

Features

A list of short descriptions of all the features the platform has

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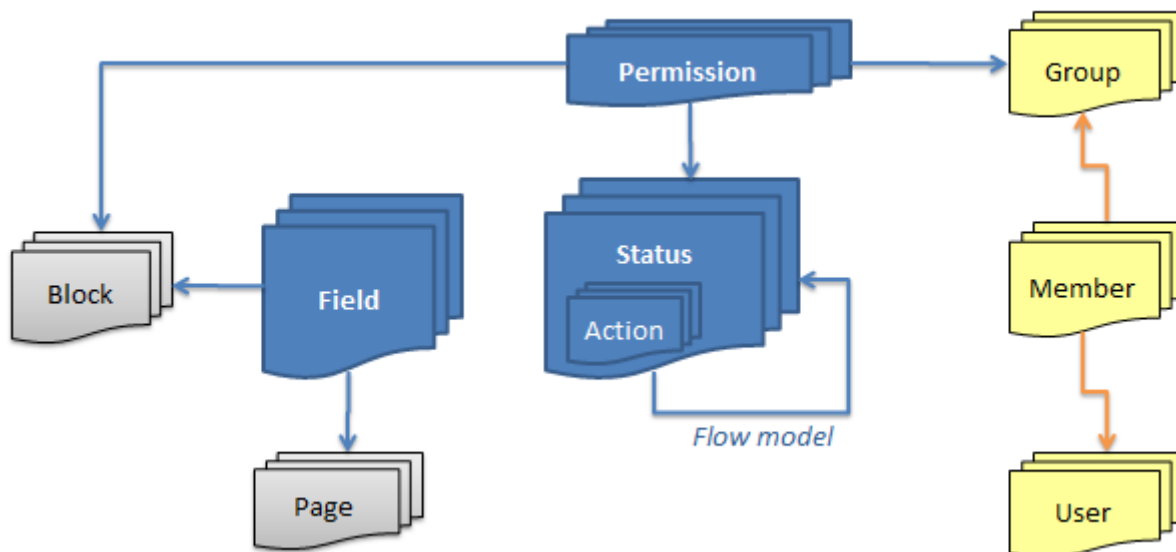
Access Control

How permissions work

Blocks

Blocks are permission "groups" for fields, ensuring that permissions only have to be set once for each "type" of information.

Permissions in a solution point to fields via the block related to the field.



External access

It's possible to grant external users access to very limited parts of the system.

This is done using webinterfaces and time based tokens.

One way this feature can be used to grant external (anonymous users) access to input data, eg. support tickets or applications.

Another way this feature can be used is to grant external (anonymous users) access to update a specific record in a specific status.

Authenticating external users

An authentication flow can be added to the external access.

This is especially useful when an external user accesses sensitive information.

For external authentication the TS NoCode Platform supports MitID.

Multi tenancy

Usages

TS has built multi-tenancy support allowing to build segregated applications for multiple parties, while still having users working across organizational units.

Data in the system can be handled in different ways

- Owned by a single group of users
- Shared resource across groups (often readonly)
- Hidden resource (templates etc.)

Essentially this feature is just one of the ways Advanced permissions can be configured.

SAAS onboarding

In TS it is quite easy to build SAAS application, because the onboarding can be fully automated.

The process includes

- User signup form
 - Optionally accept from administrators
- Optional: Contract
 - Generate and send contract
 - Digital signing of contract
- Profile creation
 - User and group creation
 - Welcome information

Context switching

Users not belonging to a tenant group will sometimes need to impersonate one.

By clicking the context swtcher component, the system start to behaving as if that user was a tenant of that group.

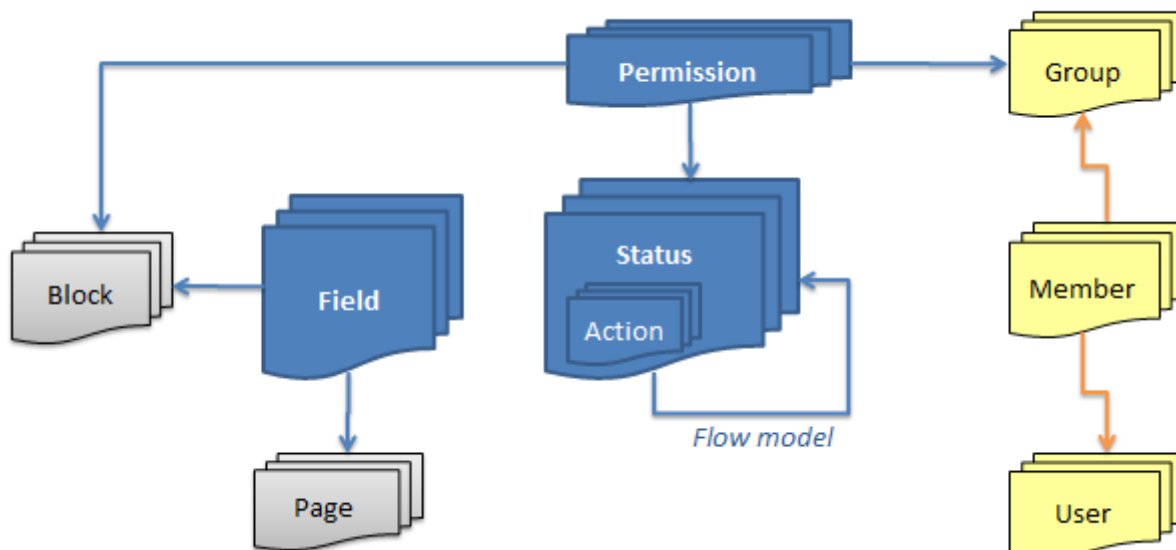
Permissions

Permissions tie together

- Groups
- Blocks (optional)
- Status (optional)

Permissions are stackable, so if higher permissions are given through one group, they will override lower permissions from other groups.

The exception is the usage of the DENY permission, which actually works in reverse: A single of the users groups with a deny permission, will supersede all other permissions.



Understanding access control

Usages

TS are based on a principle of building ONE application for MANY users.

Instead of building and maintaining multiple user interfaces, rules declarations restrict what a user can do

- What fields are available
- When records are available
- Whet records are available

Practically any set of rules can be built combining Field access and Data ownership.

Access policies

The basic Access policies controls the users access to

- Which Fields are available
- Which Status can be accessed

Permission policies stack together and include

- User group
- Field group (optional)
- Status (optional)

This allows for many combination usecases such as

Let Managers READ all data anytime

Let Managers EDIT the pricing when Status is Draft

Let Customers READ all data when Status is Order delivered

Let Administrators EDIT anything anytime except Pricing

Data ownership

Data ownership will restrict which record in an entity the user can see.

Different access restrictions exists

- Group membership (aka Exclusive groups)
- Personal record
- Access control lists
 - Named users
 - Named groups

Classic Multi tenancy is built by utilizing group data ownership.

Note: Depending on the setup the server can run with single or multiple Exclusive groups.

Other access controls

Many other components in the platform have configuration options to make them available to a single group

- Available buttons in the UI
- Status available for selection
- Widgets displayed in dashboards

User Cloning

This will allow you to create other users, with the same permissions as yourself.

In the user creation process, you will be granted the option to define which of your own group memberships, should be copied to the new user. The user will automatically receive an email invitation, along with a randomly generated password.

Note that

- Special properties like 'User creator/editor' or 'Administrator' are never copied.
- Any **Exclusive groups** that you belong too, are always copied to the new user.

How to activate this feature

- User must have the **User creator/editor** property set

Access Control

User Profile

This personal function allow you to change your password or personal contact details.

ARTICLE WRITING IN PROGRESS ...

Accessibility

Internationalization

TS supports multiple languages in the same solutions.

Out of the box includes Danish and English, but it is easy to add additional languages,

The following elements in the TS No-code Platform may have separate language settings

- Standard GUI elements
- Solution specific elements

Instructions

Enabling I18N will allow users to select their language or set it on their user profile

- Designer > Modules > Configuration > languageUseI18N = true

Multi-language solutions

Options include

- Field names
- Lookup values
- etc.

