MyCumulus

Overview of features

MyCumulus bv

Version: 5.3.0
Date: August 2024

Introduction

1 Introduction

The short description, "MyCumulus is a cloud-based solution for mobile data collection" expresses the essence, but is too concise. MyCumulus is more than mobile data collection. This document provides a description of the components of MyCumulus, their functions and the possibilities they give to the user and the organization.

As will be apparent from this description, MyCumulus has many possibilities. Among other things, giving access rights to the various users in an organization, and creating complex forms requires a good knowledge of the principles. The daily user, namely the person who uses the MyCumulus app, is not confronted with this complexity. The design of MyCumulus is aimed at making use on the site as simple as possible and to prevent user errors.

Below an overview of the different components of MyCumulus. Later chapters deal with the details.

The components of MyCumulus are:
- Back-end
- Web application
- MyCumulus app
- Pythagoras macro

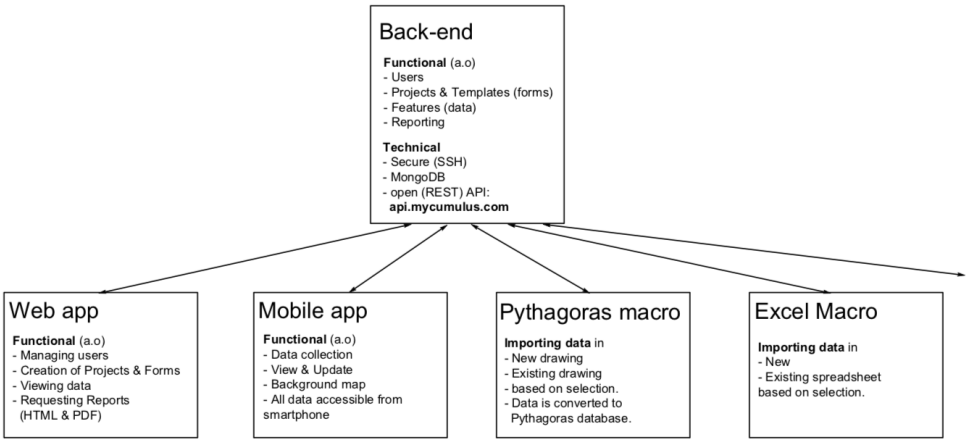
Chapter 2 gives an overview of the most important concepts of MyCumulus:
- Projects
- Forms
- Administrators - Users

In the detailed description of the MyCumulus back-end and the MyCumulus clients, the use of these concepts becomes clear.

1.1 Back-end

The back-end is a server on which all data of the MyCumulus users are stored. All transactions are done via the back-end. The other components use the back-end for retrieving and storing data, creating reports, etc.
The functions of the back-end are described in Back-end 20

Schematically presented:



1.2 MyCumulus web-app

The login button on the website www.mycumulus.com gives access to the web application. The main goals of the web application are:

- Create and manage projects and forms
- View and edit data
- Creating reports and exporting data
- Manage other users in the organization and access rights.

1.3 MyCumulus app

The MyCumulus app provides access to projects and forms. The ultimate goal is primarily to introduce new data and update existing data.
To read the forms and the data therein, access to the internet is required. Once this data is available, it is also possible to work offline. The new data, and changes to existing data, can then uploaded as soon as connection to the internet is restored.

1.4 Pythagoras Macro

The pythagoras macro has different functions. The ultimate goal is to convert data from MyCumulus to a Pythagoras drawing and upload Pythagoras points, lines and polygons to MyCumulus.

1.5 Other MyCumulus clients

An Excel macro can read data from MyCumulus into an Excel spreadsheet.
Other clients can be developed to exchange data between MyCumulus and other applications or databases.

Projects and forms

2 Projects and forms

A form defines the structure of the data. As in a classic database table, the names and properties of the fields determine the table.
However, there are important differences with a traditional database table. But more on that.

Once a form has been created, data can be stored there.

Projects contain forms. This hierarchical structure has several advantages:
- A project can be duplicated. In the duplicated project, duplicates of the forms are made, but without the data.
- Grouping multiple forms that belong together. For example, forms of polylines, forms of points, forms of general data about a project.

2.1 Administrators - Users

An administrator is associated with a MyCumulus account.
The Sign Up function in the web app asks:
- user name
- e-mail address
- password

This will be the login details of the administrator. The administrator can add users, and optionally delete them. The number of users that can be added depends on the license agreement. A 5-user agreement allows the administrator to add a maximum of 5 users.

Deleting the account deletes all data from the administrator and users created under the same account.

The administrator can perform all operations that an ordinary user can also perform. But the role of the administrator in larger organizations is primarily to manage users and their rights. Creating projects and forms is often also the task of the administrator. Creating a user for a single user account makes little sense. In this situation, only an administrator is needed.

May Create Projects

A user who has this right can create projects and give other users with the same account access rights to his projects and forms, with the exception that these users can also create projects. That remains a privilege of the administrator.

Members of a project

The owner of a project manages the members of the project. Only users who belong to the same account can become a member.
Access to a project does not automatically mean read, write, update and delete rights to every form. These rights are assigned to one or more users via the web application per form or for all forms of a project. For example, a user can only have read and update rights. This user cannot add new data or delete data. Only adjust existing data.

Archiving a project

A project can be archived or deleted. An archived project is no longer visible to project members, nor is it visible in the MyCumulus app and in the MyCumulus Pythagoras macro. All data of an archived project is saved. When deleting a project, the forms and data belonging to the project are also deleted.
Not only projects, but also Project Templates and Domains can be archived.

Summary

MyCumulus allows:
- manage users
- multiple users working on the same project
- grant access rights (write, read, update, delete) to users
- creation and use of Project Templates and Domains in order to facilitate the creation of new projects and forms

Large organizations with departments that never have access to each other's projects can benefit from creating different accounts. Each account has its own administrator and users.

2.2 Projects

With the MyCumulus web application a project is created or an existing project is duplicated.

The project data:
- Name
- Description
- Icon

The MyCumulus app, after logging in, will display the list of projects (name and description) that the user has access to. As stated under Administrators-Users 10, the owner of the project can manage the members and their rights.

Deleting a project will delete all forms and their data. This operation cannot be undone.

2.3 Project Templates

A Project Template contains forms like a normal project. The difference with a "normal" project is that a template project cannot be used for data collection. It serves, as the name implies, as a template for creating new projects.

When creating a new project, a project template can be selected. The forms are then automatically copied from the template project.

MyCumulus provides "public" Project Templates. These are available to any user.

2.4 Domains

A domain is a collection of forms within a specific domain. For example, you can create a domain *Sewage* that contains a series of forms related to sewage.
A new form can be blank, or a form chosen from a domain. In the latter case, the form is copied to the user's project, after which it can be modified if necessary.

MyCumulus provides "public" Domains. The forms in these public domains are available to any user.

2.5 Forms

A form contains one or more fields, similar to a table. In a table, data data is added similar to records in a table.
There are, however, a number of fundamental differences.

- In MyCumulus a form can have a geometry: point, polyline or polygon, or just no geometry.
  The MyCumulus database, MongoDB, allows geospatial queries. The MyCumulus app uses this, among other things, to download data within a certain distance from the given location.
- The order of the fields and their descriptions can be adjusted in the course of use. Fields can be added and an unnecessary field removed.
  Even though data has already been saved according to the old schedule, reports and downloads will conform to the current schedule.
- Collection of fields, dynamic arrays of collections, ... in short, random structures.
- Type of fields: in addition to the usual types such as text and number, a field can also contain the type *QR code, photo, video, audio, coordinates*.

2.5.1 Form Name and Styles...

A form has a
- Name
- Description
- Icon

Optionally a form can be linked to a predefined style. The style contains a number of rules defining the attributes on how a geometry object will be represented.
A style contains a.o.:
- Layer
- Symbol
- Color
- Line style

2.5.2 Geometry

The geometry of a form:
- No
- Point
- Polyline
- Polygon

The geometry is chosen when creating a form. Next, the fields are added.
In the MyCumulus app, the first field of a form will always be the geometry.

The geometry is stored in geodetic coordinates: latitude, longitude, elipsoidal height.
If the data has been obtained with the MyCumulus app, these are the coordinates of the internal or linked GNSS receiver. The antenna height will then be charged for the height. Depending on the receiver used and possible corrections (RTK, PPP, SBAS), the geodetic coordinates are WGS, ETRS-89, ...

2.5.3 Fields : common properties

A field has a:
- name
- label
- description

The name is given to the name of the field in the file. To avoid problems when exchanging with other databases, the name may only contain alphanumeric characters.
The name is not shown in the MyCumulus app, but the label is displayed. Often the name and label will be the same.

The description is a help in the MyCumulus app. It can give an instruction or description of the meaning of the field.

Use Previous Value

The field contents are deleted in the MyCumulus app after saving the data. If "Use Previous Value" is set, the previous value will be retained.

Required field

The MyCumulus app will refuse to save the data if the field is empty.

Enabled field

A field that that is not *Enabled* cannot be edited in the MyCumulus app. This is useful for fields that are filled in automatically. For example the time when measuring a position. Also for applications where only updates of records are allowed.

Default Value

If a field is empty when opening a form, the default value is entered. *Use Previous Value* takes precedence over default value.
The default value can be an expression.

Text field

User name : the name of the user.
User email : emailadres of the user

Date field
Today : the date when opening a form for data collection

Time field
Now : the time when opening a form for data collection

2.5.4 Types of Fields

MyCumulus has the following types of fields

Auto Increment

An *Auto Increment* field is a number that increases with each subsequent record that is saved. Used, amongst other, as a point number in surveying applications, or a simple sequential number that later helps to see the order of the input of the records.

If multiple users use the same form, no checks will be made on the same point numbers. If unique sequence numbers are desired, the initial value can be different for each user. e.g. 1000, 2000, ...

Whole Number (Long)

The field may only contain an integer value
The MyCumulus app will display a numeric keyboard (without dot) when entering/editing the field. So only whole numbers can be entered

Real value (Double)

The field can only contain a real or whole number.
The MyCumulus app will display a numeric keyboard (with dot) when entering / editing the field.

Text

Any text, including emoticons and other symbols.

Boolean

A True or False value. The MyCumulus app shows an on / off button.

Barcode / QR-code

A field of this type is a text field.
In the MyCumulus app, when the field is clicked, the camera app will be opened and the barcode or QR code will be scanned and the result will be placed in the text field. This value cannot be adjusted manually.

Photo / video / audio

These fields have in common that the number of files is not limited to one. Multiple photos, videos or audio's can be stored in the same field.
File formats:

- Photo: jpg, png
- Video: 3pg
- Audio: mp3

Photo field: size and quality. The size, the number of pixels, and the quality, the degree of compression, determine the size of the file. This size affects the time of uploading / downloading photos. The default values are: "Medium". The quality of the photo is then good and the size will vary between 100k and 200k.

