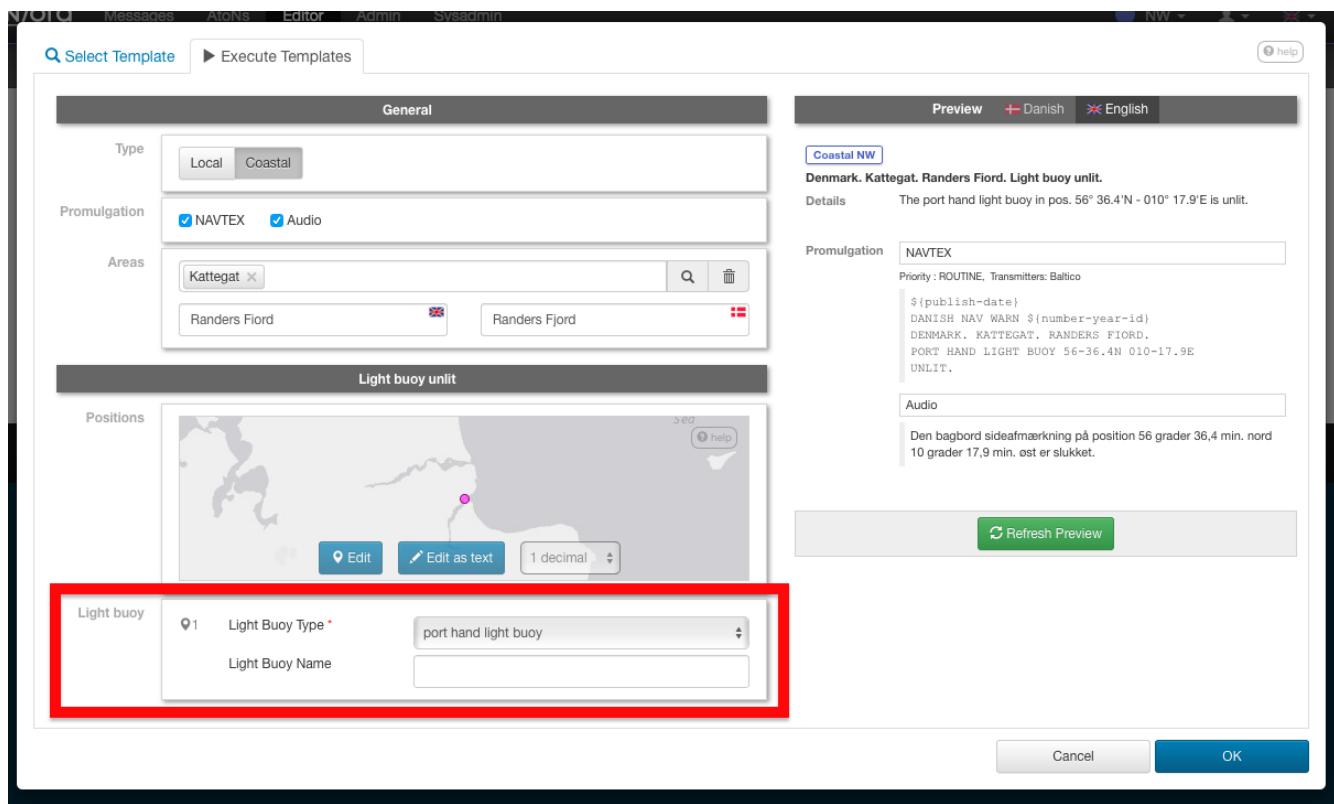
11.2.3. Template Parameters Attribute

For most message templates, just using *standard template fields* for user input is not sufficient. Rather, the user executing the template will need to input template-specific data as well, such as the buoy function in the "Light buoy unlit" template.

The *Template Parameters* field is used for defining the additional parameters of a template. The

field defines of a list of parameters, using the *Parameter Types* defined on the [Parameter Types](#) sysadmin page. Indeed, defining the parameters is analogous to the way *composite* parameter types are defined, as detailed in the [Composite Parameter Type Edit Page](#).

As an example, the "light buoy unlit" message template use the "light_buoy_by_function" *composite* parameter type to query the end user about the light buoy function and name:



11.2.4. Script Resources Attribute

The *Script Resources* attribute is used to define the actual list of script resources, i.e. server-side JavaScript and Freemarker templates, that get executed, when a message template is run.

The functionality of *script resources* is detailed in the [Script Resources](#) chapter. The Freemarker templates are used to generate an [Intermediate Message Template Format](#) that defines how a message is constructed when a message template is executed. The JavaScript resources can be used to modify data. In the "Light buoy unlit" example, a "compute-affected-radius.js" script is run, that will attempt to add an affected radius to the geometry of the constructed message based on the range to the light (only works if the message template is run from the AtoN module page).

The path specified for a script resource must match an actual script resource defined on the [Script Resources](#) sysadmin page. Indeed, clicking the pencil button of the *script resource* input field will open the specified script resource for editing on the [Script Resources](#) page. Clicking the magnifying glass button will open a dialog for easy script resource selection. Clicking the plus-sign button will add another blank script resource field to the list, and clicking the trash-icon button will clear the script resource path. Finally, the order of execution can be controlled by dragging a script resource its proper position using the drag handle.

11.2.5. Example Template Message Attribute

With a large collection of message template, it may not be easy for a non-expert user to guess which template to execute in a particular situation.

The system administrator can define an *example template message* to each template, to aid the user. This message will be displayed for guidance, whenever the template is selected in the [Template Selection Dialog](#).

11.3. Reorganizing Categories

The hierarchical order of the categories are updated in two ways:

- To move a category to a different parent category, use drag-and-drop.
- To move a category to another position under the same parent category, use the up- and down-arrow buttons above the category tree.

11.4. Deleting a Category

A category, including all its sub-categories, can be deleted by selecting it and then click the "Delete" button above the category tree. However, this only works if neither the selected category, nor any of its sub-categories, have ever been assigned to a message.

If the category has indeed been assigned to a message, the user should instead deactivate the category.

11.5. Importing and Exporting Categories

The administrator can export and import categories from the category action menu.

The export/import file format is based on a JSON representation of the [SystemCategoryVo](#) class. The data file should define root categories at the top level, and the recursively define sub-categories in the *children* field of the parent category.

The imported data is merged into the existing category tree. If an MRN is defined for an imported category, this is used to search for existing categories in the category tree. Alternatively, the name of the category (in all supported languages) is used to search for existing matches.