The languages are controlled through: **Solution > [SOLUTION] > Wizard > Internationalization**

Translations should be prefixed with the desired language code

```
en:This is the english translation  
ge:Dies ist der Englisch-Übersetzung
```

Each translation should be separated by a new line. long texts can be split into multiple lines, that may or may not be handled with linebreaks.

Note that the general GUI and solution elements are handled independently, and are not required by each other.

Adding custom languages

Options include

- Pagers
- Buttons
- Messages
- etc.

The languages are controlled through: **Designer > Resources > Language**

Translation checklist

1. Enable server I18N: "Modules" > "Policies" > languageUseI18N = true
2. Enable solution: [solution] > "Advanced"
 - Enable property: "Use I18N"
 - Set native language: "Default language"
 - Enter values: "Translate"

Accessibility

WCAC

See [Compliance](#)

AI

AI

AI Charts

Use DataWeaver to ask an AI questions about your data, to generate graphs or list, that can be used in dashboards.

AI Conversion

Usage

Ever stood with a large amount of unstructured documents, wanting to convert them into a structured database.

With our AI Filemorph that is actually possible: You upload large amounts of documents, that are converted and linked to database records.

The Filemorph process

What the user sees

1. Bulk upload of files
2. Each file is converted to a record
 - Record attributes are populated with data from the file
 - The source file is attached to the record

What happens behind the scene

- Files are uploaded
- For each file
 1. Create a record
 2. Uploaded to the new record
 3. Files are converted text streams
 - Some files will be OCR processed
 4. For each attribute in the record
 - Pass data and ask question to language model
 - Transform and populate the value

Conversion cost will be roughly 0,1 DKK per attribute per record.

Communication

MitID & eBoks

Via the builtin interfaces to eBoks and MitID, it is possible to interact with users that we have no previous interaction with.

No email or account is required, because CPR numbers (danish social security) are used as key for their persons.

eBoks messaging

The eBoks interface will allow you to send messages in the same way as you send an email notification.

The usecases are

- Only contact information is CPR
- Content to sensitive for email
- Proof of delivery and read requirements

A requirement for sending eBoks messages is having an account at Strålfors or PostNord. Most government institutions already have one, and new access points can be set up in a day or so.

Cost will vary according to our deal.

Instructions

1. Set up eBoks account
2. Add a CPR field
3. Add a Status action
 - Activate Notification
 - Set Email raw / Dynamic = The CPR field

MitID authentication

MitID authentication can be used in a couple different ways

1. Required before running a questionnaire
2. Required before running a followup survey
3. Login linked to a user profile

Variants include prompting the user for the users CPR number.

Cost for each successful login i approx 1 DKK.

Instructions

The following will set authentication before running a questionnaire

1. Set up Criipto account
2. Add entity interface
 - Choose: Criipto (MitID/NemID)
3. Click on NAME field > Assign
 - Set User property = fname
4. Click on CPR field > Assign
 - Set User property = cpr

MitID signatures

MitID can also be used for digitally signing documents.

The typical process is

1. Some event is triggers a status change
2. A document is generated and populated with data
3. Document is sent to eBoks AND user is notified
4. User logins with MitID and signs document
5. Signed version of document is returned to TS
6. Record changes status

Cost for each successful signature i approx 8 DKK, including the authentication.

For more information see [Document signing](#)

User notifications

This popup will display important notifications for you personally

The overview will contain basic information about the record as well as the context. The record in question will be displayed if you click the text.

Various sources for notifications displayed exist

- Status actions in workflows
- Responsibility for data items
 - You are set as the active user in a record field
 - A group you belong to is set as the active group in a record field

Compliance

TS No-Code Platform is designed to make sure that systems built on can be compliant without any work that needs to be done

- Security (ISO27k and ISAE)
- EU law (GDPR etc)
- Financial regulation

OWASP security

Depending on setup of the server OWASP level 1 or level 2 can be reached. This includes almost all security requirements such as

- Mitigation of common threats (SQL injection, CSRF etc.)
- Request throttling
- Password reset procedures
- Logging (see below)
- Multifactor authentication

Read more about it in [Security setup](#)

GDPR support

Data can be marked up and coupled to automatic deletion or anonymization,

WCAG (disability)

The UI supports the guidelines required for screen readers to work.

Key navigation

Nearly all operations in TS No-code can be performed without the need of a mouse or touchscreen.

Note that the behaviour is slightly different based on which facet of the system is displayed.

Main menu

Simple / Standard

key(s)	function	notes
Escape (ESC)	Select "Logout" action	
Tabulator (TAB)	Navigate to next tab element (menu/solution)	Ignore add, views and recent items
Arrow up/down	Navigate to next solution in menu	Ignore add, views and recent items
Arrow right/left	Select next menu item	

Advanced / Accordion

key(s)	function	notes
Escape (ESC)	Select "Logout" action	
Tabulator (TAB)	Select next solution in active section	Ignore add, views and recent items
Arrow up/down	Show/hide different solution sections	
Arrow right/left	Select next menu item	

This version of the menu requires a special need for combined use of

1. UP/DOWN: select section
2. TAB: select solution
3. ENTER: show solution

Note that the section selection is saved to a cookie, to ensure that the same sections are displayed as on previous visits.

List mode

Note: The "Add record" is automatically selected when entering a list

key(s)	function	notes
<i>any letter (a-z)</i>	Open quicksearch at top of the page	Search is always visible with touch devices
Escape (ESC)	Select "Main menu" action (go back)	
Arrow up/down	Navigate to records in list	Enter will open record in edit mode
Arrow right/left	Select next menu item	

Form mode

Normally focus will be set to the first input element in the form.

key(s)	function	notes
Escape (ESC)	Select "Display list" menu item (go back)	
Tabulator (TAB)	Navigate to next input field	Skips links for upload, sub record creation etc.
Enter (ENTER)	If in input box: Data will be submitted	Standard www behaviour

Arrow keys are excluded because they are used in text areas etc.

Traceability

Applications can have the following logging

- Access log
- Action log (events and actions)
- Revision log (copy of all changes)

Additionally the user management can provide

- Login history
- History of former group membership

Finally all changes to an application are logged centrally

Dashboards

Dashboards are informational boards consisting of a multitude of widgets.

We often segregate dashboards into

- Operational dashboards
- Management dashboards

Widgets for everything

TS has a long list of content

- List of items to handle
- Aggregated data
 - Graphs
 - Tables
- Shortcut buttons
 - Adding registrations
 - Performing searches
- Custom parts
 - SQL views
 - Codeunits
- Context selectors

Access to all widgets are controlled via groups, and the Dashboard will automatically layout the content to each user.

AI assisted reporting

Advanced reporting will often require complex queries to get and illustrate the data that you want.

TS has an AI assisted query builder that can be prompted using clear text

Give me Top 10 customers where order sums are larger than 10000, for orders in the current month

This will generate the required query, display in a diagram and all you need to do is to click: Add as widget

Please note: Your data is never in contact with the underlying language model

Customized content

All views can support the following references

- "ME": Placeholder parameter for the current user
- NUMBER: Relative reference for time (0 = today, 1 = tomorrow etc.)

In order to handle permissions gracefully across different users types, data ownership filter tags can be inserted into SQL statements.

Note that users can also save their own searches and list views: [Features/Personal views](#)

Data handling

How to work with data using the platform

Advanced input forms

Usage

In TS it is possible to configure very advanced and dynamic input form behavior. The goal is to minimize the effort required to enter data, and at the same time maximize data quality.

In case you need step-by-step questionnaires or wizards, we recommend looking at [Questionnaires](#)

TS has implemented more than 160 fields of various types, as documented in the [Field reference](#)

Validation rules

Validation of field values can follow one of the following

- The value is required
- Can be validated by a Regex expression
- Have a value within a minimum and/or maximum

Value ranges will differ according to data type

- Numbers: The value
- Text: Length of text
- Date: Allowed years
- Files: Number of files

Note that dependencies are resolved before validation, so in case a field is not relevant the validation rule will be ignored.

Instructions

1. Click on field
 - Check of Validation
 - Remove check in Allow empty values

Field dependencies

Fields can be dependent on values in other fields. Specific values, value ranges or list of values.