Date

The date / time in accordance with the ISO standard in which the time = 00:00:00.

Time

Time as: HH:MM:SS

FieldSet

A collection of fields is a series of fields that are grouped. For example an address.
Like any other field, it has a:

- name
- label
- description

but it does not contain any data if you ignore the fields in the collection.

In the MyCumulus app, the fields appear either on a new screen or on the same screen depending on the setting "Fields on same screen as Parent".

A fieldset can contain other fieldsets. The depth of the nesting is unlimited.

Field Set Array

In a Field Set Array, one group of fields does not necessarily exist, but the group can be repeated several times. An example: if you have to enter contacts in a form, each with name, telephone and e-mail, a series is required. The series makes it possible to enter no, one or more contacts with their data for each. In the field of sewers, a Field Set Array will be designated for a house connection, in which a number of elements occur such as pipes, bends, T-pieces, each with their characteristics.

Coordinate Field

A coordinate field field is a GNSS location that is automatically entered in the MyCumulus app when clicking on the control. A coordinate field makes the field not a point geometry.
For example, a coordinate field might occur as a field in a Field Set Array. Each element in the collection can have its own position.

Note Field

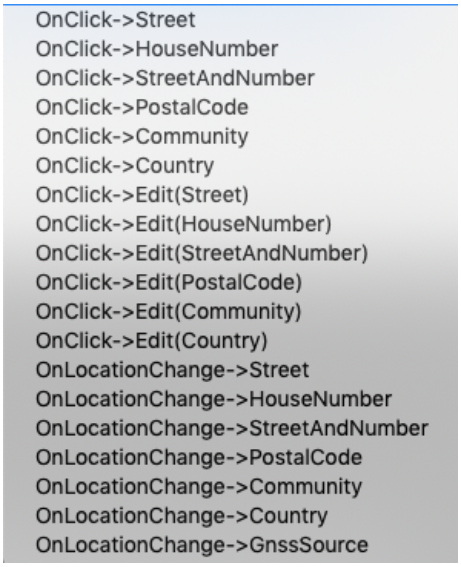
A note field contains information that cannot be modified.

2.5.5 Event Actions

In the MyCumulus app a certain operation, for example clicking on the field of a point geometry, - the event -, can have an effect on one or more other fields - action -.
For example, when the GNSS position is obtained, the street name, house number, municipality, ... can be entered automatically in other fields.

The possible combinations of Event Actions depend on the type of field.

"Text" field



The events:
- OnClick : click on the field
- OnLocationChange : upon obtaining the GNSS position of a point geometry, or the first point of a polyline and polygon geometry.

The actions:
- Street
- HouseNumber
- StreetAndNumber
- PostalCode
- Community
- Country
- GnssSource

The meaning of the elements of an address are obvious. If for a text field the *Event Action = OnLocationChange-> StreetAndNumber*, then the street and house number will be entered in the text field when the Gnss coordinate is obtained. The field remains editable manually unless it is not editable. Enabled = False.

For the "*Edit (<name>)*" type actions, an edit dialog is opened and the value appears in the edit dialog.

The GnssSource is the name of the Gnss receiver if available. For the internal Gnss of an Android device, this is "Internal GNSS". Upon obtaining the position via the mock-up location: "External GNSS". For Marxact, the name assigned to the Gnss device.

"Whole Value" field

```
OnClick->Input(Thermometer-ETI)
OnLocationChange->PoleHeight
OnLocationChange->ApcOffset
OnLocationChange->AntennaHeight
OnLocationChange->GnssAccuracy
OnLocationChange->Area
OnLocationChange->Length
```

The actions:

- Input(Thermometer-ETI) : if an ETI Bluetooth LE thermometer is connected, the temperature will be read via the bluetooth connection. This value is never editable.
- PoleHeight : the pole height as entered in the settings in the MyCumulus app.
- ApcOffset : the APC as entered in settings in the MyCumulus app.
  Both the PoleHeight and the ApcOffset are taken into account for the calculation of the height of the measured point.
- AntennaHeight : Pole height + APC
- GnssAccuracy : the accuracy as obtained from the Gnss receiver.
- Area : for a polygon geometry the area of the polygon
- Length : for a polyline geometry the length of a polyline

"Time" veld

```
OnClick->Now
OnClick->Chronometer
OnLocationChange->Now
OnLocationChange->GnssAge
```

The actions:

- *Now :* the actual time
- *Chronometer :* start/stop a chronometer. The elapsed time is displayed in the field. The chronometer can continue while other fields are filled in.
- *GnssAge :* the age of the Gnss-postions if available. The age is relative to the actual time.

Back-end

3 Back-end

The MyCumulus back-end is a highly secure server that processes the requests of the clients, including the web app, and the Android app.
All user data are secured via a username, e-mail address and password. Multiple users in an organization only have access to data from other users insofar as explicit access has been given for this. MyCumulus clients, so other programs that communicate with the back-end via the MyCumulus API, cannot bypass this protection.

3.1 MyCumulus API

The MyCumulus API is a REST API that allows programmers to write programs on various platforms that support the HTTP protocol.
The MyCumulus web application, the MyCumulus app and the Pythagoras-MyCumulus macro use the same API. These programs give an idea of the possibilities and flexibility of the API.

We will not go into the technical aspects here. We would like to point out that everyone is free to write programs for every platform that uses the MyCumulus back-end via the API. It is obvious that the access is secure. The login details of a registered user are required.

3.2 Private Server

The MyCumulus clients allow you to set the URL for a private server.
A license for a private server is required.

MyCumulus webapplication

4 MyCumulus webapplication

The main goals of the web application are:
- Create and manage projects and forms
- View and edit data
- Creating reports and exporting data
- Manage other users and access rights.

The web application runs on all browsers. However, Chrome is faster than the other browsers for the MyCumulus app.

4.1 General Settings

The *Account* settings:

Functions

- Reset of password
- Changing of e-mail
- Manage users: only the *Administrator* can manage users
- Gnss-source: currently only applicable for users of a Marxact account. Only accessible by an *administrator*.

Settings

Selection of the Coordinate Reference System:
- Geodetic
- Lambert 72 - TAW
- Lambert 2008
- RD - NAP
- UTM

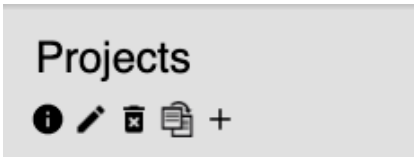
The choice only has consequences for the conversion of geodetic coordinates to planar coordinates and height in the web application.

The MyCumulus database stores a position as geodetic coordinates.

4.2 Creating and Managing Projects

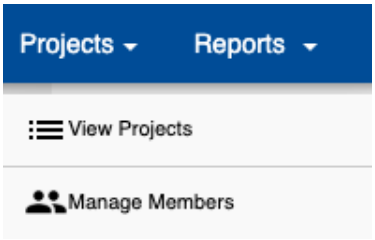
The purpose of projects and forms is described in Chapter 2.
Here we describe how projects are created, adapted and managed.

Operations on and in connection with projects

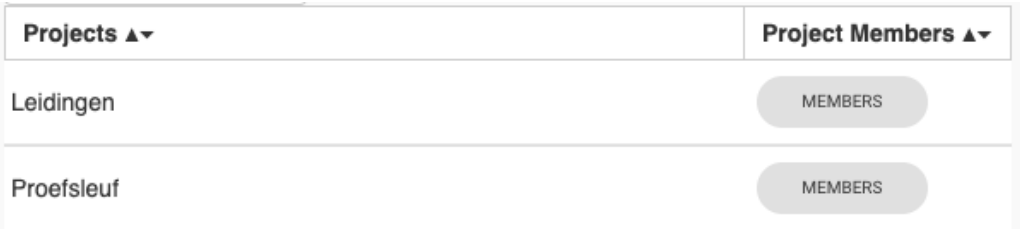


1. Open
2. Update : name, description, icon.
3. Delete : deletes the project. All forms in the project and the data in these forms are deleted.
4. Duplicate : the project and all forms in the project are duplicated. The data in the forms is not duplicated.
5. New project

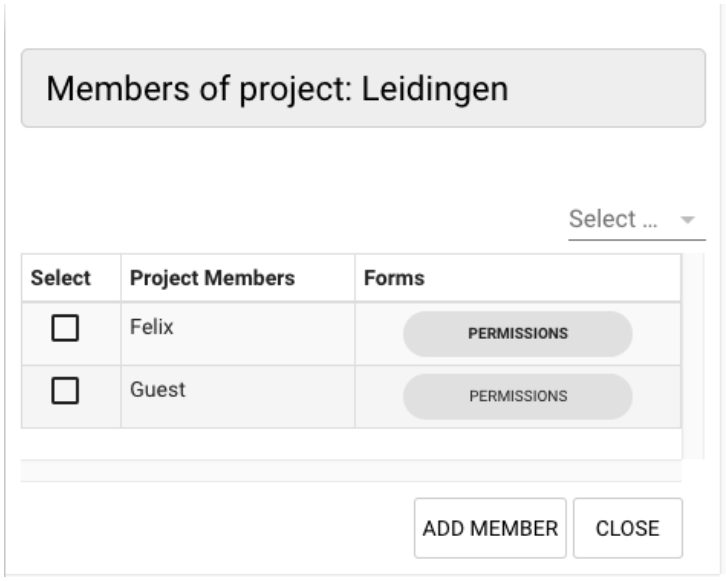
Managing members of a project.



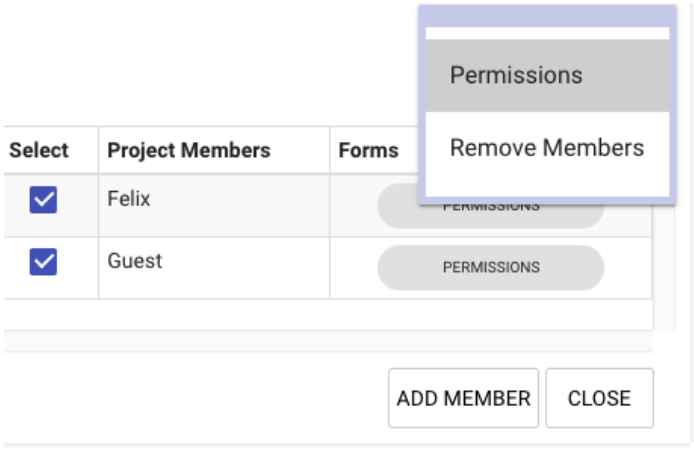
Manage Members gives a list of all projects owned by the user or administrator.