Example:

```
[
  {
    "active": true,
    "descs": [
      { "name": "Fyr", "lang": "da" },
      { "name": "Light", "lang": "en" }
    ],
    "type": "CATEGORY",
    "atonFilter": "aton.kv('seamark:type', 'light.*')",
    "children": [
      {
        "active": true,
        "descs": [
          { "name": "Fyr slukket", "lang": "da" },
          { "name": "Light unlit", "lang": "en" }
        ],
        "type": "TEMPLATE",
        "siblingSortOrder": 0.0,
        "domains": [
          { "domainId": "niord-nw", }
        ],
        "stdTemplateFields": [
          "areas",
          "type",
          "promulgation",
          "positions"
        ],
        "templateParams": [
          {
            "paramId": "aton",
            "type": "light",
            "mandatory": false,
            "positionList": true,
            "descs": [
              { "name": "Fyr", "lang": "da" },
              { "name": "Light", "lang": "en" }
            ]
          }
        ],
        "scriptResourcePaths": [
          "templates/tmp1/light-unlit.ftl",
          "templates/tmp1/compute-affected-radius.js"
        ],
        "messageId": "NW-003-17"
      },
      ...
    ],
    ...
  }
]
```

Importing a category JSON file will trigger the *category-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a category import JSON file on the *Categories* admin page, the file can be copied to the `$NIORD_HOME/batch-jobs/category-import/in` folder.

Chapter 12. Print Reports

The *Print Reports* page allows a system administrator to manage the list of PDF print reports in Niord.

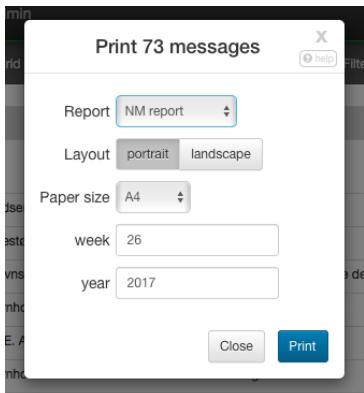
Print Reports

Add, modify and manage PDF print reports.

ID	Name	Order	Template Path	Domains	
standard	Standard	0	templates/messages/message-list-pdf.ftl		
draft	Draft	1	templates/messages/message-list-pdf.ftl		
nm-report	NM report	2	templates/messages/nm-report-pdf.ftl	NM	
nm-tp-report	NM T&P report	3	templates/messages/nm-tp-report-pdf.ftl	NM	
fa-list	Firing Areas	4	templates/messages/fa-list-pdf.ftl	Firing Areas	
nm-almanac	NM Almanac	4	templates/messages/nm-almanac-report-pdf.ftl	NM Almanac	
nm-annex	NM Annex	4	templates/messages/nm-annex-report-pdf.ftl	NM Annex	

The sysadmin may filter the list of print reports by typing a term into the *Filter* input field above the print report list. The term is matched against the ID and name of the print reports.

Whenever a user selects to print a list of messages, as described in the [Print Action](#) chapter of the editors manual, she gets to chose which *Print Report* to use.



The available list of print reports are domain specific, and each print report may query the end user for a list of input parameters, such as the "Week" and "Year" for the "NM Report" above. These parameters may in turn be used on the generated PDF, as demonstrated below:

Notices to Mariners

Week 26, 2017

26. June 2017

ISSN 1397-999X

Volume 133

2 - 225

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1. Denmark - The Baltic Sea	2
2. Denmark - The Sound	5
3. Denmark - The Waters South of Zealand	10
4. Denmark - The Great Belt	12
5. Denmark - Waters South of Funen	14
6. Denmark - The Little Belt	15
7. Denmark - Kattegat	16
8. Denmark - The Lim Fiord	19
9. Denmark - The North Sea	22
10. Greenland - W-coast	28

12.1. Standard Reports

Niord will always ensure the availability of two standard reports available to all domains.

Standard Report	Description
Standard	The <i>Standard</i> report prints out the details of the current message list in the currently selected language. It also sports a front page with a <i>Table of Contents</i> section and information about the currently applied message filter.
Draft	The <i>Draft</i> report is similar to the <i>Standard</i> report, except that it includes all language versions of each message, and a few extra fields like message <i>type</i> and <i>status</i> that are not normally included. This makes the <i>Draft</i> report very usable for proof-reading messages.

12.2. Generating PDFs

Generating PDFs using print reports is actually a two-phase process. First, the Freemarker template associated with the print report is used to convert a list of message into a HTML representation. Then, the HTML is converted into a PDF and returned to the user.

When creating and editing print reports, is important to understand how *CSS Paged Media* can be used to control such things as page size, pagination, headers and footers in the resulting PDF. Thus, the sysadmin is advised to acquaint herself with relevant documentation, such as:

- <https://www.w3.org/TR/css3-page/> - CSS Paged Media specification.
- <https://www.smashingmagazine.com/2015/01/designing-for-print-with-css/> - Introduction to using paged media.

12.3. Adding or Editing a Print Report

The sysadmin can add a new print report by clicking the "New Report" button, or edit an existing print report by clicking the pencil symbol next to the domain.

This will open the *Print Report Edit Page*:

Print Reports

Add, modify and manage PDF print reports.

Report ID	nm-report
Name	NM report
Sort Order	2
Template	templates/messages/nm-report-pdf.ftl
Domains	NM X Delete
Read-only Properties	<pre>{"volume": "133", "mapThumbnails": false, "ISSN": "1397-999X"}</pre>
Parameters	<pre>{"year": "\${year}", "week": "\${week}"}</pre>
Test	Select tag ▼ Delete Test...
Cancel Save Report	

The print report attributes:

Report Attribute	Description
Report ID	A unique ID for the report.
Name	A human readable name of the report.
Sort Order	Defines the order of the print reports as used in the Print Dialog.
Template	The Freemarker template used to generate HTML. The specified path must be the path of an existing script resource, as defined in the Script Resources chapter. Clicking the pencil button next to the path input field will indeed open the report on the Script Resources sysadmin page. Clicking the magnifying glass icon will open a dialog for easy script resource selection.
Domains	The domains for which the print report will be made available.

Report Attribute	Description
Read-only Properties	A JSON property object that may be used in the Freemarker template. In the "NM Report" example screenshots above, the "volume" value, "133", and "ISSN" value, "1397-999X", come from these read-only properties.
Parameters	The <i>Parameters</i> field is exactly like the <i>Read-only Properties</i> , except that the properties will be displayed in the Print dialog, and may thus be edited by the user per print. The <i>Parameter</i> values may be instantiated with default values containing <i>replacement tokens</i> , such as "\${year-2-digits}", "\${year}", "\${week-2-digits}" and "\${week}". In the "NM Report" example screenshots above, the effect of specifying "week" and "year" parameters can be seen.
Test	The <i>Test</i> field is not actually a print report attribute. The sysadmin can specify a message tag and test-execute the print report in this section.

12.4. Deleting a Print Report

A print report can be deleted by clicking the trash icon next to them.

12.5. Importing and Exporting Print Reports

The system administrator can export and import print reports from the action menu.

The export/import file format is based on a JSON representation of the [FmReportVo](#) class.

Example:

```
[  
 {  
   "reportId": "nm-report",  
   "name": "NM report",  
   "sortOrder": 2,  
   "templatePath": "templates/messages/nm-report-pdf.ftl",  
   "domains": [  
     { "domainId": "niord-nm" }  
   ],  
   "properties": {  
     "mapThumbnails": false,  
     "ISSN": "1397-999X",  
     "volume": "133"  
   },  
   "params": {  
     "week": "${week}",  
     "year": "${year}"  
   }  
 },  
 ...  
 ]
```

Importing a print report JSON file will trigger the *report-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a report import JSON file on the *Print Reports* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/report-import/in` folder.