Show SUBCATEGORY if CATEGORY contains either Foo, Bar or Foobar

Show field NOTES if PRICE is higher than 1000

In case the dependency is even more complex, an expression written in JS can be defined and linked to the field

Workflow dependencies

Fields can be dependent on the records location in the workflow governing that entity. Each status is assigned a status level.

Fields can then refer to the workflow model with restrictions

- Status level FROM
- Status level TO

If the status restrictions are not satisfied the field will be removed and validation requirements will be ignored.

Note that 0 signifies that the status level restriction is disabled.

Instructions

Learn to setup [Features/Status level dependencies](#)

Lookup fields

TS contains a lot of specialized lookup fields that have defined datasources ready

- Danish postal codes
- Danish addresses (DAWA)
- Countries and currencies
- NACE codes (tree searchable)

- UNSPSC codes
- SKS framework (7 subtypes)

The DAWA lookup can also work together with a Google Map. Entering an address will update the map with the location, and clicking on the map will find the address.

Duplicate prevention

To ensure that the same data are not duplicated by mistake, it is possible to ensure that new records are unique based on values in one or more fields.

Learn to set up [Features/Duplicate prevention](#)

Archived data

The archive mode will enable or disable display of hidden (deleted) elements.

Hidden elements is normally deleted or archived data. They enter the hidden state by having a status assigned, that has a "Hidden" property set.

Toggling the archive mode

- Activate by clicking archive icon
- Deactivate by clicking archive icon AGAIN

When in archive mode display of "normal" elements is disabled.

Cloning records (Copy/Paste)

Copy

Copy will put all values in the current record to the clipboard.

Later you can paste the values into a new record, and just change the few values that differ.

Note:

- Only field type data (text, number, dates etc.) will be copied.
- Files and related records will not

Paste

Paste will put all values in the current record to the clipboard.

Later you can paste the values into a new record, and just change the few values that differ.

Note:

- Only field type data (text, number, dates etc.) will be copied.
- Files and related records will not

Data reports

In order to see the data you want to

1. Selecting data
2. Working with data

Selecting data

Data selection in TS is easy due advanced functions

- Partial strings
- Numerical ranges
- Date period ranges
- Included in other views
- Location areas

Criteria may be combined with boolean operators AND and OR

Personal and shared view

Users will often search for the same data again and again, so they have the option to save a view.

A view will include

- Filter criteria (see above)
- Displayed fields
- Sorting or grouping

Furthermore administrators can share their views with all users on the system.

Visualizing data

Sets of data can be illustrated and analyzed in many different ways

- Graphs
- Calendars
- Pivot tables
- Kanban board
- Heatmaps
- Google maps

The above reports can also be included as widgets in a Dashboard.

Statistical testing

Advanced analysis options for data include

- Chi / T / tests
- ANOVA analysis
- Distributions
- Cyclic analysis

In addition Six Sigma tools such as Run charts and Pareto diagrams are included.

Duplicate prevention

What it is

Example:

“ A hr-management system is used to hire new employees that have to be registered with information such as name and email address. During this registration mistakes can happen where an employee is registered multiple times, creating duplicates in the system with different system ID's. To prevent this there should be some part of the data from the employee that would not impossibly exist for another employee, such as the email address which by design are unique. If you are adding a record of an employee whose email address already exists in the system, then that employee certainly already exists in the system. Other suitable types of data could be Social Security Numbers or CPR numbers, which are also unique by design. If no such suitable data field is available, two or more fields can be used, so that they in combination constitute a unique value. It is for example unlikely that two people with the same name and same date of employment should exist.

Guide

To prevent duplication when records are created, the entity needs to be set up right. Either a single field or a combination of fields need to be designated as being a unique key, meaning that if you attempt to create another record with the same combination of fields, you will be prevented from doing so. This can be some field with inherently unique data or for example the combination of a date and a name, where the chance of another record sharing the same date and name is considered extremely unlikely.

Entity fields

[add](#)[edit](#)

A	S	Field	Data type	Resume	In list	Sublist	Primary	Validate	Default	Block	Page
✓	✓	Jordsags nr	Parent reference	✓	✓	☐	✓	✓		Default	
✓	✓	Vejenr	Integer	☐	✓	✓	☐	☐		Default	
✓	✓	Adresse	SQL: Subselect	☐	✓	☐	✓	☐		Default	

To set a field of an entity to be a unique key, go to that entity in the back-end and select your chosen field as shown in picture 1.

Field

[remove](#)[manual edit](#)[assign](#)[translate](#)[siblings](#)

Active	☒
Type	Parent/child: Parent reference
Title	Jordsags nr
Helptext	

JORDSAG [usage](#)

The unique key feature is an advanced one, which means that you have to toggle the advanced view as shown in picture 2.

Configuration	Edit configurations ⓘ
Options	☐ Create items with default value
	☒ Include field value in item Resume
	☒ Values are Indexed for faster search
	☒ Is part of a Unique key
Display	☒ Show by default in List views
	☐ Show by default in Lists of children on parent items
	☒ Show by default when using Field filter (primary)
	☐ Show by default in Heatmaps (remember to define categories)
	☐ Use special CCS styling edit CSS

Now enable the check mark as shown in picture 3. Your chosen field is now part of a unique key. If this is the only field with this check mark enabled, then this will be the only key. If you select a second or third field, then the combination of the values of those fields will be the unique key.

File management

TS solutions will often include files either as related content or generated artifacts.

All you have to do to add file support for a solution, is adding field of type Files. Office files can be edited online (WebDAV) and media files will be handled gracefully.

Note that it is also possible to bulk convert documents to structured data using [AI document conversion](#).

WebDAV editing

WebDAV will the user to edit files directly without the need for downloading and the uploading the files. Note that you must have WebDAV enabled software such as Microsoft Office installed.

Supported formats include

- Word (docx)
- Excel (xlsx)
- Powerpoint (pptx)

If the server is added as a trusted site, it is also possible WebDAV edit files containing macros (doxm,xlsm,pptm).

Instructions

1. Enable [WebDAV in configuration](#)
2. Click the icon with pencil overlay to edit a file directly

Document generation

Documents can be generated by inserting data in special tags in predefined templates.

Output includes

- Word
- Excel
- Powerpoint
- PDF

Instructions

1. Entity > Advanced
2. In template list press: Add
3. Upload file
 - The file can contain tags that must match field name in the solution
4. Set displayed template name
5. Optionally set output fieldname (must be a file field)

Document signing

Signing will be handled by external providers.

TS supports

- Criipto (MitID, BankID, etc.)
- DocuSign

Unless you need international signatures, TS recommends Criipto. (DocuSign pricing is steep and the plans are quite inflexible).

Instructions

Use the following to set up Criipto document signing

1. Create an appropriate template
2. Add an Status action
 - Activate codeunit execution
 - Set codeunit to
 - dk.tempusserva.signing.criipto.CriiptoStatusAction
 - dk.tempusserva.signing.criipto.CriiptoStatusActionGenerator
3. Modules > Configurations
 - oauthCriiptoAllow: true
 - oauthCriiptoClient: From Criipto setup
 - oauthCriiptoHost: From Criipto setup

Media files

Media files are natively supported without the need to change anything

- Images have thumbnails generated
- Videos open in a player
- Videos support streaming (jumping / skipping in the playback)