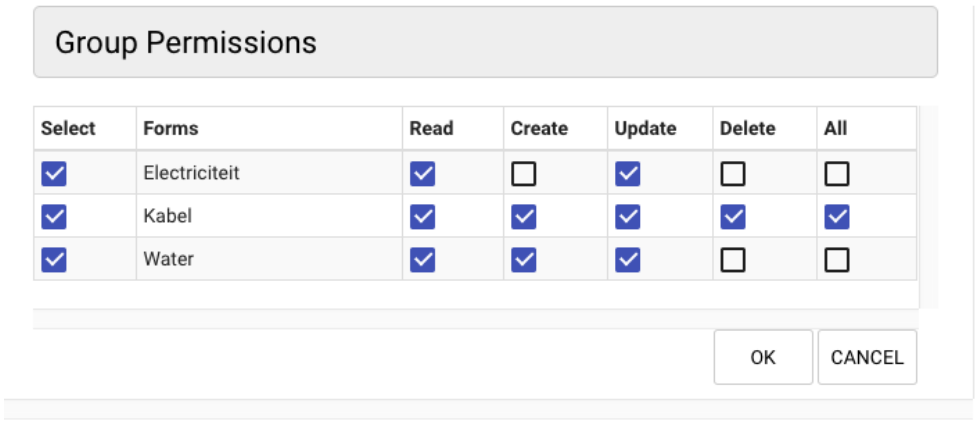
The button *Members*, allows to manage the member of the project and the access rights.



By selecting multiple users, a number of users can be given the same rights.

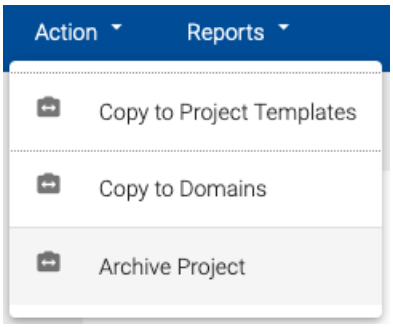


The rights are granted on all forms.



Forms without Read permission will not be visible in the MyCumulus app and in the web application.

Archiving a Project

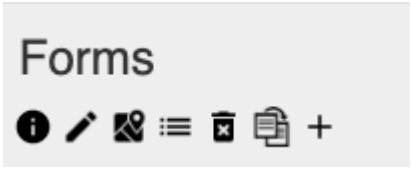


The menu *Archive Project* permet d'archiver un projet.

4.3 Creating and Managing Forms

The purpose and characteristics of forms are described in Chapter 2.
Here we describe how forms are created, adjusted and managed and, most importantly, how fields in forms are added and edited.

Operations on or in connection with forms:

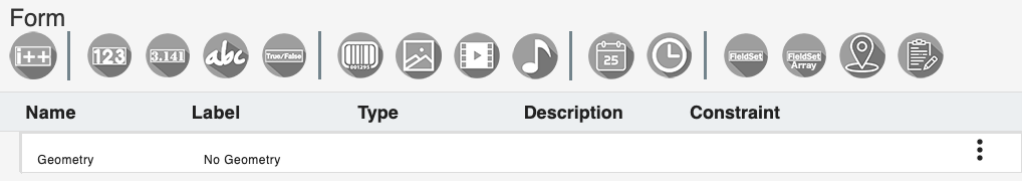


The meaning of the icons from left to right:

1. Open
2. Update: change name, description and icon
3. Show data on card: only applicable to geometries
4. Show list of records
5. Delete: deletes the form. All data (records) in the form are deleted.
6. Duplicate: the form is duplicated. The data in the form is not duplicated.
7. New form

4.3.1 Creating a new form

Use the + icon to create a new form.
The choice of the geometry - none, point, polyline, or polygon - in this phase is important. The name and description can always be changed later. Changing geometry can only be changed as long as no data has been collected.



Then use the icons to add fields:

Meaning of the icons from left to right:
- Serial number

- Round number
- Real number
- Text
- Boolean

- Barcode / QR code
- Photo
- Video
- Audio

- Date
- Time

- Collection of fields (FieldSet)
- Series of collection fields (Field Set Array)
- Coordinate field
- Note field

More information about fields, when they are best used, and their possibilities are described in Types of fields 14, and Fields : common properties 13.

The information that must be entered depends on the type of field. Here the data for a Real Number field.

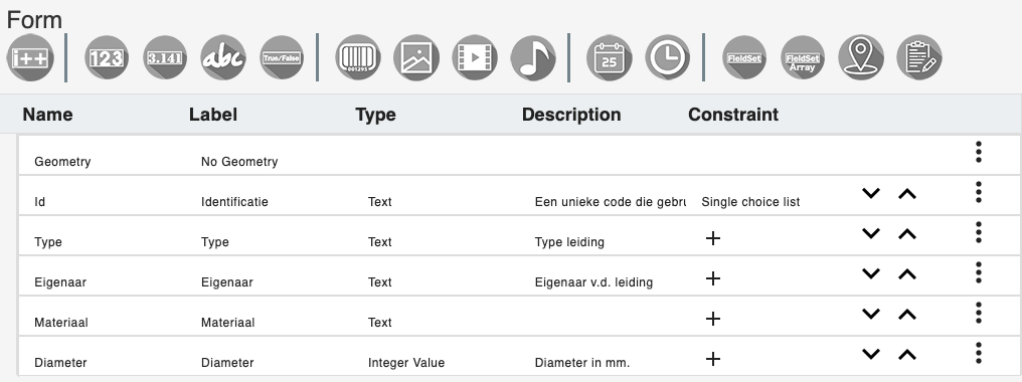
The list contains all possible values separated by a ';' (semicolon). If the list ends with a '*', a value not present in the list can be entered in the MyCumulus app. A list in the format <Name1>-><Value1>; <Name2>-><Value2>... will display a list in the MyCumulus app containing <Name1>, <Name2>, etc. Upon selection, the value will be converted to the corresponding value in the field.

Each field **must** have a name and label. The other fields are optional.

The name is given to the name of the field in the file. To avoid problems when exchanging with other databases, the name may only contain alphanumeric characters.
The name is not shown in the MyCumulus app, but the label is displayed. Often the name and label will be the same.

During the creation, but also later, the characteristics of a field, the order, etc. can be changed. Fields can be added and deleted. If the name of a field changes, the fields with the old name will **not** be changed in the records. These records remain in the database under the old name.

Example of a form



With the buttons ⌄ and ⌃ you can change the sequence of the fields.

Choice and Multiple Choice

With the + button you can link a selection list or multiple choice list to the field.

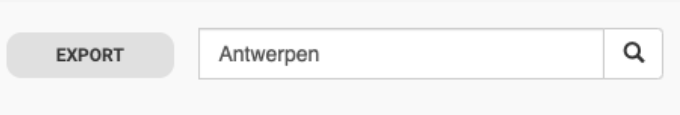
The list contains all possible values separated by a ';' (semicolon). If the list ends with a '*', a value that is not in the list can be entered in the MyCumulus app.

A list in the form of <Name1>-><Value1>; <Name2>-><Value2> ... will display a list in the MyCumulus app that contains <Name1>, <Name2>, ... When, in the mobile app, a choice is made, the value is converted to the corresponding value in the field.

In the MyCumulus app the value is entered by selection in the list.

4.3.2 Show list

The list shows the first 100 records. The "simple search function":

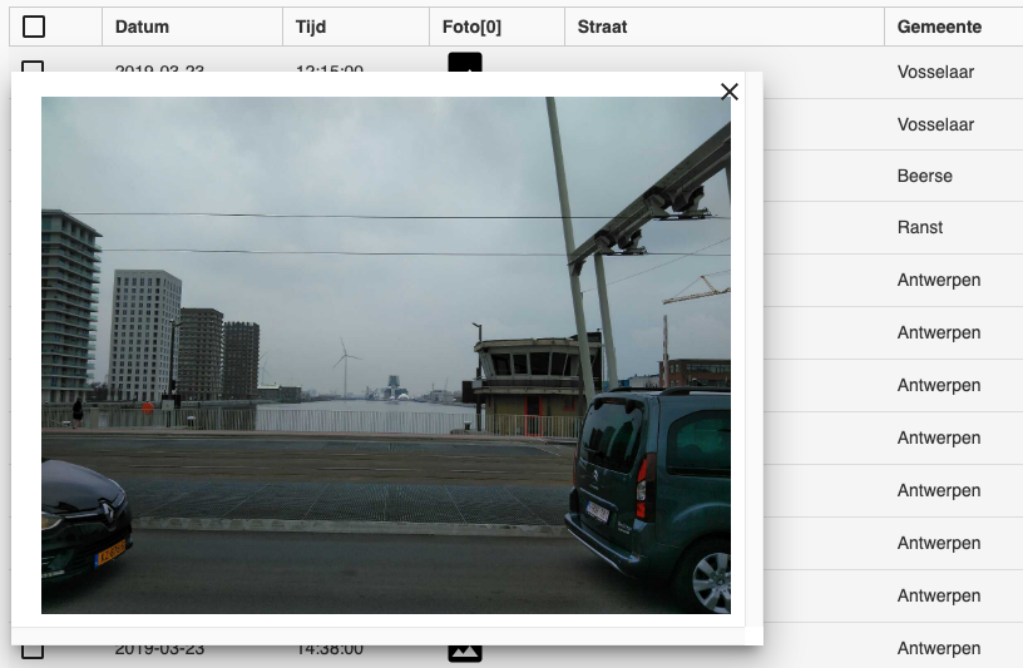


will only show those records where the text "Antwerpen" appears in one of the fields.
More complex queries are possible via the export menu.

The list contains the values of the fields.

	Geometry Type	Datum	Tijd	Foto[0]	Straat	Gemeente	Opmerking
☐	Point	2019-03-23	18:12:00			Beerse	
☐	Point	2019-03-23	15:32:00		Londenbrug	Antwerpen	
☐	Point	2019-03-23	15:01:00			Antwerpen	
☐	Point	2019-03-23	15:00:00			Antwerpen	

Coordinates and photos are displayed when clicking on the relevant field or icon



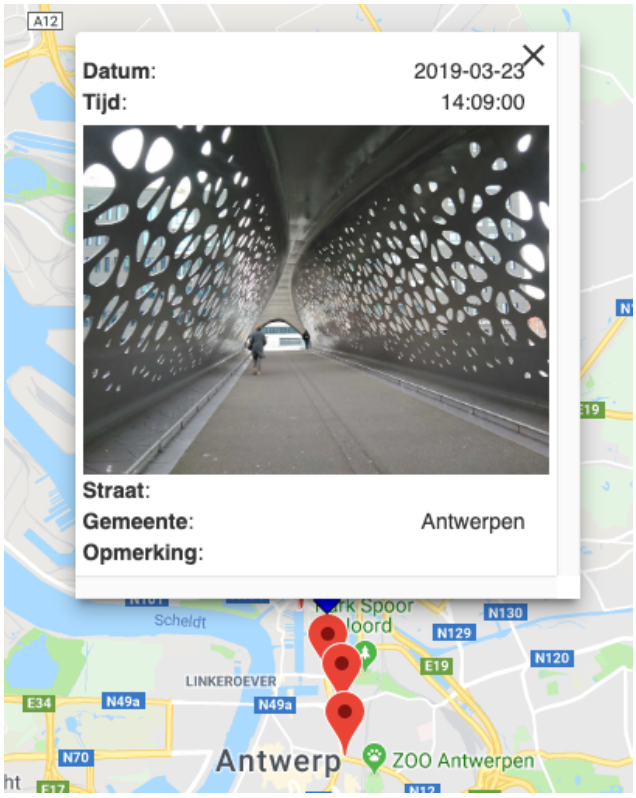
Records and reports can be created from the Show list screen.