Chapter 13. Mail Queue

The *Mail Queue* page allows a system administrator to inspect all mails sent by the Niord system.

Mail Queue

Displaying 10 of 182 mails matching search criteria.

NB: Mails get deleted after 14 days.

Recipient	Sender	Subject			
All	Pending	Sent	Error	From date	To date
Created		Status	Sender	Recipients	
Jun 26, 2017 7:30 AM		sent	Visti Iversen <vili@dma.dk>	Aktive navigationsadvarsler	
Jun 26, 2017 7:30 AM		sent	Peder Pedersen <peder@carolus.dk>	Active navigational warning	
Jun 25, 2017 3:55 PM		sent	Peder Pedersen <peder@carolus.dk>	Farvandsefterretninger til oplæsning 25-06-2017	
Jun 25, 2017 3:55 PM		sent	Visti Iversen <vili@dma.dk>	Farvandsefterretninger til oplæsning 25-06-2017	
Jun 25, 2017 7:30 AM		sent	Visti Iversen <vili@dma.dk>	Aktive navigationsadvarsler	
Jun 25, 2017 7:30 AM		sent	Peder Pedersen <peder@carolus.dk>	Active navigational warning	
Jun 24, 2017 3:55 PM		sent	Peder Pedersen <peder@carolus.dk>	Farvandsefterretninger til oplæsning 24-06-2017	
Jun 24, 2017 3:55 PM		sent	Visti Iversen <vili@dma.dk>	Farvandsefterretninger til oplæsning 24-06-2017	
Jun 24, 2017 7:30 AM		sent	Visti Iversen <vili@dma.dk>	Aktive navigationsadvarsler	
Jun 24, 2017 7:30 AM		sent	Peder Pedersen <peder@carolus.dk>	Active navigational warning	

« ‹ 1 2 3 4 5 6 7 8 9 10 › »

Mails in Niord originate from a few places:

1. Users can send mails based on a message selection on the [Messages](#) page. Please refer to the [Email Selection Action](#) chapter.
2. Similarly, when a user submits a new comment to a message, they can add mail recipients, as described in the [Comments Editor Page](#) chapter.
3. By far, the most mails will have been sent by mailing lists, as described in the [Mailing Lists](#) chapter.

Niord has a system setting, "mailDeleteAfterDays", that defines for how many days a message should be preserved in the *Mail Queue*. After that, the mails will be deleted.

13.1. Sending Mails

When a mail is submitted to the mail queue, it will have a *pending* status. Every minute, Niord will process pending mails and attempt to send them. If a mail is successfully sent to the SMTP-server, it will be assigned the *sent* status. If an error occurs, however, the error message will be stored in the mail, and it will be re-scheduled to be sent after a set number of minutes (which increases with each attempt). After 5 failed attempts to send a mail, it will be assigned the *error* status, after which, no more attempts will be made to send the mail.

A system administrator should thus periodically check for error-status mails in the *Mail Queue*, and take appropriate actions (such as updating an invalid user mail address, etc).

13.2. Mail Filtering

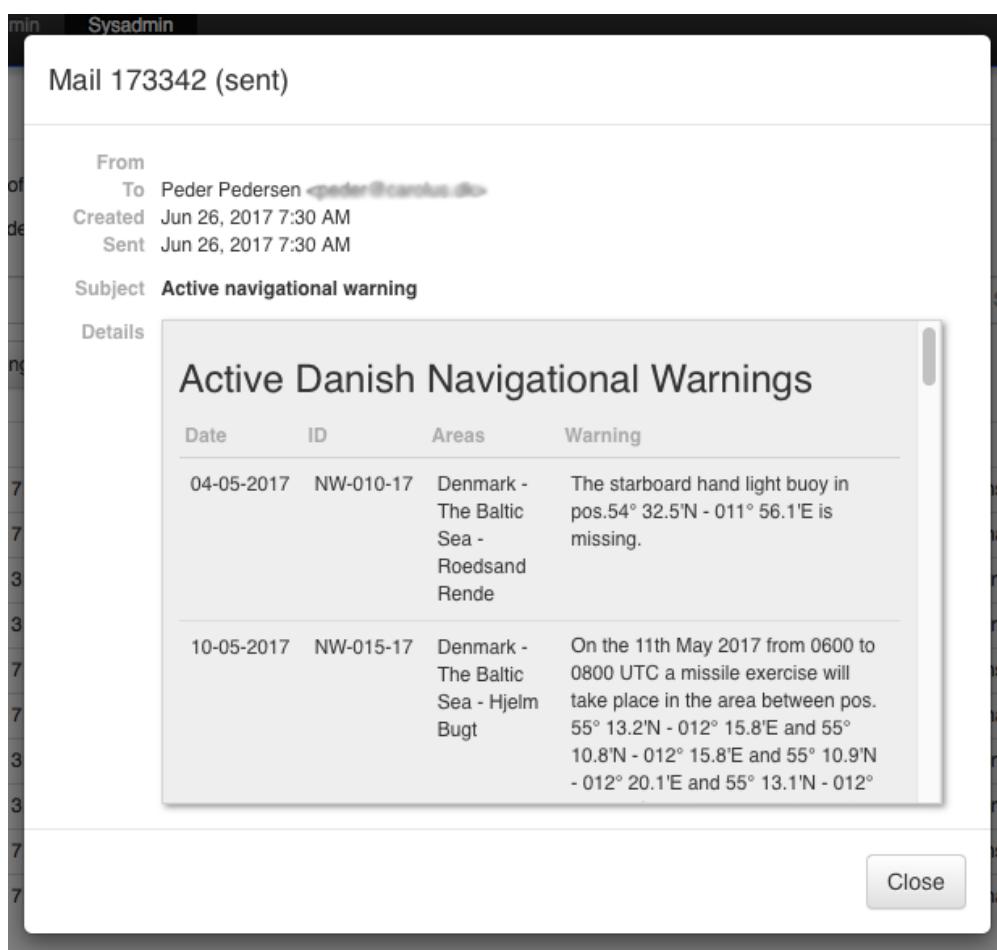
The mail queue may contain thousands of mails. Hence the list of mails is paginated with 10 mails per page.

The fields above the mail list are used for filtering the mail list. The available filter fields are:

Mail Filter	Description
Recipient	Matches the e-mail address of the recipients
Sender	Matches the e-mail address of the sender
Subject	Matches the subject of the mails
Status	Filters the mails by their status, either <i>pending</i> , <i>sent</i> or <i>error</i> (or all of these).
Date Interval	A possibly open-ended date-interval that can be used to filter mails by the date they were submitted to the mail queue.

13.3. Mail Details

Clicking the letter-icon next to a mail, will open the *Mail Details* dialog:



This will display the mail in its entirety, including the date, address fields, subject and mail body.

Chapter 14. Integration

By default, the *Integration* sysadmin page is blank, and serves as a place-holder for system-specific integration management pages.