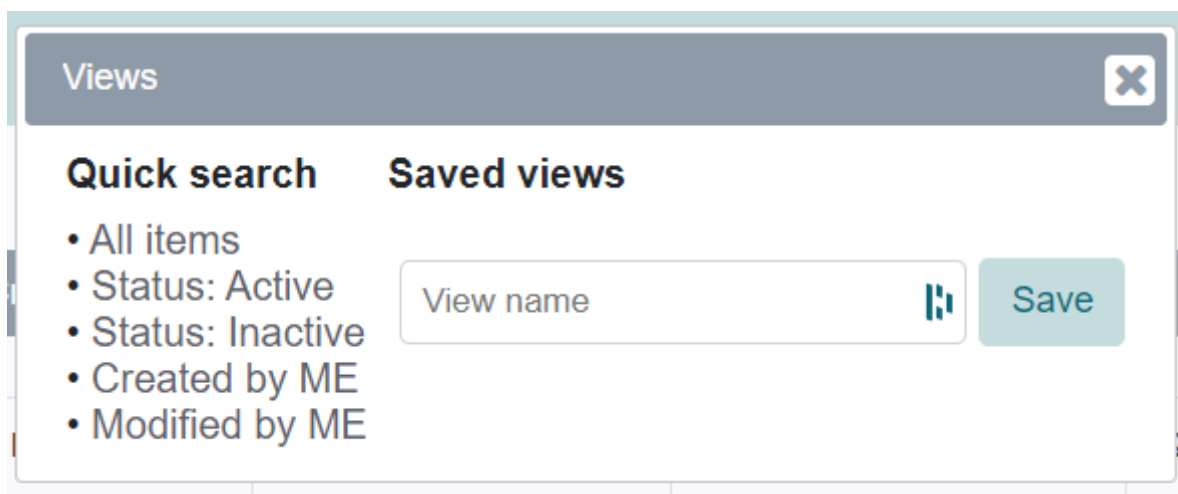
It is also possible to use specialized fields in solutions

- Files: Pictures
 - Image uploads on mobile devices can use camera as a source
- Files: Videos

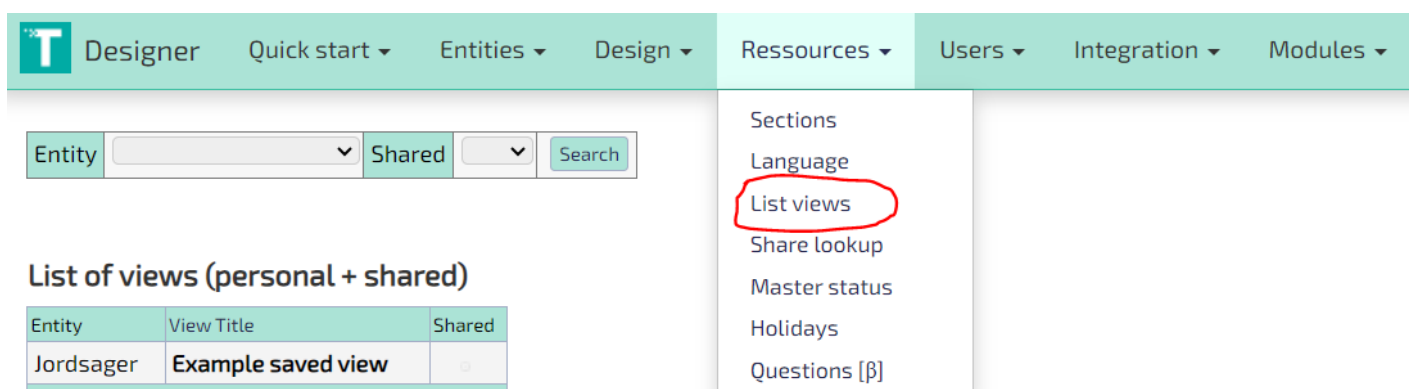
Note that it is quite easy to set up an automated video scaling process, if the underlying storage is S3.

Personal views

A View (also called List View) is a specific showing of a list of records from an Entity. Using the search and advanced search functions, you can choose to exclude records from the View using different parameters. The currently active parameters can be seen below the View. To save the parameters of a View for later reuse, click the 'Views' button in the functions menu and give the saved View a name in the text field



Initially this saved View is a Personal View, meaning that only you will have access to it. To make it a Shared View, which every application user has access to, navigate to the back-end and select the 'List views' option from the 'Resources' dropdown menu. Now select the name of the View and check the 'Shared' box. The Personal View is now a Shared View instead.



Entity	View Title	Shared
Jordsager	Example saved view	☐

Other users who use the Shared View are still restricted to the information available to their own user group. You can therefore not accidentally share unauthorized data by making a Shared View.

QR and NFC actions

QR code and NFC tags are plain and simply access to a URL, often with specific references to records.

The purpose is to ease access to webbased resources, so the user can do things with a simple gesture or action.

Common usecase scenarios are

- Working with inventory
- Consumers accessing information

Scanner verbs and nouns

TS facilitates a special automation language, where work can be handled simple by scanning codes.

The idea is to, in any order, scanning both

- A reference to a OBJECT to work with
- An ACTION you want to use on the selected object

“ The user scans the QR code for order 123. The user scans the QR code for "Order ready". Order 123 changes status to "Order ready".

QR codes for OBJECTs and ACTIONs are typically displayed in templates for easy printing.

Service pages

Service pages at publicly accessible content, that can be accessed via NFC or QR.

Optimally will redirect from an intermediary URL to the final destination, in order to be able to change the destination after the codes are printed (QR) or written (NFC).

Questionnaires

Usages

Questionnaires are used for data collection for external parties.

TS questionnaires can be used in two modes

- A public page everyone with a link can access
- Specific requests sent to a user to add information to a record

Access are given by adding an interface to an existing entity and defining access to fields.

Interfaces and questionnaires

Normal questionnaire is a link that creates a new record that an anonymous user populates.

Returning questionnaires will be sent to a specific user, and contains access token for an existing record. Tokens are normally sent by status actions, normally to an email field on the record.

Instructions

Learn how to set up a [questionnaires](#) and [Interfaces](#)

Quiz and training module

In the quiz module you can set up questions, answers and scores. Afterwards you can set up a questionnaire, with random questions that the user is asked.

Questions are ordered into a structure

1. Domain: Grouping just for order things
2. Topic: Areas questions will be randomized in

3. Question
4. Answer

Instructions

1. Set up questions: Designer > Ressources > Questions
 1. Create a Domain
 2. Create a Topic
 3. Create multiple questions
 1. Add answers and set the correct option
2. Create a questionnaire
 1. Add a field of type: eLearning: Quiz suggestion list
 1. Add a number of question you want asked
 2. Point to the Topic you just created

Recent Items

This function displays a popup with links for recently accessed items for this type / solution.

The items are named according to their Resume signature - the same which is displayed when searching or when a reference is set for a record.

The recent items are also available from the main menu.

Relational database

Since the 1960 it has been well known that SQL databases are the way to go for complex systems storage.

TS is based on the MySQL / MariaDB / Percona databases, and all data is fully normalized granting multiple benefits

- High performance with high volumes
- Easy to integrate with BI systems
- Predictable structures

Scalable applications

Applications built on TS No-code Platform will adhere to common design practices ensuring good performance, stability and integrity. The platform is very scalable in regard to

Complexity

You can, without limitations, keep extending the models as far as needed, using the Parent and Child relations.

Due to a very elaborate and flexible permission model, multiple user types and use case scenarios are easily supported in a single unified application.

We even support logical constructs such as many-to-many relations. TS has customers running more than 350 linked applications on the same server.

Performance

TS databases are largely unaffected by data set sizes and number of concurrent users.

There building configurations for indexing fields, and the built in searches can be supported by Elastic search and indexing.

To prove our point we have actually had the whole platform running smoothly on a Raspberry PI.

Volumes

Databases will handle large amounts of data gracefully, but large object sizes will often cause problems in back/restore scenarios.

TS No-code Platform supports unlimited file size and count, using a mixed database and block storage approach.

Relational searches

A common problem querying data is specifying criterions and values in different parts of the model

Show orders where the sum > 10000, and one or more ordelines refers to the product Smart TV

In TS this is handled gracefully by allowing interlinked searches

Look at parents referring children

1. Make a search in the child items (optionally name the view)
 - Set search criterions normally
2. Make another search in parent item
 - Set search criterions normally
 - In the *List of children* field refer to the CURRENT_QUERY (or given name)

Look at children referring parents

1. Make a search in the parent items (optionally name the view)
 - Set search criterions normally
2. Make another search in child items
 - Set search criterions normally
 - In the *Parent reference* field refer to the CURRENT_QUERY (or given name)

Searching

A simple search will provide search options for fields already displayed in the list.