More about this in Reports - Export 31.

4.3.3 Show data on a map

All points, poly lines or polygons that are visible in the list are shown on a background map.

All points, poly lines or polygons that are visible in the list are shown on a background map.



4.4 Searching, Copy and Paste of records

In MyCumulus, you can easily copy and paste records between projects. To assist in locating the records you want to copy, utilize the search function. This allows you to search within the active form as well as across all projects and forms.

4.4.1 Search

The Search field in a form allows you to search for one or multiple values within text fields.
For instance, to retrieve all records containing either 'HWA' or 'DWA', simply type 'HWA DWA' (separating both values with a space).
Consequently, all records with either 'HWA' or 'DWA' in any of their fields will be displayed.

The Global Search function, located in the search field at the top, searches across all projects and forms. Only the projects, forms, and records containing the specified text value(s) will be displayed.

4.4.2 Copy - Paste - Duplicate

In MyCumulus, records can be seamlessly transferred between forms, even if those forms belong to different projects. To do this:

1. Select the records you wish to copy.
2. Navigate to the 'Edit' menu and choose 'Copy'.
3. Proceed to the desired project/form where you want to transfer the records.
4. Under the 'Edit' menu, select 'Paste'.

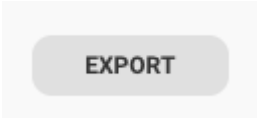
However, keep in mind that this copy-paste functionality requires the source and destination forms to have matching structures.

For duplicating records within the same form, you can utilize the 'duplicate' function.

Be aware that the current version of MyCumulus does not preserve photos or other media data in copied records.

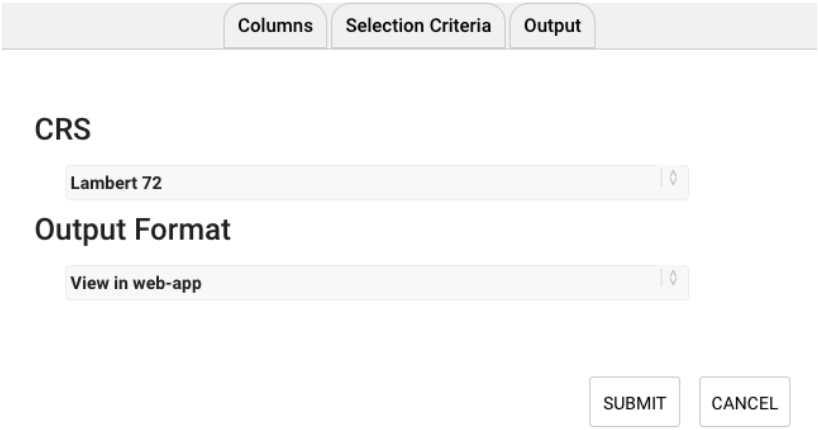
4.5 Reports - Export

The button



allows you to export a subset of the data in a form or to create a report.

In the dialog box:



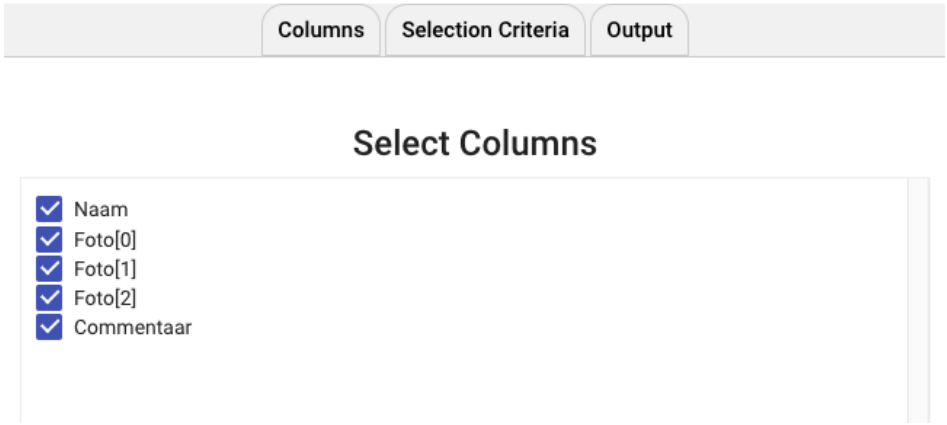
you choose:

- the fields (Columns)

- the rows and the order (Selection Criteria)
- CRS and export format

4.5.1 Fields

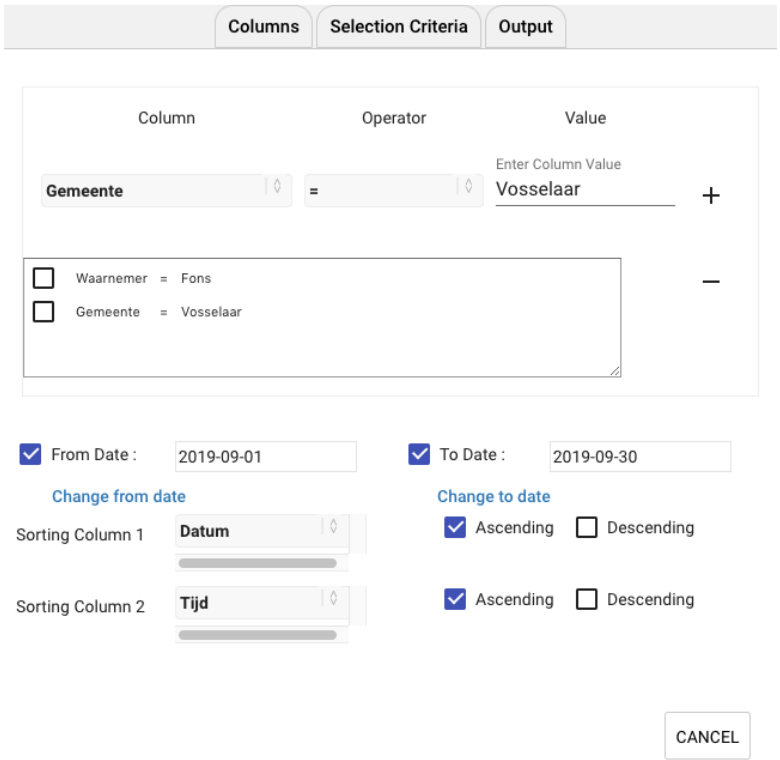
In *Columns* you select the fields that are exported or appear in the report.



In this example, all fields of the form are exported.

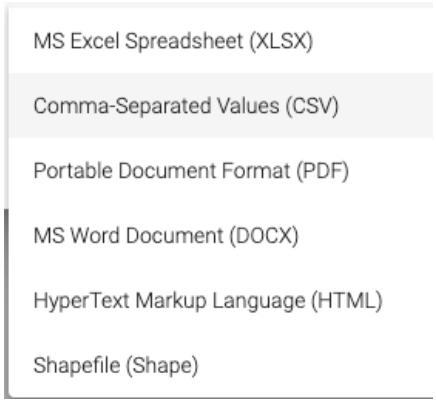
4.5.2 Selection Criteria

In the following example:



only the records with the fields "Waarnemer" = "Fons" and "Gemeente" = "Vosselaar", and the record created in December 2019, are exported / included in a report.
The records are selected in ascending order from the "Date" and "Time" fields.

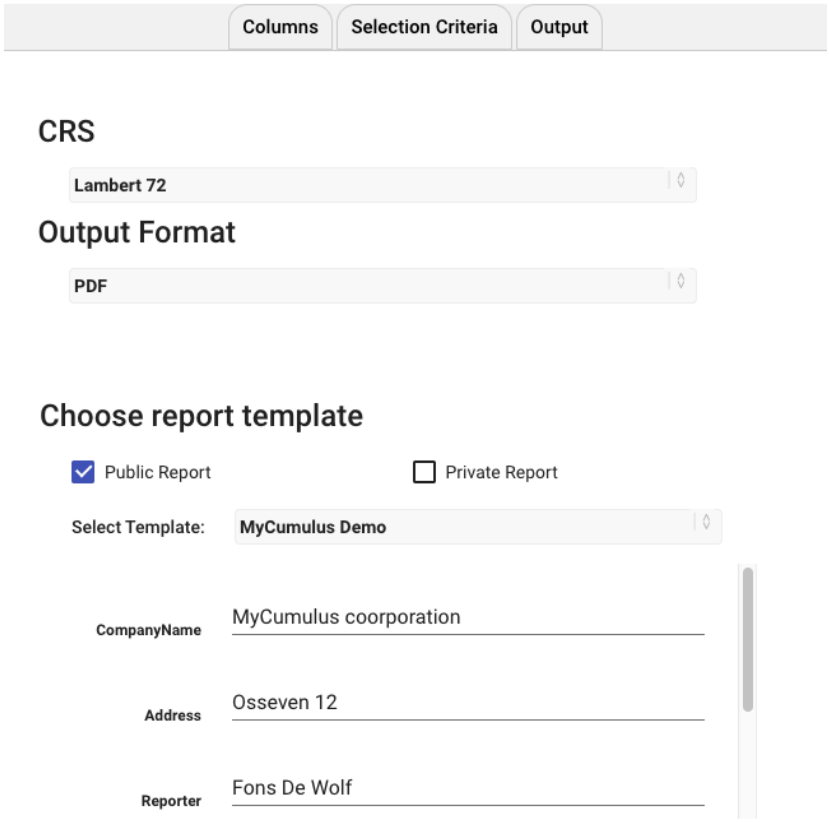
4.5.3 Format of Report



- View in web app: data is not exported. The web app will display the subset as determined by choice fields and selection criteria.
- MS Excel : a report in MS Excel format.
- MS Word : a report in in MS Word format.
- HTML: a report in HTML format
- PDF: a report in PDF format
- Shape: export as Shape files
- CSV: export in text format where each field is separated by a comma
- GeoJSON: export in GeoJSON format.