Hence, this chapter will use the *Danish Niord* system as an example for how to add integration functionality. All functionality and UI resources for the Danish *Integration* page is included in the [niord-dk](#) Github project.



The functionality detailed in this chapter is specifically from the *Danish Niord* system, and thus, it is *not* standard Niord functionality.

14.1. DK Legacy NW Import

The *Legacy NW Import* integration tab will only be present when the currently selected domain is "Legacy NW". It supports importing NWs from the current Danish NW production system (until Niord takes over this role completely, that is).

Integration

Integrating with legacy systems.

The screenshot shows the "Legacy NW import" tab selected in a panel titled "Integration". The panel has the following fields:

- Msg. Series:** A dropdown menu set to "dma-nw".
- Local Msg. Series:** A dropdown menu set to "dma-nw-local".
- Start date:** A date input field set to "1/1/2016" with a calendar icon.
- Message Tag:** A "Select tag" dropdown, a "Tag" icon, and a "Delete" icon.
- Auto-import:** A checked checkbox labeled "Automatically import future changes".
- Buttons:** "Update Import" and "Test Connection".

Below the panel is a section titled "Result" which contains a large, empty text area.

The panel allows the system administrator to specify the target message series to use for local and coastal legacy NW messages, and also to specify the date from which to import old legacy NW messages, and whether to auto-import NW messages from the legacy system or not.

14.2. DK Legacy Firing Area Import

The *Legacy Firing Area Import* integration tab will only be present when the currently selected domain is "Firing Areas". It supports importing firing areas from the current Danish NW

production system (until Niord takes over this role completely, that is).

Integration

Integrating with legacy systems.

The screenshot shows the Niord software interface with the 'AtoN Import' tab selected. The interface is divided into three main sections:

- 1 Firing Areas:** Contains buttons for 'Test Connection' and 'Import Areas'.
- 2 Firing Exercise Schedule:** Contains a checked checkbox for 'Auto-import firing area schedule' and buttons for 'Save' and 'Import Now'.
- 3 Generate Firing Area Template Messages:** Contains fields for 'Msg. Series' (set to 'dma-fa') and 'Message Tag' (with options 'Select tag', a copy icon, and a delete icon), along with a 'Generate Firing Area Templates' button.

Below these sections is a 'Result' section which is currently empty.

The tab also supports importing the firing schedules associated with the firing areas from the legacy NW system, and there is a function for generating firing area template messages from the firing areas.

Please refer to the [Firing Schedules](#) chapter for a discussion of firing areas and schedules in Niord.

14.3. DK Legacy AtoN Import

The *Legacy AtoN Import* integration tab supports importing Danish Aids to Navigation seamarks. The files to upload must be Excel sheets generated from the Danish *Afmærkningsregister* system.

Integration

Integrating with legacy systems.

[Legacy NW import](#)

[AtoN Import](#)

Please upload the following files:

- AFMyndighed_TableT...** List of all AtoNs. Upload before the remaining files.
Fyr2013.xls List of lights used in the Fyrliste publication.
AIS2013.xls List of AIS transponders used in the Fyrliste publication.
DGPS2013.xls List of DGPS transmitters used in the Fyrliste publication.
Racon2013.xls List of RACONs used in the Fyrliste publication.

[Browse...](#) or drop .xls file here

Result

Please note, the AtoNs Niord module is currently not enabled in production, since the quality of the AtoN data is not good enough. However, in the future it is hoped that a more extensive AtoN integration will be implemented.

Chapter 15. Settings

The *Settings* page allows a system administrator to manage system settings in Niord.

Settings

Manage system settings.

Key	Description	Value
adminIntegrationPageEnabled	Flags if the 'Integration' admin page should ...	true
analyticsTrackingId	The google analytics tracking ID.	
authServerRealmKey	The public key associated with the Niord rea...	MIIIBjANBgkqhkiG9w0BAQEFAAOCAQ8AM...
authServerUrl	The Keycloak URL	https://localhost-kc.e-navigation.net/auth
baseUri	The base application server URI	https://localhost.e-navigation.net
batchFileExpiryDays	Number of days after which batch job files a...	10
batchJobRootPath	The root directory of the Niord batch jobs	\${niord.home}/batch-jobs
country	The country	DK
documentationUrl	The URL template to the documentation site	http://docs.niord.org
editorFieldsBase	The base set of editor fields to display in the...	{"type":true,"orig_info":false,"id":true,"title":t...}
editorFieldsNm	The additional set of editor fields to display f...	{"orig_info":true,"attachments":true,"note":tr...}
editorFieldsNw	The additional set of editor fields to display f...	{}
faMrnPrefix	The MRN prefix to use for firing areas	urn:mrn:ih:fa:dk:
firingExerciseScheduleDays	Default number of scheduled days to includ...	30
frontPageMessageSeries	The list of message series IDs to display on ...	["dma-nw","dma-nw-local","dma-nm"]
legacyAutoImportFeSchedule	Auto-import flag for the import of legacy firi...	true
legacyMsilImportParams	Parameters used for importing legacy NW p...	{"seriesId":"dma-nw","localSeriesId":"dma-...
legacyNwDbLocation	Location of legacy NW database dump	http://msi.dma.dk/msi-safe-dump.sql.gz
legacyNwDbPassword	Database password to the legacy NW databa...	*****
legacyNwDbUrl	JDBC Url to the legacy NW database	jdbc:mysql://localhost:3306/oldmsi?useSSL...
legacyNwDbUser	Database user to the legacy NW database	oldmsi
mailDeleteAfterDays	Delete scheduled mails older than the given ...	1
mailMaxPerMinute	The max number of mails to send per minute	10
mailSender	The sender e-mail address	niord@e-navigation.net

Settings are ultimately persisted to the database, and this is the incarnation of the settings that you get to view and modify on the *Settings* page.

However, the settings originate from various sources before being persisted to the database. These options are detailed later in this chapter.

15.1. Settings Model

A setting in Niord is more than just a key-value pair. It is comprised of the following attributes:

Setting Attribute	Description
Key	A unique key for the setting.
Value	The <i>value</i> of the setting. The format of the value depends on the <i>type</i> of the setting.

Setting Attribute	Description
Type	The <i>type</i> of a setting can be one of "String", "Password", "Integer", "Long", "Float", "Double", "Date", "Boolean", "Path" and "json".
Description	A textual description of the setting.
Cached	Dictates if the setting may be cached (for a few minutes) in Niord. This reduces load on the database.
Web	If this flag is set, the setting is passed along to the Niord web-application via a JavaScript file, and becomes available to the Angular code as a \$rootScope variable.
Editable	If this flag is set, the setting is editable and included in the settings list on the <i>Settings</i> page.

Note that for settings of type "Password", the associated value *never* leaves the Niord backend. If the *Editable* flag is set, the sysadmin can set a new password on the *Settings* page, but she can never view the old password.

15.2. Settings from niord.json

Whenever Niord starts up, it will look for a "niord.json" file in Niords home folder (itself controlled with a settings).