The search window provides you with the following options:

- Define filter/search values
- Select which fields to display
- Quick access to analysis

The setup of the list view can be saved for later use by using: [View function](#)

Setting search values

When setting search criterions these are appended to existing filters. Normally "AND" operators are not needed, as TS assumes an implicit AND between multiple criterions

Example:

1. The list is filtered with: Status = "New"
2. Another criterion is set: Date > 31/12/2012
3. The list now displays only values where
 - The field Status has the value "New"
 - **AND**
 - The field Date has a value greater than 31/12/2012

Criteria are displayed at the bottom of the page, and remain in place until you add the "New search" option when searching or logging out of the system. Note that each criterion can be removed by pressing the minus icon.

Selecting fields for display

By enabling/disabling the checkbox next to a field, you can control if the field is displayed in the list.

Note that

- It is possible to set criterions for fields that are not displayed
- Data exports til XL includes an option to display ALL fields in an export

Quick analysis

Some fields have an graph icon next to them, which allows access to analyze this variable.

This will provide you with

- A count of the different values
- A bar or piechart of the data

Status level dependencies

What it is

Example:

“ A hr-management system is used to show information on employees who are assigned to projects. These employees are either currently working on a project or between projects. Or they might be in the process of being hired and would therefore not be a full employee yet. Depending on which of these states the employee is currently in, different information about them would be made available. If they were under consideration of being hired, we should see their application. If they were working on a project, we should see their work schedule. If they were between projects, we should see the end date of their last project. Each piece of information should only be made visible for the status in question, since they make no sense or are unimportant otherwise. Status level dependencies are used to manage this visibility.

Guide

Entity status

[add](#)[flowchart](#)

A	ID	Status	Final	Depend	Flows	Level	Actions
☐	11617	Accepted	✓	0	0	0	0
☐	11630	Closed: Delivered	✓	0	0	0	1
☐	11674	Assigned	☐	0	2	0	0
✓	11614	New Ticket	☐	0	11	1	3

Status levels are numerical categories that one or more statuses can belong to. Individual Fields in an Entity can be configured to depend on these levels such that they can be made inactive and hidden if the Entity record is not in a status with the correct level. For example can the dependency

be set for all status levels above a certain value such that one or more Fields are only active and displayed for those levels. To see the status levels of an Entity's statuses, go to that Entity in the back-end and look in the column shown in picture 1.

Active	☐
Status	Assigned
Master status	Igang
Status level	0 (0 will be ignored)
Initial state	☐ (available for new items)
Meta state	☐ (is this available from any state)
Final state	☐ (can this status ends the process)
Hidden data	☐ (is data deleted or archived)
Skip validate	☐ (ignore all validation errors)
Assigned by	All users
XL model active	☐ (calculate model)
Targeting	☐ (use performance targets)
SubmitCancel	

To change a status's level, go to that status and edit it as shown in picture 2.

Field

removemanual editassigntranslatesiblings

Active

Type

Title

☒

Basic: Website (URL)

Link

LINK

usage

Dependency

▼

!=

▼

builder

Status level from

0

 to

0

 (0 is disabled)

Submit

Cancel

To set the dependency, toggle the advanced view of the Entity panel on as shown in picture 3 and go to the bottom as shown in picture 4.

Using Views

The view dialogue allows you to save searches and field selection in views.

The views are normally personal and will only be displayed for you as a user. The administrator can however share already created views, which are usable but not editable for you.

Creating views

After selecting fields and setting search criterions, you can save the setup for later use by

- Setting a name in the textbox for the view
- Pres "Save"

The named view is now displayed in this dialogue as well as on the solution overview (the page shown after login).

Deleting views

In order to delete a view just press the red minus icon next to the view.

Changing views

It is currently not possible to edit views after their creation, but you can always make copies with the same name

1. Click the view you want to change
2. Make modifications
3. Save the view using the same name as before
4. Delete the old view

Data handling

Viewing and editing data

Work in progress...

Importing and exporting data

Export excel

Export will create and download a file readable by Microsoft Excel or any other 3rd party Office product.

Export file options include

- **All records:** Unlike the default limited to the records displayed in this page
- **All fields:** Unlike default limited the fields displayed in the current view
- **Explode parents:** Include data from related **parent** records
- **Explode children:** Include data from related **child** records in denormalized (flattened) form
- **System export:** Use system name in columns (good for later CSV imports)

After downloading the file you should save it in you preferred format using "Save as ...".

Exporting for Print

Print view will display the current page with certain elements removed

- Website wrapper (menus, headers and footers)
- Tempus Serva navigation (menu and pagers)
- Links and optional features

Furthermore single records will be displayed in display mode (edit elements are removed).

Import CSV

The import function allows selected users to upload data, for either creation of new or update of existing records.

Using import

All normal restrictions are in place, so there will be no difference between imported and data entered manually through regular forms.

During import each line in the import file is handled as a separate job. Consequently some lines may fail and some lines may succeed: The results can be retrieved after the import where a modified version of the import file including the success/failure status information, will be returned to the user. This file makes it easy to error correct, as the the format is exactly the same as the import file.

Import format

Import files must apply to the following restrictions

- File content is in **CSV format**
- Column names should use the field **system name**.

The easiest way to build a working import template, is making a [Excel file export](#) with the "System export" option enabled.

Options

Imports can have certain options included that change what happens during the import

- Continue on errors: Do not stop processing on single field errors
- Ignore empty values: Empty values are never processed (default: treat as "" or null)
- Disable codeunits: Disable custom functionality
- Disable validation: Disable field restrictions

Warning: Do not use the last two options (codeunit/validation), unless you 100% certain how the solution works.

Enabling user profiles

Add the role data handler for the users that should be allowed to import data

Designer > Users > Edit users > [USER] > "Data handler"

Integrations

Custom code

In some cases there will be a need for specialized functionality.

Using codeunits you use all of the existing nocode features, and just do the special features in custom code.

The platform will handle WHEN to execute the code, while you make the code do WHAT you want.

Note that custom extensions are loaded dynamically, so the platform can still be updated independently of your custom code.

Many extension points

Your custom code can be plugged into various points

Pages

A page will display file or HTML content, with or without navigation wrapped around it.

Normal pages will only be served to authenticated users, while the public variant can be served to anyone accessing the URL.

Link via: URL (example: `main?command=xxx`)

Event handlers

An event handler will extend the behavior of an existing entity.

Multiple function handles ensure your code can be executed at the right time: `beforeSelect`, `beforeRender`, `beforeUpdate` etc.

In addition it is also possible control navigation flow after updates or build custom permission schemes (see below).

Link via: Designer > Entity > Advanced > Codeunit

Status actions

Actions will allow certain code to run as if it were a normal status action: Timed, On enter, On leave

Link via: Designer > Entity > STATUS > STATUS ACTION > Codeunit

Scheduled code

This is used for custom code that you need to run without user intervention.

Link via: Designer > Modules > Configuration > serviceRunCustomCodeunitClass

Global content

This codeunit can inject HTML content into all pages on that instance.

Link via: Designer > Modules > Configuration >
dk.p2e.blanket.codeunit.common.PageStaticContent

TS NoCode API

The TS API will enable access to all relevant things in the system, including your own custom models.

Data can be queried and updated via the object model, that will ensure that all rules and permissions are respected.

See detail and code examples in [API v1.0](#)

All requests will be passed references to

- DB connection
- User profile
 - Session variables
- Server settings
 - Policies
 - Cache

Custom security

Custom security is an option in Event handlers, that allows you to build custom security schemes.

Use cases include

- Users profile must be related to some other data
- Users permissions are change over time
- A records attributes defines who may see it
- Access to records are governed by the records relation to other records

You simple write an SQL filter that can be appended to all database queries relating to that entity.

Integrations

eBoks

Send messages via eBoks

Integrations

Email import

Read POP3/IMAP, autocreate records

Integrations

FTP

Expose uploaded documents via FTP.

Integrations

OLAP

Exposing Mondrian OLAP Cubes

Integrations

REST service

Expose data though REST.

Integrations

Send notifications

Send notifications to users via SMS/Email

SMS

We currently recommend <https://www.cpsms.dk/>

Integrations

Sign documents

Sign documents using DocuSign or MitlD

Integrations

WebDAV

Expose uploaded files via WebDAV

Search indexing

Background

TS provides a special page to use for enterprise search indexing. The pages served through the search servlet, will be stripped of unnecessary content including links, forms and other "active" types of content.