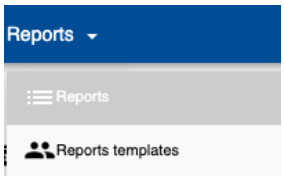
Creation of a report

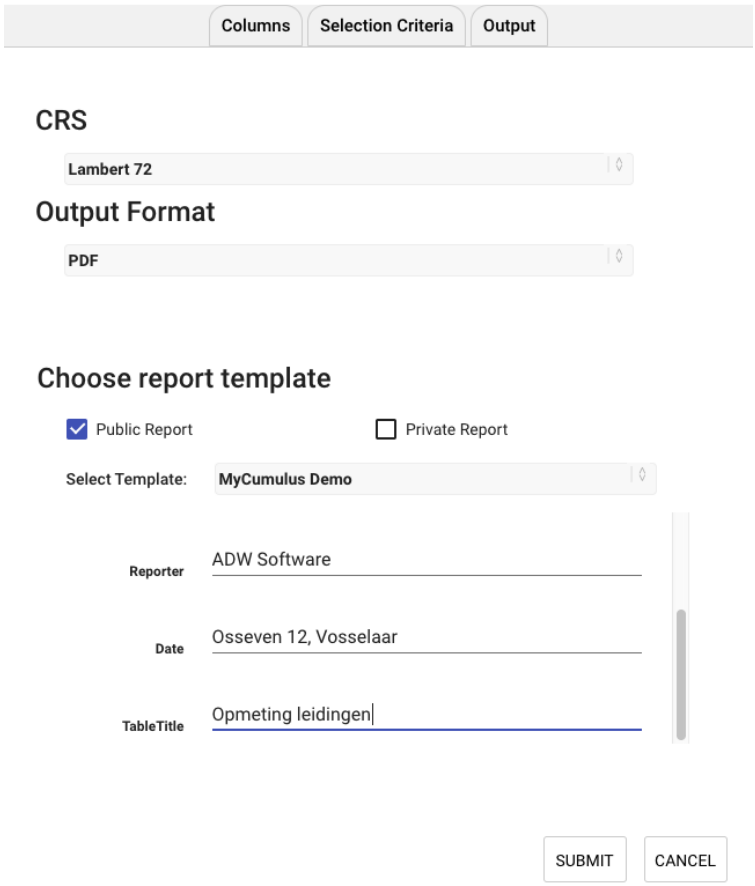
For a report, ie with a choice of HTML or PDF, a report template must be chosen, public or private, and the variables (placeholders) of the report must be entered.



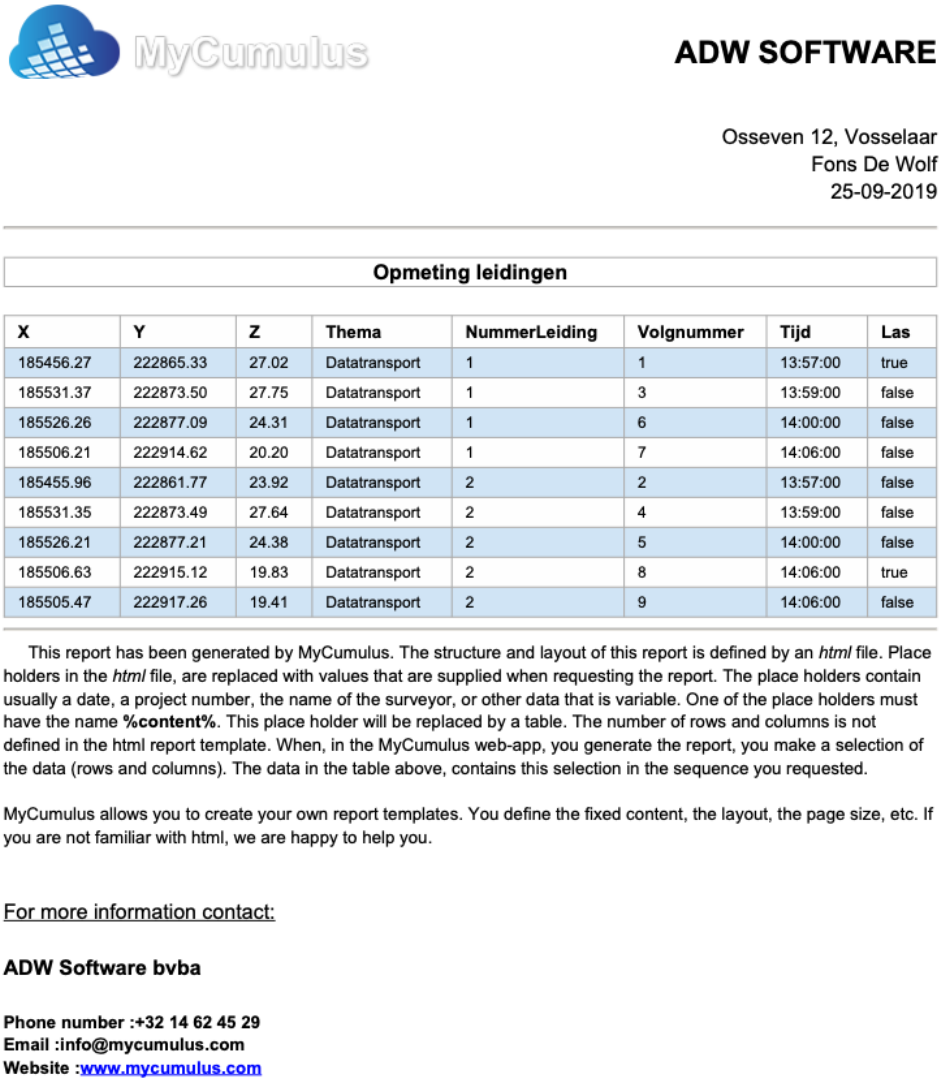
The report is created on the server. The report will then be available on the server and can be downloaded.

Download of a report





Result



MyCumulus

ADW SOFTWARE

Osseven 12, Vosselaar
Fons De Wolf
25-09-2019

Opmeting leidingen

X	Y	Z	Thema	NummerLeiding	Volgnummer	Tijd	Las
185456.27	222865.33	27.02	Datatransport	1	1	13:57:00	true
185531.37	222873.50	27.75	Datatransport	1	3	13:59:00	false
185526.26	222877.09	24.31	Datatransport	1	6	14:00:00	false
185506.21	222914.62	20.20	Datatransport	1	7	14:06:00	false
185455.96	222861.77	23.92	Datatransport	2	2	13:57:00	false
185531.35	222873.49	27.64	Datatransport	2	4	13:59:00	false
185526.21	222877.21	24.38	Datatransport	2	5	14:00:00	false
185506.63	222915.12	19.83	Datatransport	2	8	14:06:00	true
185505.47	222917.26	19.41	Datatransport	2	9	14:06:00	false

This report has been generated by MyCumulus. The structure and layout of this report is defined by an *html* file. Place holders in the *html* file, are replaced with values that are supplied when requesting the report. The place holders contain usually a date, a project number, the name of the surveyor, or other data that is variable. One of the place holders must have the name **%content%**. This place holder will be replaced by a table. The number of rows and columns is not defined in the html report template. When, in the MyCumulus web-app, you generate the report, you make a selection of the data (rows and columns). The data in the table above, contains this selection in the sequence you requested.

MyCumulus allows you to create your own report templates. You define the fixed content, the layout, the page size, etc. If you are not familiar with html, we are happy to help you.

For more information contact:

ADW Software bvba

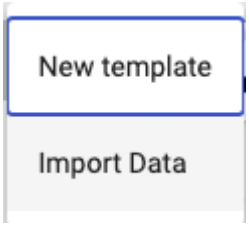
Phone number :+32 14 62 45 29
Email :info@mycumulus.com
Website :www.mycumulus.com

Private report templates

MyCumulus allows you to create your own templates with personalized header (logo, ...) additional text, variables (place holders).
The intervention of ADW Software is necessary for testing and uploading the templates.

4.6 Import

The button *Import Data*

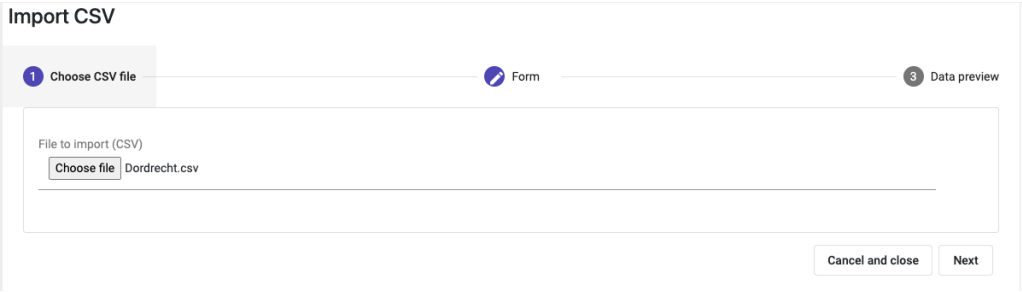


allows to import a CSV file into MyCumulus.
The data is either added to an existing form or a new form is automatically created depending on the choice you make.

4.6.1 CSV-file

Calling the Import Data function gives a dialog where you control the import in three steps.

Step 1: choose the CSV-file



The selected file is analyzed for validity.

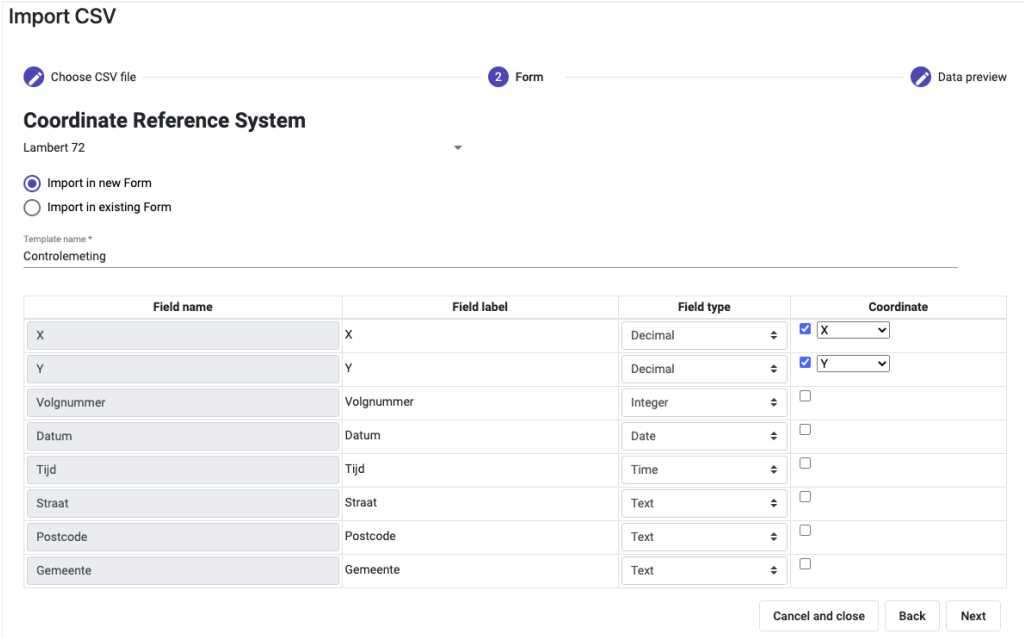
The CSV file is a text file in which the fields are separated by a "," or a ";".

```
X,Y,Z,Volgnummer,Datum,Tijd,Straat,Postcode,Gemeente
218186.764, 266206.061, 1, 2019-02-15, 10:30:00, "Graafsebaan, 3", 5242JM,
"Rosmalen, 's-Hertogenbosch"
185454.058, 222885.329, 2, 2019-04-29, 19:33:00, Osseven 12, 2350, Vosselaar
187225.022, 215916.394, 3, 2019-04-30, 10:10:00, Spoorwegstraat, 2460,
Kasterlee
185453.894, 222895.633, 4, 2019-07-06, 09:58:00, Osseven 12, 2350, Vosselaar
```