Example:

```
[
  {
    "key"      : "baseUri",
    "description" : "The base application server URI",
    "value"     : "https://niord.e-navigation.net",
    "web"       : false,
    "editable"   : true
  },
  {
    "key"      : "authServerUrl",
    "description" : "The Keycloak URL",
    "value"     : "https://niord-keycloak.e-navigation.net/auth",
    "web"       : false,
    "editable"   : true
  },
  ...
]
```

15.3. Settings from Environment Variables

When the Niord application server (Wildfly) starts up, settings may be instantiated using environment variables.

Example: In order to specify the "niord.home" system setting, instantiate Wildfly with the argument "-Dniord.home=/home/enav/niord".

If settings are defined from environment variables, they are essentially read-only. A sysadmin cannot override these settings on the *Settings* page.

15.4. Settings from Code

Settings can also be defined and instantiated with default values directly in Niord java code.

Example:

```
public class RepositoryService {  
  
    @Inject  
    @Setting(value="repoRootPath", defaultValue="${niord.home}/repo",  
             description="The root directory of the Niord repository")  
    Path repoRoot;  
  
    @Inject  
    @Setting(value="repoCacheTimeout", defaultValue="5",  
             description="Cache timeout of repo files in minutes", type=Type.Integer)  
    Integer cacheTimeout;  
  
    ...  
}
```

15.5. Editing a System Setting

The sysadmin can edit a system setting by clicking the pencil symbol next to the setting.

This will open the *Setting Editor Page*:

Settings

Manage system settings.

Key

frontPageMessageSeries

Description

The list of message series IDs to display on the front page when not logged in.

Value

["dma-nw", "dma-nw-local", "dma-nm"]

Cancel

Save Setting

The only setting attribute that can be edited is the *value* of the setting. The editor widget used for editing the value depends on the *type* of the setting, with checkboxes used for "boolean" settings, a date picker used for settings of type "Date", etc.

15.6. Importing and Exporting Settings

The system administrator can export and import system settings from the action menu.

The export/import file format is based on a JSON representation of the [SettingVo](#) class.

Example:

```
[  
  {  
    "description": "The Keycloak URL",  
    "key": "authServerUrl",  
    "type": "String",  
    "value": "https://localhost-kc.e-navigation.net/auth"  
  },  
  {  
    "description": "The base application server URI",  
    "key": "baseUri",  
    "type": "String",  
    "value": "https://localhost.e-navigation.net"  
  },  
  ...  
]
```

Importing a settings JSON file will trigger the *settings-import* batch job. Batch jobs can be monitored and managed by system administrators.

As an alternative to manually uploading a settings import JSON file on the *Settings* sysadmin page, the file can be copied to the `$NIORD_HOME/batch-jobs/settings-import/in` folder.

Chapter 16. Batch Jobs

The *Batch Jobs* page allows a system administrator to monitor batch jobs executed in Niord.

Batch Jobs

Manage and monitoring of batch jobs

Execute JavaScript... Upload batch set...

Instance	Start	End	Status	Action
246	Jun 26, 2017 7:10 AM	Jun 26, 2017 7:10 AM	legacy-nw-data.json logs...	completed
245	Jun 23, 2017 8:30 AM	Jun 23, 2017 8:30 AM	legacy-nw-data.json logs...	completed
244	Jun 23, 2017 7:10 AM	Jun 23, 2017 7:10 AM	legacy-nw-data.json logs...	completed
243	Jun 22, 2017 2:30 PM	Jun 22, 2017 2:30 PM	legacy-nw-data.json logs...	completed
242	Jun 22, 2017 12:30 PM	Jun 22, 2017 12:30 PM	legacy-nw-data.json logs...	completed

dk-dgps-import
1 executions

dk-light-import
2 executions

dk-nm-import
9 executions

dk-nw-import
246 executions

dk-racon-import
1 executions

domain-import
2 executions

mailing-list-import

« < 1 2 3 4 5 6 7 8 9 10 > »

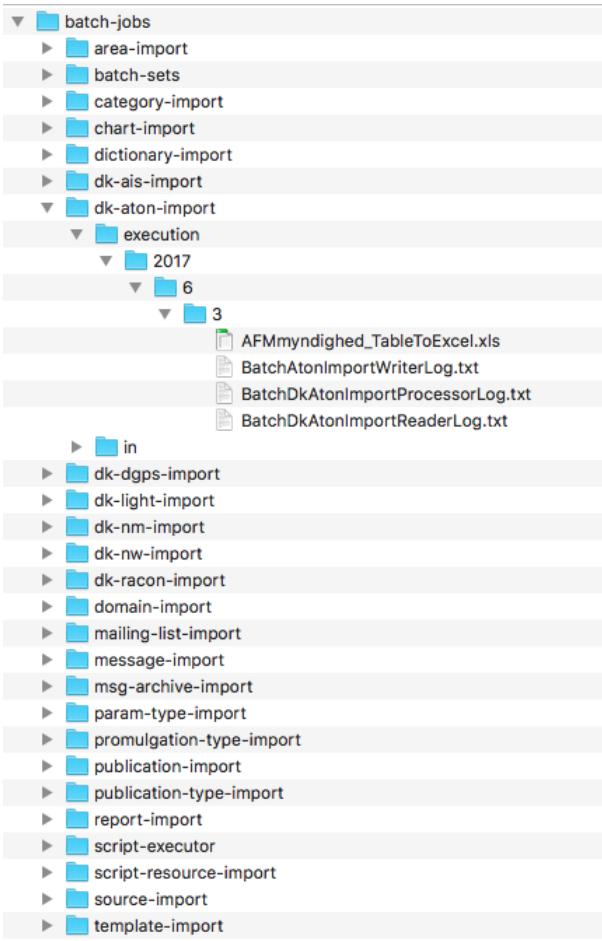
Batch jobs play an extremely important role in Niord. Almost all types of Niord data, e.g. areas, charts, categories, dictionaries, messages, etc., can be imported using batch jobs.

The list in the left side of the *Batch Jobs* page, lists all the batch job types that have been executed in Niord, and for each batch job type, the number of executions.

16.1. Batch Job Execution

Batch Jobs can either be executed from the UI (e.g. by uploading an AtoN Excel file from [Danish Integration](#) sysadmin page), or by copying the same file to a batch job folder on the Niord server.

The path to the batch job file system folder is: `$NIORD_HOME/batch-jobs/batch-job-type/in`. The screenshot below shows the batch job folder structure, with the folders of the "dk-aton-import" batch job fully expanded:



When the batch job is executed, the batch job file is copied to the "execution" sub-folder with the format `$NIORD_HOME/batch-jobs/batch-job-type/execution/year/month/execution-no`, along with the log files produced whilst executing the batch job.

The batch job architecture in Niord is implemented using the Java EE 7.0 Batch Processing Architecture - please refer to <http://www.oracle.com/technetwork/articles/java/batch-1965499.html>. This means that the batch jobs are typically divided into three sub-tasks for *reading*, *processing* and *writing* data, each producing their own log file in the execution folder.

Also, each batch job processes a certain batch job-specific number of records in each transaction, which means that the batch job can be stopped during execution, restarted or abandoned.