SearchOverview.png

Indexing setup

1. Create a search user
 - Assign groups corresponding to content that should be indexed
2. Add a new source to index (see Constellio example below)
 - Set source endpoint to <server>/<application>/search
 - Activate Basic authentication to new user

Search box integration

To enable the user to search from the pages in TS a search box.

Options include:

- Inherit a search functionality from page referenced in Wrapper
- Insert a search form in a Wrapper (probably "Header padding")
- Insert a search form in a Section header HTML

Search form mentioned above are nothing but static HTML code

Security

Security and compliance features that is built into the platform

Bruteforce

In order to prevent brute force attacks on passwords to measures are implemented

- Maximum number of retries for passwords
- Detection of spread attacks across multiple accounts

Maximum login retries

Configuration options for Maximum number of login retries are

After the defined amount of retries have been reached, the user account is suspended.

There is an option for automatic password reset (password is sent to user).

Policy_reference#Security

Brute force detection

Detection of spread attacks are implemented by registering the number of failed login attempts during a defined amount of time.

If a certain threshold is passed, the server will temporarily deny further login attempts, for a defined amount of time.

During this period the server will function normally for already logged in users.

Configuration options for brute force detection are

Policy_reference#Protection

Compliance built-in

Activity and data logging (optional)

Activity and Data Logging includes the automatic creation of a series of log files. Logging can be set up for each entity in an application providing insight and transparency in relation to: user activity, creation, changes and status of different records in an application.

- **Access Log:** Can be activated on an entity in an application. This automatically generates a log of which users have accessed and/or edited a given record.
- **Status Log:** Can be activated for an entity in an application. This automatically generates a log of the history of the created records, which shows how long a record has been in each status
- **Change Log:** Can be activated for an entity in an application. This automatically generates a log of what changes have been made to the individual records. Including who has changed what and when (timestamp).

How to: Each option is activated on the entity Advanced page.

Pro tip: Especially the status log can be used for setting up performance charts on dashboards, as it can give detailed information of how much time was spent in each step.

Versioning (optional)

By default file versioning is supported on the "Documents" and "Files" field types. In addition, data revisions can be supported on each entity. This automatically builds an audit log for each record.

In addition data revisions can be supported on each individual entity.

How to: Data revisions is activated on the entity Advanced page.

GDPR Deletion Policies (optional)

For each entity in a TS Application, a GDPR Deletion Policy can be set up, enabling automatic deletion or anonymization in accordance with the specified rules. The application will thus automatically delete or anonymize data and files in the application, cf. specified criteria.

How to:

1. Set up an action on a entity status
2. Check of deletion policy
3. Choose between anonymization or deletion
4. Optionally select log data to also be deleted

In case you choose "anonymization" you should define how each field should be handled

1. Click on a field
2. Click on Assignment
3. Check of anonymization
4. Optionally set value after change

Event and System Logging (recommended)

When Event and System Logging are turned on for an application, the following events are logged automatically:

- User logins
 - Successful normal user logins are hidden
 - Also contains client IP (used for MFA)
- System events
 - User errors
 - Scheduled services
 - Administrator logins

Error events will include stacktraces if available.

The eventlog can be cleaned automatically on a regular schedule.

Compliance external

Request logging

The webserver itself can be set up to do make detailed logs in file, containing for example

- Request timestamp, IP and session ID
- Stacktraces on errors

Depending on your security setup you might want to log these to a central repository

Data restrictions

Understanding permissions

Data access is restricted in two ways

- **Mandatory** permissions granting access to
 - Certain groups of fields (blocks)
 - Records in certain status
- **Optional** filters binding certain data to certain users
 - Owner user (the user that created the record)
 - List of users (dynamic list of users for each record)
 - Per group (group property)

If a user has no active permissions, they will not have any kind of access to the solution. Filters on the other hand is just considered to be additional restrictions, limiting the access granted by permissions.

In both cases the security restrictions always apply, even during system access, API interaction, integration etc.

Permissions [mandatory]

Permissions to solutions are granted as a sum of multiple permissions.

Each permission contains

- Group
- 0-1 Status (records have status)
- 0-1 Blocks (fields belong to blocks)
- Allow read
- Allow write

Permissions stack in an aggregate like manner, allowing to build complex structures from different fragments. This is also the reason that the Allow read and Allow write properties can be set to empty values (typically for generic permissions).

Differentiated FIELD level access

Fields belong to blocks. Permissions may be bound to such a block.

A permission with a block specified will ONLY apply to the fields belonging to this block.

Differentiated STATE level access

Permissions may be bound to a certain status.

A permission with a status specified will ONLY apply to records in this status.

Filters [optional]

All ownership options can be overridden by belonging to a certain group, that ignores all types of filters (3 below).

Access to configuration:

Designer > [solution] > Security - Filters

Ownership by data exclusive group

Designer attribute: Use Exclusive groups for access control

The solution contains a **Exclusive group** that defines a group with access to this piece of data.

- Scope: Group
- Cardinality: One

Ownership by data member lists

Designer attribute: Use Lists of members for each item

The solution contains a **memberlist** field where users can have their access added or removed. Behind the scenes a table with a relation between the record and the user is maintained.

- Scope: User
- Cardinality: Many

Ownership by being the creator

Designer attribute: Use Creator only restriction (ignore group recommended)

You must have created this record in order to see access it.

- Scope: User
- Cardinality: One

Encryption

HTTPS / SSL is readily supported as the interface is indifferent of which protocol is used by the user.

It is however possible to force the user to use SSL by tweaking the configuration

- Force SSL during logins
- Force SSL in interface

Users making specific requests, will receive a rewritten redirect including all parameters, from the original request. The recommended setting is always using SSL at all times.

Guide to set up SSL: [Setting_up_SSL/HTTPS](#)

Security baseline

Security by design

The platform is security designed in accordance with OWASP version 4:

- Level 2: Compliant
- Level 3: +90% supported

In addition the platform supports a wide range of security schemes and logging features, needed for support of ISO27001, ISAE3000 etc.

The platform is subject to periodic penetration testing. Last customer testing was july 2021.

Default security

By default the TS Platform is verifiably secure to all common threat vectors, such as

- SQL injection
- Cross-Site Scripting
- Session hijacking
- Login replays
- etc

Protective measure includes common hardening efforts, such as

- Data sanitization
- Request throttling
- CSRF tokens
- etc

In addition to this baseline additional features can be activated per installation.

- Built-in: Features in the product itself
- External: Measures controlled in application server or operating system

Security built-in

Password Policies (recommended)

TS No-code Platform allows you to setup and enforce the use of strong passwords through an appropriate password policy. Specify attribute requirements that control complexity and lifetime of passwords such as:

- Minimum password length
- Special characters
- Maximum password age
- Maximum number of tries

The structural restrictions will be honored when

- The user changes his password
- A new random password is generated and sent

Passwords can also be set to expire after an amount of time.

How to: The polices can be changed in server configurations in the group *Password policies*

Note: The password polices will have no impact on SSO authentication

Multi-factor Authentication (recommended)

Device MFA

TS No-code Platform offers native Multi-factor Authentication to protect against unauthorized access by requiring a user to provide multiple authentication factors to prove their identity. At present two different options are available:

- MFA using session-specific, one-time-passcodes sent to the users mobile phone via regular or Flash SMS
 - You will need to create an account for sending SMS
 - Cost is approx. 0,30 DKK per message)

- MFA using a dedicated app from
 - Apple
 - Google
 - Microsoft

SMS requires very little of the users, while App based MFA is considered (slightly) more secure.

Note: If using singesignon (SSO) the MFA will not be used

Location MFA

IP can be used as factor. In some cases slightly less secure, but much easier for the user.

Options include

- Country whitelisting (via IP)
- Static whitelisting of IP's
- Adaptive whitelisting of IP's

Adaptive whitelisting happens when the same user logs in from the same IP multiple times (typically 5).

IP MFA can be used together with normal MFA, so that SMS/App check is only required in case the IP is not whitelisted.