Rules

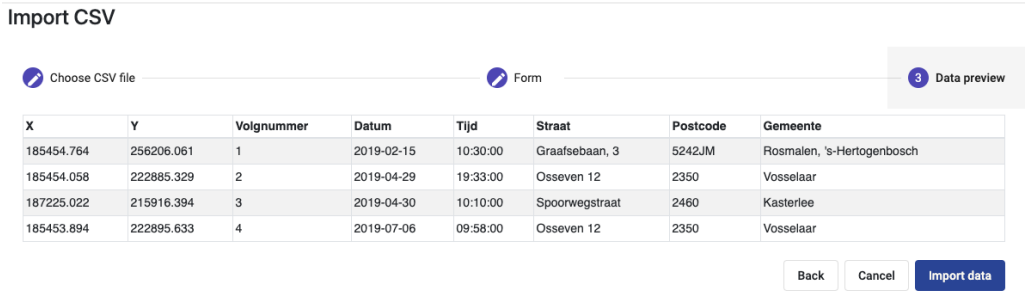
1. The first line contains the names of the fields as they will be used in the MyCumulus form.
2. Coordinates are in Latitude, Longitude, (Z) or X, Y, (Z). If X Y Z the coordinates are Lambert 72, RDNAP, UTM or BGS2005

Step 2: indicate type of data, etc.



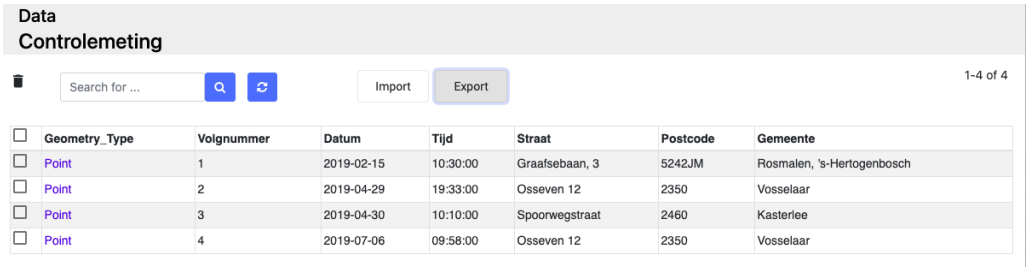
If in the previous step the file is a valid CSV file then:
1. the fields for the X, Y and optionally Z are indicated.
2. The CRS of the data is selected,
3. Indicate: import into a new or existing form
4. Select of the type of the fields if no text: Date, Time, Decimal, ..

Step 3: Preview and Import

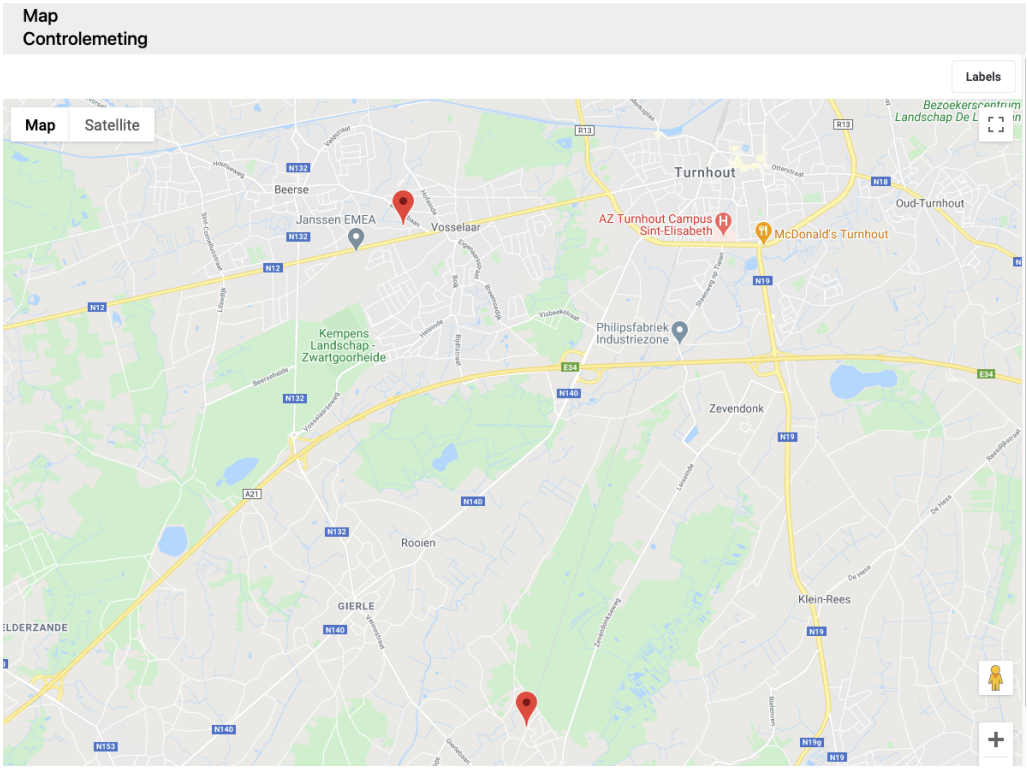


During Import, the CSV is copied by the MyCumulus server in a new form or added to an existing form.

If there are errors in the data, for example an invalid date, an error message will be given. The CSV file is then not imported.
If ok, the results of the import are shown.



Map view provides additional control.



4.6.2 Excel

Importing an Excel file begins by reading the Excel file. The first row must contain the column names; these names will be used as field names in MyCumulus. After reading the column names, you can specify the data type for each field, such as 'text', 'integer', 'decimal', 'date', etc. This choice determines the data type of the field in the MyCumulus database.

During the import, the data are validated. Then, a new record is created for each row in the Excel file.

MyCumulus app

5 MyCumulus app

The MyCumulus app is an Android application that is available for free on the Google Play Store.
The app runs on Android versions 8 to 14.

To use the app you must first be registered as a MyCumulus user via the web app.

MyCumulus can be used without connecting to the internet, although with a few limitations:

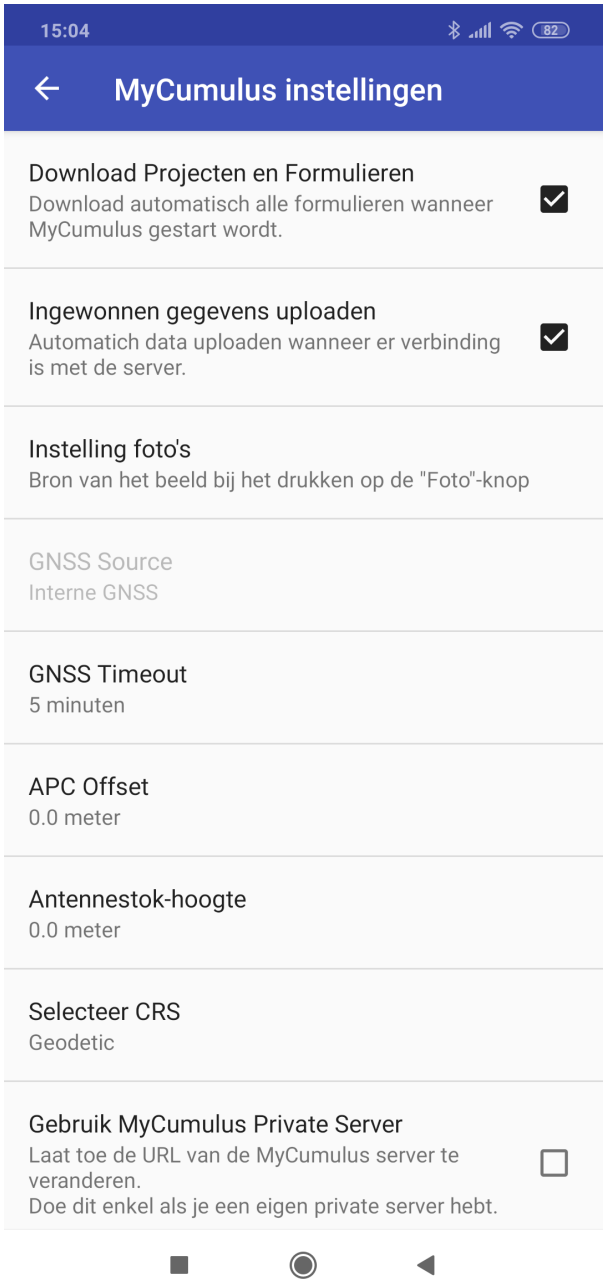
- login only with the login details of the last user. The projects, forms and data of the last user are retained even if the device has been switched off.
- no upload or download of data
- no conversion from position to address
- no conversion from geometric to planar coordinates.

New data is stored locally and can be uploaded as soon as a WiFi or data connection is available.

If the mobile internet signal is weak, uploading photos and videos can take a long time. If the delay is too large, it is advisable to switch off "Uploaded data". (See settings).

5.1 Settings

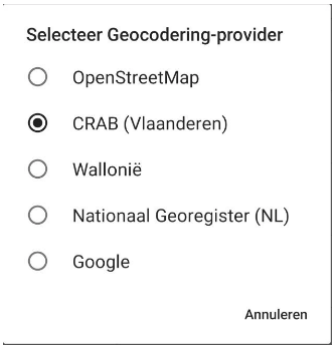
Overview of settings:



When using high accuracy GNSS, the APC Offset and Antenna Pole Height must be entered for correct height conversion.

The coordinates are displayed in the chosen Coordinate Reference System. For RD-NAP, Lambert 72 and Lambert 2008, the coordinates and the height are converted and corrected. This in accordance with the standards of Kadaster (NL) and NGI (B).

The MyCumulus app allows to retrieve the address based on the WGS coordinate. For this MyCumulus uses the following *Geocoding Providers*.



For the Netherlands, the National Georegister service is recommended, for Flanders, CRAB.
If these providers do not provide an address for the indicated position, this can happen if too far from a known address, then the address will still be obtained via OpenStreetMap.