As an example, the "dk-aton-import", which is a fairly long-running batch job, will first have the "started" status, and appear with a progress indicator on the *Batch Jobs* page:

Batch Jobs

Manage and monitoring of batch jobs

Execute JavaScript...

Upload batch set...

area-import
2 executions
category-import
13 executions
chart-import
7 executions
dictionary-import
27 executions
dk-ais-import
1 executions
dk-aton-import
3 executions
1 running
dk-dgps-import
1 executions

Instance	Start	End	Status	Action
3	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	started
2	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	completed
1	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	completed

If the batch job fails during execution, it will stop executing, and enter the "failed" status. Similarly, if the user clicks the "Stop" button, it will enter the "stopped" status:

Batch Jobs

Manage and monitoring of batch jobs

Execute JavaScript...

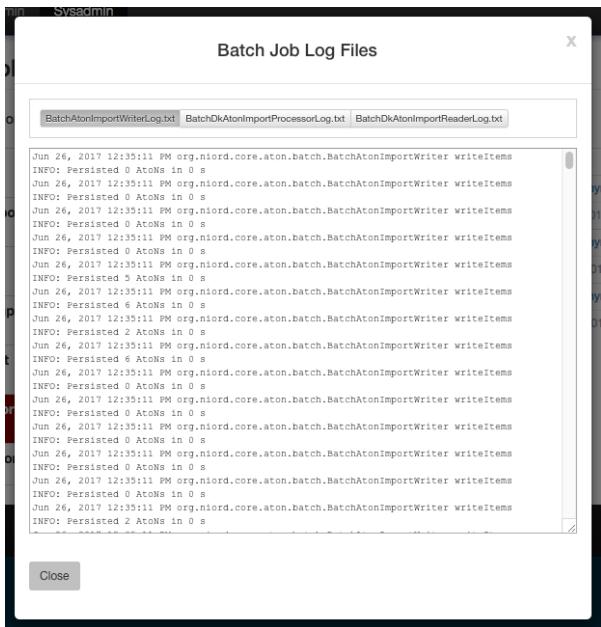
Upload batch set...

area-import
2 executions
category-import
13 executions
chart-import
7 executions
dictionary-import
27 executions
dk-ais-import
1 executions
dk-aton-import
3 executions
dk-dgps-import
1 executions

Instance	Start	End	Status	Action
3	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	stopped
2	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	completed
1	System Admin	 AFMmyndighed_TableToExcel.xls	logs...	completed

All database transactions will be rolled back to the last successful commit before the batch job failed or was stopped. The system administrator can now click the "Abandon" button to completely abandon the batch job, or she can click "Restart" to attempt to restart the batch job. If the batch job failed, the sysadmin may e.g. attempt to update the batch job file to fix the problem causing it to fail, and then restart.

The sysadmin can also inspect the log files generated by the sub-tasks of the batch job, by clicking the "logs..." link, which opens the *Batch Job Logs* dialog:



All associated log files are listed in the top part of the dialog, and the contents of a log file can be inspected by clicking on the associated log file name.

16.2. Batch Sets

The "Upload Batch Set" button in the top-right part of the *Batch Jobs* page, allows the system administrator to upload a zip-archive containing multiple batch job files.

The zip archive must also contain a special file, *batch-set.json*, which enlists and schedules all included batch jobs.

Example:

```
[
  {
    "jobName": "domain-import",
    "fileName": "domains.json",
    "delay": 2000
  },
  {
    "jobName": "dictionary-import",
    "fileName": "aton-dict.json",
    "delay": 2100
  },
  {
    "jobName": "chart-import",
    "fileName": "charts.json",
    "delay": 5000
  },
  {
    "jobName": "area-import",
    "fileName": "areas.json",
    "delay": 5100
  },
  ...
]
```

The scheduling mechanism (i.e. the "delay" attribute), can be used for handling inter-dependencies between imported data. If e.g. the areas.json file depends on the presence of the domains defined in the domains.json file, they can be scheduled as seen in the example above.

16.3. Batch Job Clean-Up

In order to avoid getting the Niord file system filled up with batch job execution files and folders, old files and folders will automatically be deleted after a certain amount of time, as dictated by the "batchFileExpiryDays" system setting.

Chapter 17. Keycloak Integration

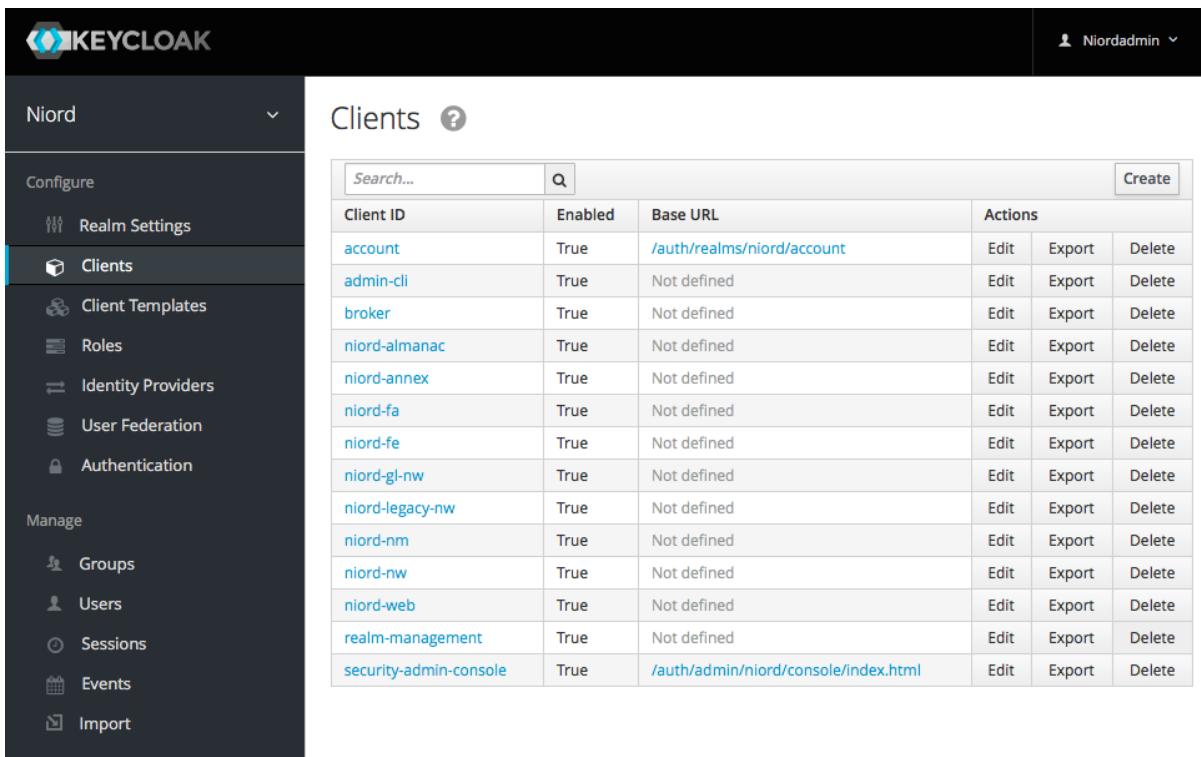
Keycloak is an open source identity and access management middleware product, which is documented in detail at the [Keycloak website](#).