Geolocation blocking (optional)

Geoblocking will allow the servers to deny requests from certain countries.

The geoblocking will match the clients IP against a Geo service. The county will be matched to the servers whitelist of country names.

How to: Change the system configurations starting with *ipBlocker*

- Activate setting **ipBlockerActive**
- Set allowed countries in **ipBlockerAllowedCountries**

Request throttling (optional)

As specified in OWASP v4 system should be able to limit the amount of request a user can carry out in a system.

Limitations can be set on

- Pages hit
- WebDAV requests
- Upload (size/count)
- REST operations

How to: Edit server configurations starting with *limit*

Brute force prevention (optional)

This protection is handled by not serving too many requests to the login page, regardless of the source in question. This will prevent brute force attacks on distributed accounts using multiple machines. In case the detection triggers, login requests will be ignored for at set amount of time, while already logged in users can continue their work.

How to: Define systems configurations starting with *brute force*

Additional configurations

- File whitelisting (uploadWhitelist)
- OWASP compliance (owaspCompliance)

Security external

Virus scanning

Scanning of uploaded files are left to software installed on the system.

The upload feature will temporarily store the files on the file system, so that detection mechanisms can quarantine the files in case they are infected.

Storage encryption

Storage encryption is normally supported by the underlying technologies, with the possible exception of password hashes (handled with BCrypt).

MySQL (+8) supports multiple encryption schemes

- The whole database
- Single schema (each TS installation)

Read more about encryption for [MySQL](#) and [MariaDB](#)

O/S level encryption technology includes

- Windows: BitLocker
- Linux: LUKS

Transport encryption (https)

Minimum requirements are SSL certificates. On Linux these can easily be obtained for free via LetsEncrypt.

Optionally the server can also apply to HSTS, using the following [guideline for Tomcat](#).

Denial of service attacks

Protection against DOS attacks are best handled using dedicated services such as Cloudflare.

Single sign-on

TS NoCode contains its own user management. In order to minimize the effort in maintaining the profiles, and require less effort for users already authenticated in other systems.

Oauth2

There are multiple Oauth 2 sources available

- Azure
- Office 365
- Google
- LinkedIn
- Facebook
- MitID

Note than only the Office 365 source can be used to synchronize group membership.

Implementation

Setup will require 2 steps

1. Setting up the SSO source
2. Configuring your TS platform

In Designer > Modules > Configuration set up the following properties

- oauth___Allow: Set to true
- oauth___Tenant: From step 1 above
- oauth___Secret: From step 1 above
- oauth___Client: From step 1 above

LDAP integration

LDAP integration is not SSO per se, but rather using LDAP as an authentication source.

- Use LDAP to authenticate
- Import and link groups

Implementation

Learn about how to set up LDAP integration ([insert link](#))

TS as Oauth2 provider

In case you want other systems to use TS to authenticate users, the platform can be set up to respond to Oauth2 requests.

Implementation

Contact TS support team to get a link to the required Wordpress SSO plugin

Also

- oauthWPAllow: Set true
- oauthWPClient: Set to anything
- oauthWPSecret: Set to anything
- oauthWPHost: URL of the Wordpress server

Services

Services will allow **Administrators** to carry out certain maintenance functions.

- Control the cache
- Rebuild or test certain resources
- Acquire information about system services
- Manage emergency mode and messages

Static content pages

Option 1: Dashboard page

Dashboard pages are preferred as you can easily control access via groups

1. Add a new dashboard
2. Add a widget in the dashboard
 - Choose type HTML
 - Copy/paste HTML code into content
 - Set width to 12 (full width)

Option 2: Using a codeunit

Make a call to one of the static page codeunits

```
main?command=dk.p2e.blanket.codeunit.common.PageStaticContent
```

```
main?command=dk.p2e.blanket.codeunit.common.PageStaticContentNoMenu
```

Page content can be configured in: Modules > Static content

Statistics

The statistic analysis will allow you to carry out different statistical tests and illustrations

- Statistical test: Perform Chi2 or t-test on data (test type is autoselected)
- Analyse variable: Distribution diagrams and basic metrics (sum, count, min etc.)
- Regression analysis: Corellation between two continous variables
- Paretho chart: Sorted aggregated distribution in categories

CrossTabulate

This will allow you to display pivot tables of the data.

A pivot table will contain

- x-axis: First grouping / category
- y-axis: Second grouping / category
- Cell values
 - Count number of records
 - Sum for a selected variable
 - Minimum for a selected variable
 - Maximum for a selected variable

Note that you do not have specify both x and y-axis.

The pivot tables respects the active filters and search values.

Statistics

Flow Diagram

The diagram function displays the workflow associated with this solution.

Information provided

- Routing to state (either arrows or "meta")
- Usergroups with access in selected status
- Automated actions: Notifications, state changes etc.
- Expected and tolerable waiting time

Heatmap

Heatmaps will provide you with a color graph, based on values and categories in fields.

All filters and field selections apply for the output.

The threshold for each color is set in the fields, and are normally restricted to numeric types or categories.

Heatmap enabled fieldtypes include

- Integer and decimal values
- Enumeration and symbols
- Lookups with categories

RunCharts

Runcharts will display user activity in the solution.

By default the following diagrams will be displayed

- New items: Amount of records created per day
- Activity: Amount of records changed per day
- Completed: Amount of items reaching a status which has the "Completed" property

Note that the "Activity" diagram will change with every update (not built from historical data), and is therefore not a measure of work completed in a day ("record inactivity" is actually a more precise description).

Many other diagrams can be configured if needed - contact you local solution administrator.

Status History

This special report will display a timeseries analysis of:

How many records where in which states at a given point in time

The analysis is built on historical data that has been changed at a later point in time, so each point reflects the count by status on that particular day. Filtering options include status and timeframe (to/from date).

Status based workflow

Status

Each record in TS no-code has a status assigned.

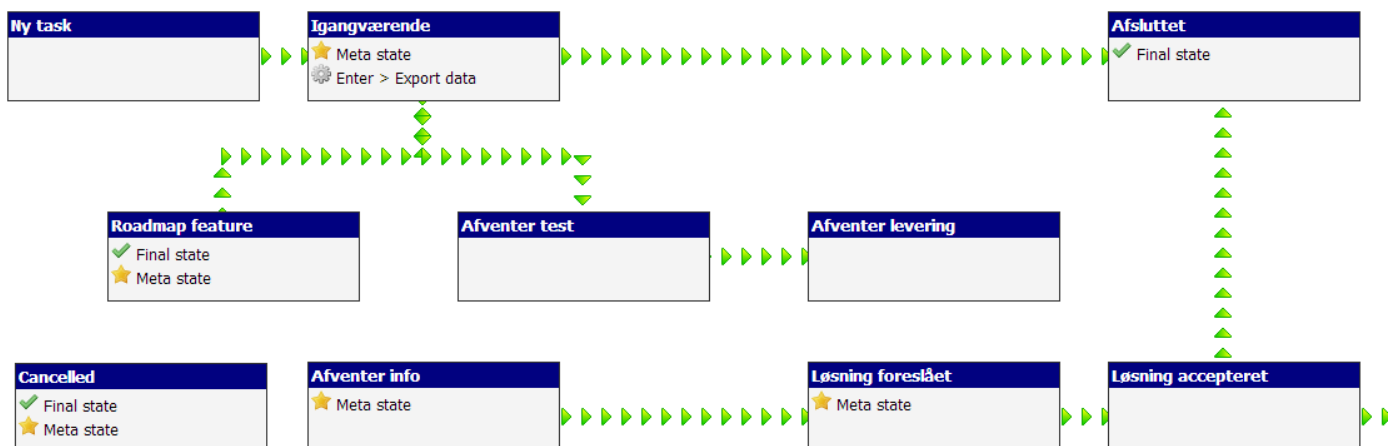
A status signifies the state of the record, in regard to maturity, responsibility and degree of completion etc., but also serves as an anchor for automated actions and permission for users.

A default status is always assigned. After that the status can change either manually, or as a result of automated action.

Sources for automated changes include

- External users via questionnaire interaction
- Timed **status actions**: Ex. Escalation
- Automated routing based on record values

The states available for a record are defined by which states are connected to the current state, either by status connectors or special properties ("meta state").