5.2 Connecting with GNSS receivers

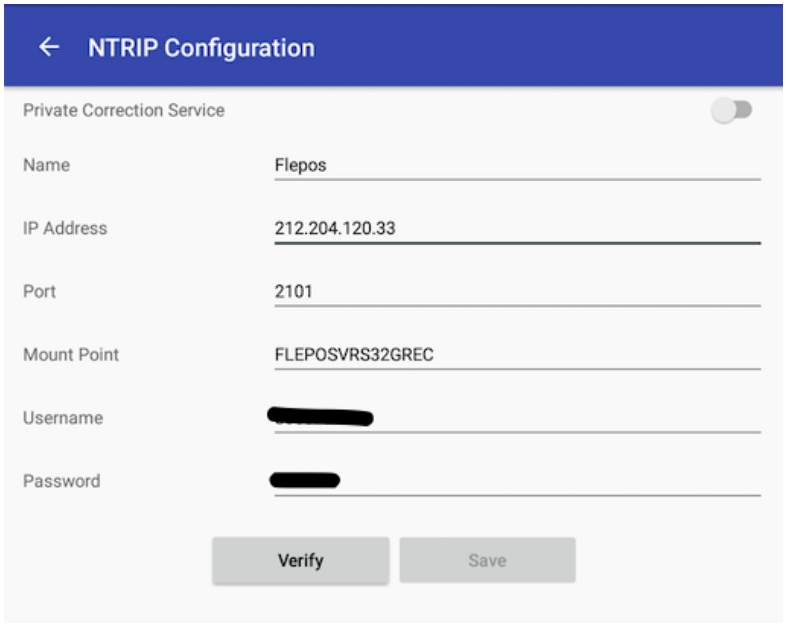
The MyCumulus app can determine the position using both the internal GNSS receiver of the Android device and most professional GNSS receivers. Additionally, MyCumulus can act as an NTRIP client: if the receiver supports this functionality, the MyCumulus app will send the RTCM corrections to the receiver. This means that the receiver does not need its own SIM card.

MyCumulus supports the following configurations:

1. The standard internal GNSS receiver of Android.
2. Professional high-precision GNSS receivers that are built-in and receive RTCM corrections via MyCumulus.
3. GNSS receivers connected through the serial port of the Android device and receiving RTCM corrections via MyCumulus.
4. External GNSS receivers that transmit NMEA data via Bluetooth.
5. External GNSS receivers that receive RTCM corrections from MyCumulus via Bluetooth and return NMEA data.
6. Receivers that transmit their position via the internet.

In the 'Settings' menu of MyCumulus, you will find a set of predefined settings for GNSS devices that we have tested. We continuously update the list of devices."

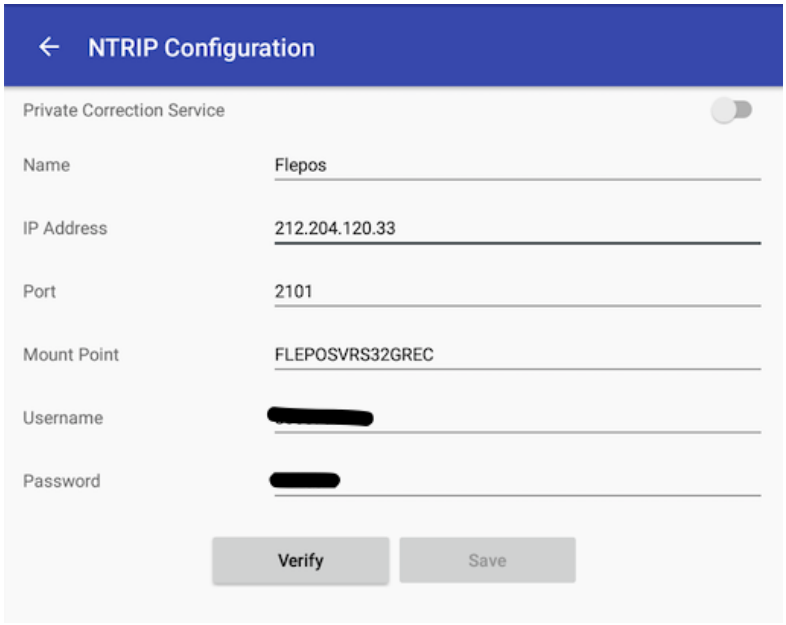
MyCumulus contains a number of predefined correction services so that you have only to enter Username and Password.



The button **Verify** will make connection with the Correction Service and verify Username and Password.
If ok, and the configuration is saved, next time you login in MyCumulus and need to obtain a location, MyCumulus will automatically make connection with the Correction Service. When locations are not required anymore, the connection with the Correction Service is stopped after a time-out set in settings.

5.2.1 NTRIP Configuration

MyCumulus offers several predefined correction services. As a result, you only need to enter a username and password.



By clicking the **'Verify'** button, you can connect to the correction service to check the entered username and password. If this information is correct and the configuration has been saved, MyCumulus will automatically connect to this correction service the next time you log in and wish to determine a location. Once location determination is no longer required, the connection to the correction service will automatically be terminated after a timeout specified in the settings.

5.3 Projects

The "Projects" screen provides a list of all projects to which the user has at least the right to read.
The projects are listed in alphabetical order.

From the project list you navigate to the forms in the chosen project.

Visible - Hidden projects

If the list of projects is long, unused or less used projects can be hidden. One or more projects can be made visible again at any time.

Visible - hidden only applies locally to the device. It has no effect on the list of projects on the server.

Duplicate Projects

By selecting one or more projects you are able to duplicate the project(s) and it's forms. The data is not copied.
When duplicating one project, the duplicated project can be given a new name.
When copying multiple projects, the new names are automatically assigned.
A user duplicating a project owned by an Admin or another user, will become the owner of the duplicated project.

5.4 Forms

The forms screen shows all "visible" forms in a selected project. If the list of forms is long, unused or less used forms can be hidden. One or more forms can be made visible again at any time.

Visible - hidden only applies locally to the device. It has no effect on the list of forms on the server.

The forms are listed in alphabetical order.

Opening a form creates a new form. All fields are empty or have their default value unless the form is used for this in a MyCumulus session. Then the previous values are entered for the fields that have this property. See Fields: Fields : common properties 13.

Duplicate Forms

By selecting one or more forms you are able to duplicate the form(s). The data is not copied.
When duplicating one form, the duplicated form can be given a new name.
When copying multiple forms, the new names are automatically assigned.
Only forms of projects owned by the user can be duplicated.

5.5 Data Collection

Collecting data means completing the form. Filling in the fields, choosing from a list, taking a photo, ... Filling in a form will show itself in practice.
The fields that are not adjustable (not enabled) are grayed out.

The fields marked with a * after the label are mandatory fields. If not entered, the data in the form cannot be saved and a message appears.

Forms of points, poly lines or polygons will automatically and continuously read the current GNSS location. The accuracy of the position is displayed at the top next to a satellite symbol. The GNSS source, Internal or External is also displayed.

Photo field / Video field

A long press on a photo field gives a selection menu:
- Camera
- FlashAir
- List of media apps

Camera

Internal camera app is opened. Operation depends on the version of Android and possibly on the brand of the Android device.
After taking a photo you have the option to save or cancel.

The choice made is retained. Briefly pressing a photo field will perform the preferred action.

Several, in principle an unlimited number of photos can be added to a photo field. Photos can be deleted.

FlashAir

FlashAir, is an SD card with Wifi for reflex cameras, among other things. When Android connects to the FlashAir card via WiFi, photos taken with the reflex camera are transferred to the photo field in the MyCumulus app.

List of media apps

Opens a list of applications registered in Android as a media app. By default, these are the "Photos" and "Gallery" apps. This makes it possible for a previously taken photo to add a screen dump or other image that appears in the Gallery as a photo to MyCumulus.
There are apps, including an app with the name "Drawing" that, when selected, opens and allows you to make a sketch, draw on a photo, etc. When saving the sketch, it is added to the MyCumulus photo field.

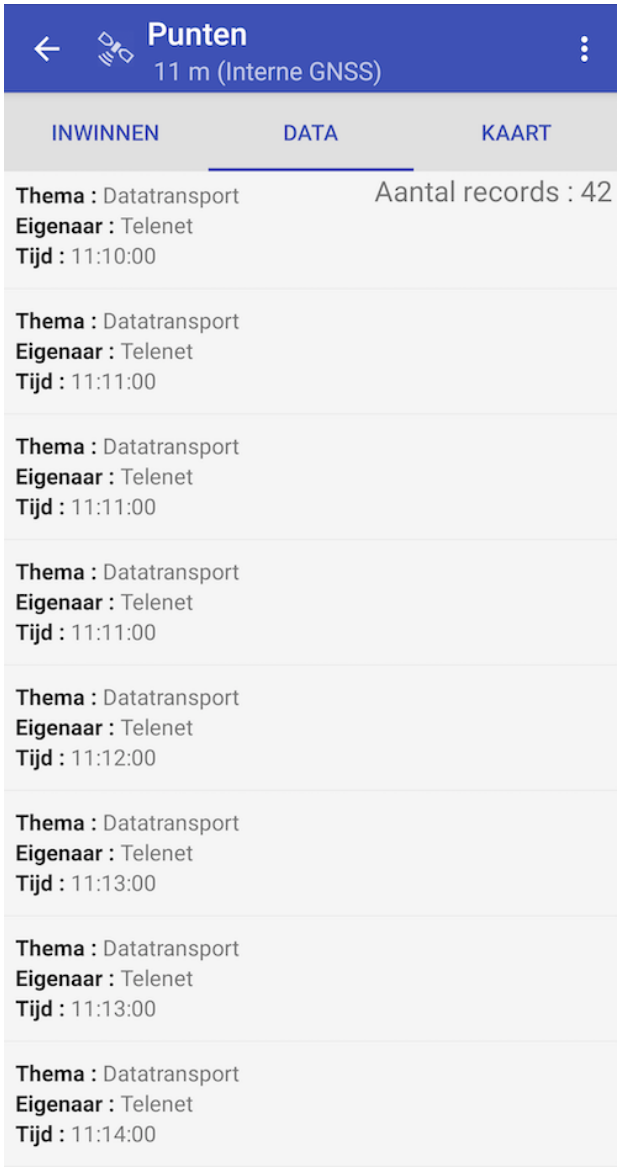
Temperature

If an ETI Bluetooth LE thermometer is connected, the temperature will be read via the bluetooth connection.

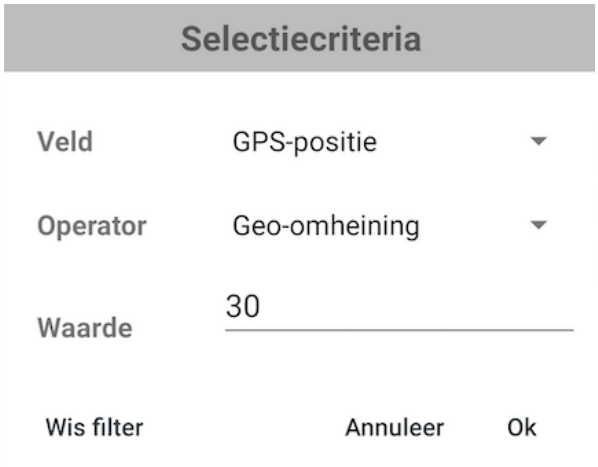
5.6 Data

The data window shows a list of all records that are stored locally on the Android device.