In general, once Niord has been set up and configured, there is hardly any need for administrators to use Keycloak directly.

Keycloak has been integrated tightly with Niord in the manner detailed below. The reader should be somewhat familiar with Keycloak before reading this.

17.1. Niord Domains

Domains in Niord are detailed in the [Domains chapter](#). For each domain in Niord, there will be *bearer only* application client in Keycloak.



The screenshot shows the Keycloak administration interface. The top navigation bar includes the Keycloak logo, a search bar, and a user dropdown labeled "Niordadmin". The left sidebar is titled "Niord" and contains the following menu items:

- Configure
 - Realm Settings
 - Clients** (selected)
 - Client Templates
 - Roles
 - Identity Providers
 - User Federation
 - Authentication
- Manage
 - Groups
 - Users
 - Sessions
 - Events
 - Import

The main content area is titled "Clients" with a question mark icon. It features a table with the following columns: "Search...", "Client ID", "Enabled", "Base URL", and "Actions". The "Actions" column includes "Edit", "Export", and "Delete" buttons. The table lists the following clients:

Client ID	Enabled	Base URL	Actions
account	True	/auth/realms/niord/account	Edit Export Delete
admin-cli	True	Not defined	Edit Export Delete
broker	True	Not defined	Edit Export Delete
niord-almanac	True	Not defined	Edit Export Delete
niord-annex	True	Not defined	Edit Export Delete
niord-fa	True	Not defined	Edit Export Delete
niord-fe	True	Not defined	Edit Export Delete
niord-gl-nw	True	Not defined	Edit Export Delete
niord-legacy-nw	True	Not defined	Edit Export Delete
niord-nm	True	Not defined	Edit Export Delete
niord-nw	True	Not defined	Edit Export Delete
niord-web	True	Not defined	Edit Export Delete
realm-management	True	Not defined	Edit Export Delete
security-admin-console	True	/auth/admin/niord/console/index.html	Edit Export Delete

As an example, for the "NM" Niord domain, there is a corresponding "niord-nm" application client in Keycloak.

Also, there is a single *public* application client for the actual Niord web application.

17.1.1. Roles

As described in the [System Administrators Manual](#) chapter, a user may have either the *User*, *Editor*, *Admin* or *Sysadmin* role in each of the Niord domains.

These roles area really just *application client roles* in Keycloak:

The screenshot shows the Keycloak Niord UI. On the left, a sidebar menu includes 'Niord' (selected), 'Configure' (with 'Realm Settings' highlighted), and 'Clients' (selected). The main content area shows the 'Clients' section for 'niord-nm'. The 'Roles' tab is active, displaying a table with four rows:

Role Name	Composite	Description	Actions	
sysadmin	True	System administrator	Edit	Delete
user	False		Edit	Delete
editor	True	Editor	Edit	Delete
admin	True	Administrator	Edit	Delete

The roles are *composite* client roles, defined hierarchically, so that if a user has the *Sysadmin* role, she also automatically has the *Admin* role, if she has the *Admin* roles, she also automatically has the *Editor* role, and if she has the *Editor* role, she also automatically has the *User* role.

When a domain is created via the Niord UI, the corresponding application client, including the client roles mentioned above, are created automatically in Keycloak.

17.2. Niord Users

All users in Niord are created and maintained in Keycloak, although Niord also provides a UI for managing users on top of Keycloak, as detailed in the [Users & Contacts](#) chapter of the administrator guide.

The screenshot shows the Keycloak Niord UI. On the left, a sidebar menu includes 'Niord' (selected), 'Configure' (with 'Users' highlighted), and 'Manage' (with 'Groups' selected). The main content area shows the 'Users' section. The table contains the following data:

ID	Username	Email	Last Name	First Name	Actions		
1f055615-d1f2-468...	urn:mrn:mcl:user:c...	peder@carolus.dk	Pedersen	Peder	Edit	Impersonate	Delete
18755b92-d26a-4a...	urn:mrn:mcl:user:...	cst@dma.dk	Schubert	Christian	Edit	Impersonate	Delete
899ff511-011f-4ee...	urn:mrn:mcl:user:...	petl@dma.dk	Dam	Peter	Edit	Impersonate	Delete
15532042-a7e5-48...	urn:mrn:mcl:user:...	mcb@dma.dk	Billesø	Mads Bentzen	Edit	Impersonate	Delete
d268e11e-f9ac-4e7...	urn:mrn:mcl:user:...	lgu@dma.dk	Søndergaard	Karsten Gramstrup	Edit	Impersonate	Delete
f6941a82-a0fe-4e8...	urn:mrn:mcl:user:...	vjl@dma.dk	Iversen	Vistli Rejnall	Edit	Impersonate	Delete
1102ed87-3869-4a...	urn:mrn:mcl:user:...	mbb@dma.dk	Balle	Martin	Edit	Impersonate	Delete
4115a6b1-6906-4d...	urn:mrn:mcl:user:...	jaal@dma.dk	Anker	Jan Ole	Edit	Impersonate	Delete
b3bc3767-67f5-4b...	urn:mrn:mcl:user:...	rl@dma.dk	Larsen	Rune	Edit	Impersonate	Delete
5d3f8a8d-d378-44f...	urn:mrn:mcl:user:...	fsd@dma.dk	Sørensen	Flemming S.	Edit	Impersonate	Delete
c7f94a97-fd69-4b2...	urn:mrn:mcl:user:...	nje@dma.dk	Jensen	Niels Müller	Edit	Impersonate	Delete
4461871e-8a0d-49...	urn:mrn:mcl:user:...	dw@dma.dk	Westh	Ditte Marie Hjorth	Edit	Impersonate	Delete
e158da33-2c1e-4a...	urn:mrn:mcl:user:...	lgj@dma.dk	Christensen	Tomas Groth	Edit	Impersonate	Delete
c6bbc88b-8666-48f...	urn:mrn:mcl:user:...	klk@dma.dk	Kalsø	Katrina	Edit	Impersonate	Delete

In turn, Keycloak may be configured to use other identity providers. For instance, in the set-up used by the Danish Maritime Authority (DMA), Keycloak is integrated with the *DMA Active Directory Federation Service*, and hence, the first time a DMA employee clicks the "DMA" link on the log-in page and logs in using her usual work credentials, she will automatically be created as a user in Keycloak.

Keycloak can also be integrated with other Keycloak services, Active Directory or other LDAP

provides, etc.