Status action

Status actions are addon functionality bound to a certain status.

When an item fulfills certain criterions, the action is fired resulting in

- Sending of an email ([Notification](#))
- Export and routing of documents ([Export](#))
- Creation of tasks ([Task create](#))

Conditions for triggers can be:

- When entered
- When leaving
- Set amount of time

Read more about it here: [Status actions](#)

Status trigger	
Title	Reminder
Action type	Timed ▼
	7 days relative to Last modified ▼
Notification	☐ Active
Task create	☐ Active
Codeunit	☐ Active
Export	☐ Active
Shift status	☐ Active
Last runtime	
Add Cancel	

Status dependencies

Status dependencies ensure that a certain status can be assigned, after certain criterions are met.

Example:

- Status "Priority handling" dependency: Customer type = "GOLD"

Status prerequisite		
Field	Operator	Expression
Kontaktet	=	Yes
		Add CANCEL

Status flow

Status flows represent legal pathways in the workflow.

In regard to the user interface, only valid options will be displayed in the records status selector. This check is also carried out by the data layer, so the same restrictions apply regardless of the data that was entered by regular users, file imports and the webservice interface.

If a given status can be used from most other states, we recommend using the Status:IsMeta attribute: Meta states can be entered from all other states.

Status routing

The routing feature provides options for changing a records status automatically.

To do routing you need the following

- A test case
 - A field reference
 - Compare operator (ex. "=")
 - Compare value (ex. "Hello world")
- Status set if the test is POSITIVE
- Status set if the test is NEGATIVE

The test is evaluated each time the record is saved, and status is only changed if a valid comparison can be made.

Status routing		
Field	Operator	Expression
Kontakt	=	Happy
Routing	Test positive	Interesseret
	Test negative	Afvist
		ADD CANCEL

Workflow engine

All entities in the system have workflow / lifecycle model attached to them. In addition all records will have a status field, indicating the records place in its workflow. Each step in a workflow is called a status, and influences how records behave in that step (status).

- What new status can be assigned from here
- What automated actions should be carried out (see below)
- What permissions do the users have in this step
- What fields should be shown or hidden
- What are the time constraints on this part of the process

Automated actions

Entering, leaving or staying in a certain status can trigger certain actions in the system.

Trigger summary

- Enter
- Leave
- Timed

Timed actions are defined as an amount of time, relative to some date fields.

“ Send an email 1 day before the date defined in the BIRTHDAY field

Execute code 7 days after this status was reached

Actions include

- Notifications
- Task creation
- Code execution (this can do anything)
- Change status
- Export data
- Delete data (GDPR compliance)

Learn more about [Status action configuration](#)

Performance measures (LEAN)

For each record in the system it is possible to measure the time spent in a status.

This can be compared to performance targets on

- The whole flow
- A single status

The targets consists of two values

- Goal
- Tolerance

“ After submitting a ticket, the service desk should optimally respond within 4 hours (goal). We can however accept if it takes 24 hours (tolerance).

We can now easily mark up records depending on their time usage

- Green: Better than goal
- Yellow: Better than tolerance, worse than goal
- Red: Worse than tolerance

This can be visualized on each record using Gauge fields, or in aggregated form via a list report.

Instructions

Setting up measures

- Entity > Advanced
 - Set checkmark in
 - Define goal and tolerance
- For each Entity > Status
 - Define goal and tolerance
 - If the status is the last part of a measured workflow check Final

Adding Gauges to an entity

- Visual extra: Visual: Target gauge Step

- Visual extra: Visual: Target gauge Total

Styling

Customized design

To customize the look and feel of your platform, you can exert detailed control of all design elements

- **Stylesheets** defining colors, graphics and fonts
- **Templates (rendering)** controlling how pages are rendered
- **Wrapper** controlling the header and footer on all pages
- **Language** where labels on buttons are set
- **Buttons** which controls the iconography

Note that default design is well tested 100% responsive, so take care not using too many !important or fixed width declarations.

Design quickstart

For a most basic functional customer design you can define 3 colors and a URL to a logo.

Instructions

1. Designer > Design > Stylesheet
2. Edit values in
 - themePrimary
 - themeSecondary
 - background
3. Reload page with CTRL + SHIFT + R

Stylesheets

Styling is written using CSS declarations. The different stylesheets can be used both generically, for a single entity or a single interface.

Th TS stylesheets are modular in the sense, that the can inherit content from each other. All stylesheets can refer a parent stylesheet: The parents stylesheets are simply prepended to child stylesheet.

The TS design is based on Bootstrap 4.1, whos declarations can be used and changed if needed.

Colors and most size definitions are set in CSS variables, which which use we strongly encourage.

Instructions

The following will create a new stylesheet and use it on the whole application

1. Module > Design > Stylesheet
2. Add a new stylesheet
 - Specify parent
 - Insert CSS declarations
 - Note the ID after update
3. Modules > Configuration
4. Set defaultStylesheet = ID

Context sensitive styling

In some cases your design needs to change according to usecase, user in question or choices made using the application.

By default the following CSS classes are added to the page depending on the situation

- Command requested: Ex. editCommand
- Language selected: Ex. daDK, enUK
- User template: Ex. IsAdministrator, IsAnonoumous

In addition it is possible to add a CSS class to a group, and then all users in that group will have that class added to their page.

Templates

The HTML templates contains tags, that helps the system render correctly. The template can contain both generic field markers, and specific ones tied to a single field. The rendering will first look for a specific tag, and if that is not present default to the generic ones. Templates can be shared between multiple entities, or be tied to a single one.

Note: When editing templates make sure that they are still WCAG compliant. Ordering of elements and ID markup is important for it to work.

Website wrappers

Wrapper allow TempusServa installations to wrap itself in content from other sites.

You provide an URL for page you want to look like, and the server will download and rewrite the contents in the page. The method is however not flawless, and some sites due to poor design or security restrictions cannot be mimicked at all. Normally the contents will get refreshed on fixed schedule, but in some instances it will be required to do some manual tweaking of the code afterwards.

Instructions

1. Add a new Wrapper
2. Insert URL of the page
3. Insert HTML tag where output should begin
 - Display the source of the page in another browser
 - Note at which tag the dynamic content starts
 - Optionally provide an end tag to
4. Optionally insert extra code before and after the content
5. Test the page
6. Change the defaultWrapperID in Designer > Modules > Configuration

Troubleshooting tips

- Check stylesheets for local references (TS will only collect the main page)
- Disable any <form> tags in the page

Multi device

By default all applications built on the platform will work equally well on PC's, phones and tablets.

Certain features on phones are automatically available when using these devices

- Clicking phone numbers will make a call
- Camera will open when adding pictures to a record

TS Gateway App

Frequent mobile users will sometime prefer to have a dedicated app, to have access via an icon and to utilize these phones authentication.

I that case we can register you application in the TS Gateway App, and the users will only have to authenticate themselves a single time. Note on the first login, they will also have to choose what application they are accessing.

In case you want an app with specific name and icon, we build dedicated apps (Apple + iPhone) to your company in 8-10 hours.

Working offline

Applications can be set up to work offline, using cached copies of the website. In the meantime new records can be created and pictures can be attached to the records. When Internet connection is available again, the collected data will be sent to the server.

Contact TS Support to lean more about this feature.

Tenant whitelabeling

The Tenant whitelabeling feature allows you to apply different branding and styling for each ExclusiveGroup in an application.

This is handled by inserting an additional stylesheet into the page, by including a special codeunit page inside ALL pages (displayed at the top).

Limitations:

- Users without an ExclusiveGroup assigned to their user profile will not experience the special styling
- It only works with one ExclusiveGroup per tenant (multiple ExclusiveGroups are not possible)

Configuration:

To apply Tenant whitelabeling to an instance go through the following steps

1. Change the configuration "doIncludeGlobalContent" to: true
2. Change the configuration "globalContentCodeunit" to:
dk.tempusserva.solution.whistleblow.ContentCustomerStylesheet
3. Create a stylesheet including the "Group " and the ExclusiveGroup ID - Example: GroupID 123