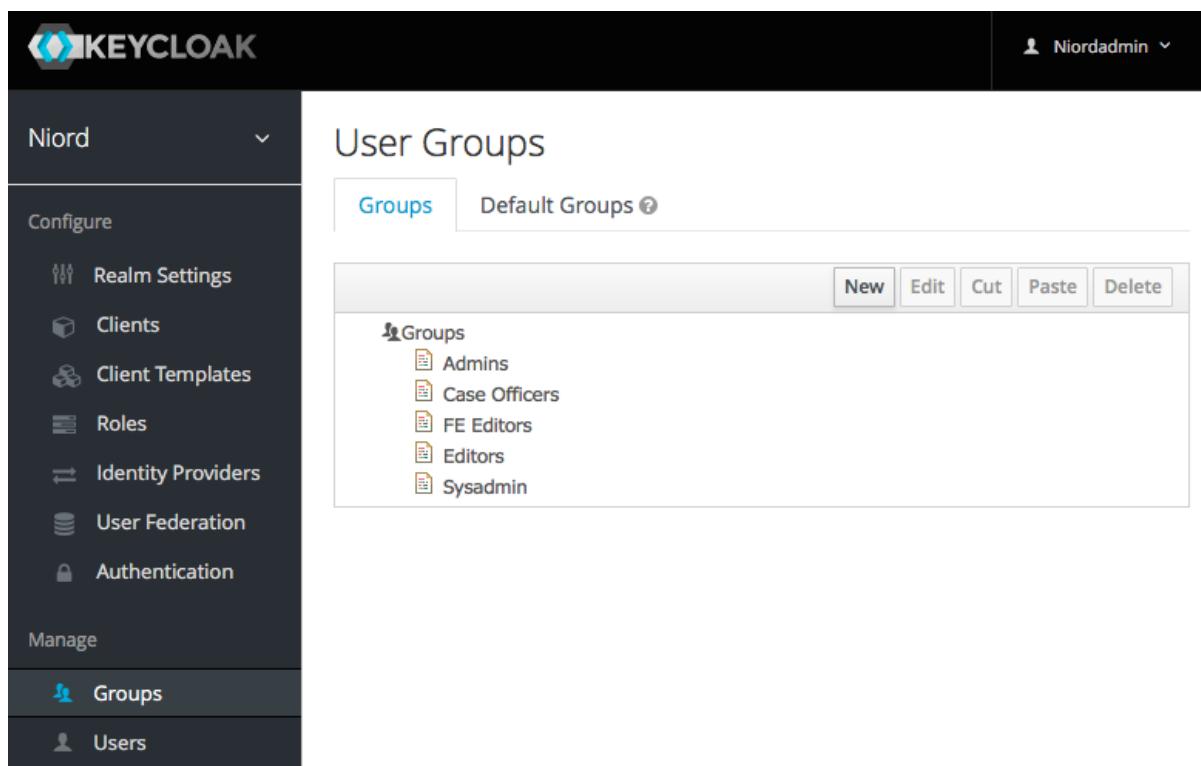
17.2.1. User Groups

Instead of assigning domain roles (i.e. Keycloak application client roles) directly to users, which would be a tedious task, Niord instead rely on Keycloak *Groups*.

As an example, at the Danish Maritime Authority, the following user groups are defined, at the time of writing:

- *Sysadmin*: Members of the "Sysadmin" user group will have the *Sysadmin* role in all domains.
- *Admins*: Members of the "Admins" user group will have the *Admin* role in all domains.
- *Editors*: Members of the "Editor" user group will have the *Editor* role in the "NW", "NM", "Firing Areas", "NM Almanac", "NM Annex" and "NW Greenland" domains.
- *Case Officers*: Members of the "Case Officers" user group will have the *User* role the "NW", "NM", "Firing Areas", "NM Almanac", "NM Annex" and "NW Greenland" domains.
- *FE Editors*: Members of the "FE Editors" user group will have the *Editor* role in the "Firing Areas" domain.

These groups are defined and maintained in Keycloak:



The screenshot shows the Keycloak administration interface for the "Niord" realm. The left sidebar has sections for "Configure" (Realm Settings, Clients, Client Templates, Roles, Identity Providers, User Federation, Authentication) and "Manage" (Groups, Users). The "Groups" section is currently selected. The main content area is titled "User Groups" and contains two tabs: "Groups" (selected) and "Default Groups". Below the tabs is a toolbar with "New", "Edit", "Cut", "Paste", and "Delete" buttons. A list of groups is shown, including "Groups" (Admins, Case Officers, FE Editors, Editors, Sysadmin), each with a small icon and a "View" link. The "Admins" group is highlighted with a blue border.

For each group, the relevant domain roles are assigned, as in the example below, where the "Editors" group is assigned the "editor" role of the "niord-nm" application client (i.e. "NM" domain):

Groups are created and maintained quite rarely. However, assigning users to groups is a common everyday task for administrators. Hence, Niord provides a simplified UI for this task, as detailed in the [Managing User Group Membership](#) chapter.

17.3. User-Specific Editor-Fields

The list of editor fields being displayed when a user edits a message in Niord is highly configurable. There are settings to define a base set of fields, a message main-type (NW,NM) specific set, plus the list can be customized depending on the message series, areas and categories assigned to the message.

It is also possible to customize the list of editor fields per user in Keycloak, or indeed, per user group.

Step 1 is for the system administrator to define two *User Attribute Mappers* for the "niord-web" application client; one for the "editorFieldsNw" *token claim* and one for the "editorFieldsNm" *token claim*. Example:

Niord

Clients > niord-web > Mappers > editor fields NW

Editor Fields NW

Protocol: openid-connect

ID: cb4f3ca4-6647-401c-935a-d32ce91a34ee

Name: editor fields NW

Consent Required: OFF

Mapper Type: User Attribute

User Attribute: editorFieldsNw

Token Claim Name: editorFieldsNw

Claim JSON Type: Select One...

Add to ID token: OFF

Add to access token: ON

Add to userinfo: OFF

Multivalued: OFF

Save **Cancel**

Step 2 is for the system administrator to assign the relevant "editorFieldsNw" and "editorFieldsNm" user attributes either directly to the user, or - more likely - to the relevant user groups. The format of the attribute values should be a JSON structure that enables and disables specific editor fields. Example:

Niord

Groups > MAS Vagt

MAS Vagt

Attributes

Key	Value	Actions
editorFieldsNw	{ "publication": false }	Delete
		Add

Save **Cancel**

17.4. Niord Security

All access to the Niord backend happens via calls to REST endpoints. The obvious example is the actual Niord web application which makes Ajax calls to the Niord backend.

The Niord backend has been integrated with Keycloak, so that all calls to Niord resolves the roles of the callee in the context of the current domain (the current domain is specified via a request header).

Hence, access to Niord can be checked using standard Java EE security checks. See the (simplified) example below, where annotating a REST endpoint with "@RolesAllowed(Roles.ADMIN)" will validate that the user has the *Admin* role in the current domain, or throw an exception.

```
@PUT
@Path("/area/{areaId}")
@Consumes("application/json;charset=UTF-8")
@Produces("application/json;charset=UTF-8")
@RolesAllowed(Roles.ADMIN)
public SystemAreaVo updateArea(@PathParam("areaId") Integer areaId, SystemAreaVo
areaVo) {
    Area area = new Area(areaVo);
    return areaService.updateAreaData(area).toVo(SystemAreaVo.class, DataFilter.get()
);
}
```