When swiping down, all records are downloaded from the MyCumulus cloud. Criteria can be given via the menu "Filter Records" which records are displayed and possibly downloaded. For example, "Eigenaar" = "Telenet", will display a list of all records in which the "Eigenaar" field has the value "Telenet".



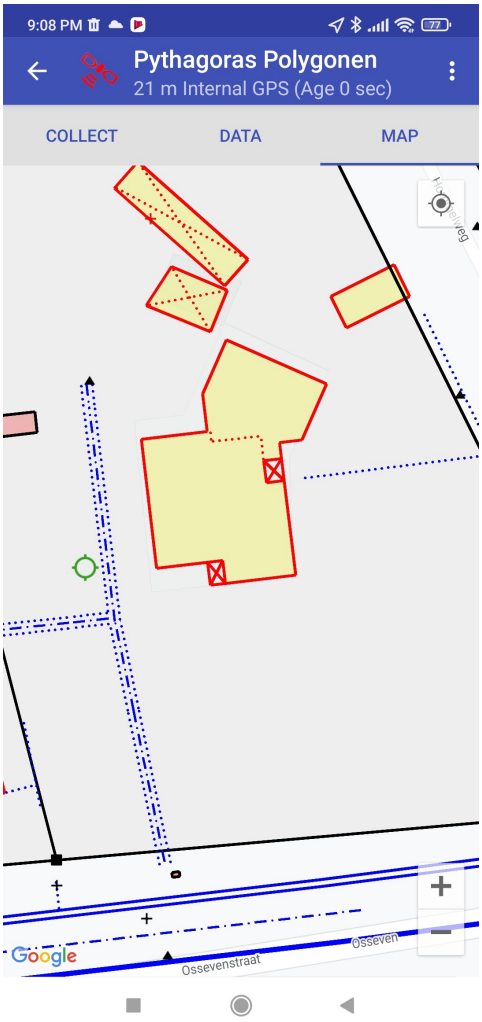
Geo-fence allows you to see only the objects within the given radius of the current position.



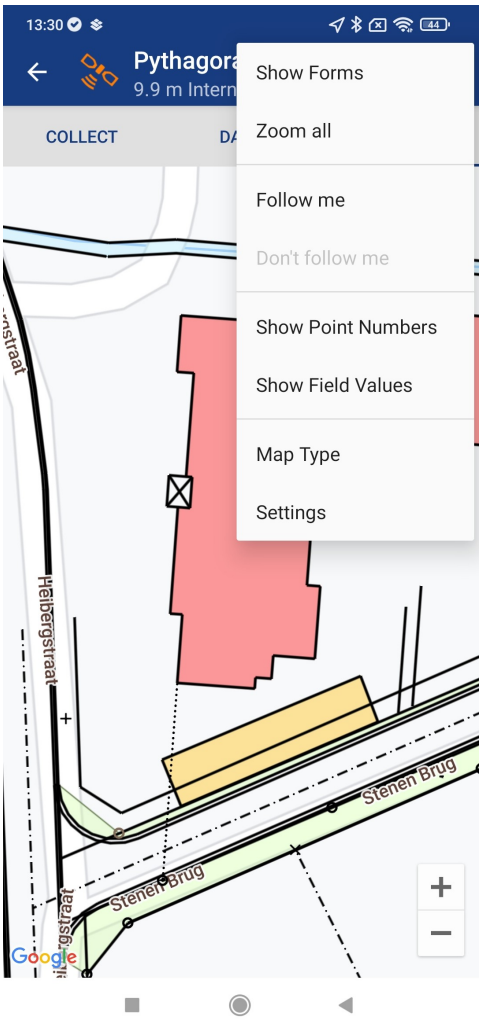
Selecting a record shows the form, with the fields filled in. More about this further.

5.7 Map

In the background of a Google Map map, all points, poly lines or polygons in the form that are locally on the device or a selection from them are shown. Clicking on an object will give you the choice of either opening the form or starting the navigation.



The menu item *Show point numbers* will show the point numbers for points and the sequence numbers of the vertices for polylines and polygons.



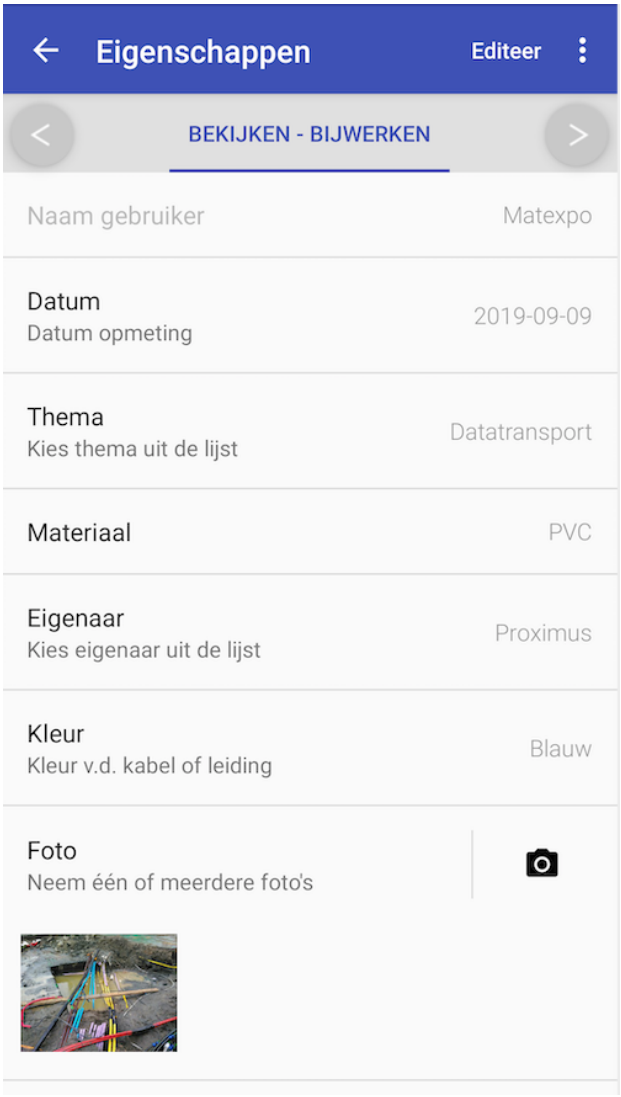
The *Follow me* menu will keep the current position in the center of the screen.

The *Show Field Values* menu displays the labels and values of the fields selected in the web app, on the map.

Show Forms allows you to choose which forms (layers) will be visible.

5.8 Scrolling through your data

The form of the indicated object (record) with the fields is shown via the list of data or via the map. The < and > keys allow you to see the previous and next record.

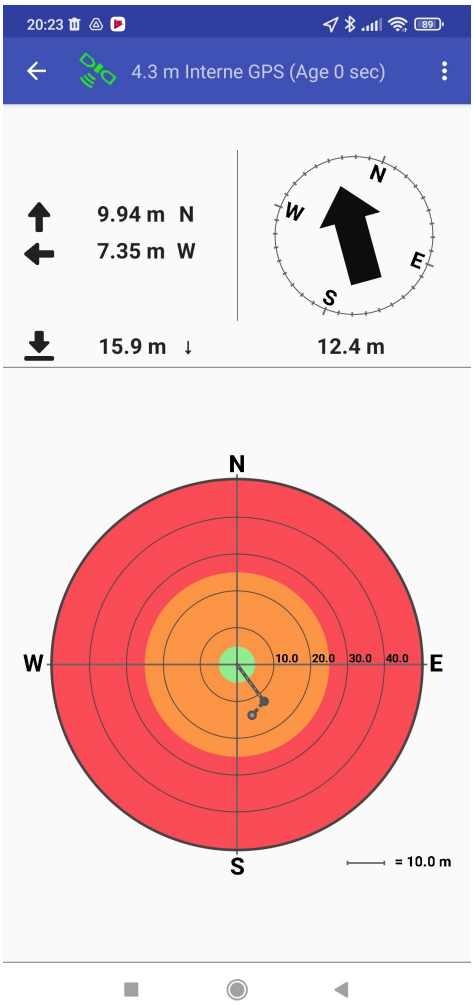


Edit

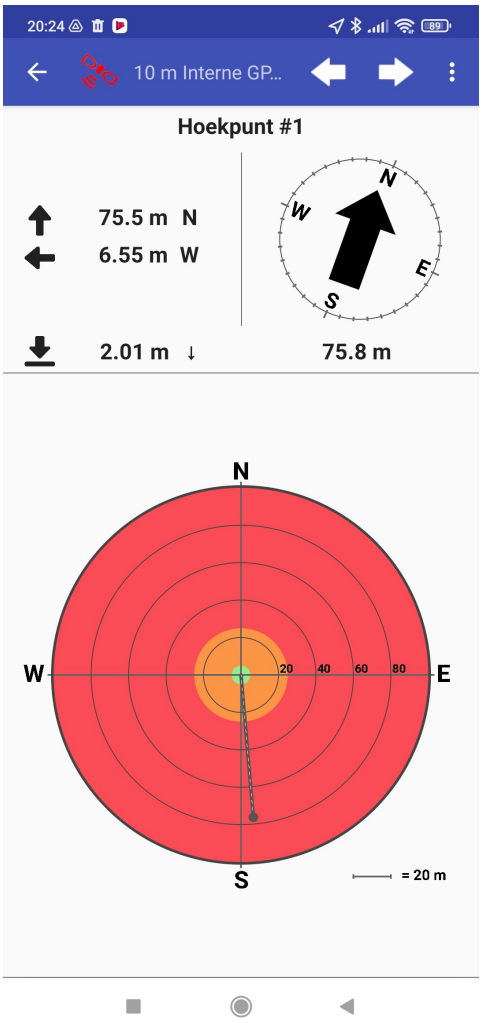
The values of the fields can be adjusted via this menu. The data in the MyCumulus cloud is updated.
This function can be used for, among other things, updating and supplementing data.

5.9 Navigate

Navigating - better known as "stake out" for surveyors - shows a screen with information that leads you to a selected point.



Stake-out of (navigation to) points, poly lines or polygons is started from the view-window 51 or by clicking on the point, poly line or polygon in the map.



Use the arrow keys to choose the next vertex of the poly line or polygon

Top left

- Indicates the distances in the direction of the North-South and the West-East axis. The values are always positive. The arrows and the letters N, S, W, E indicate the direction.
- Height difference

Top Right

A compass and an arrow indicating the direction to the point.
Below the compass, the distance to the point.

Under

A compass rose with the actual position and a line that indicates the direction to the point.

The diameter of the green circle is adjustable.

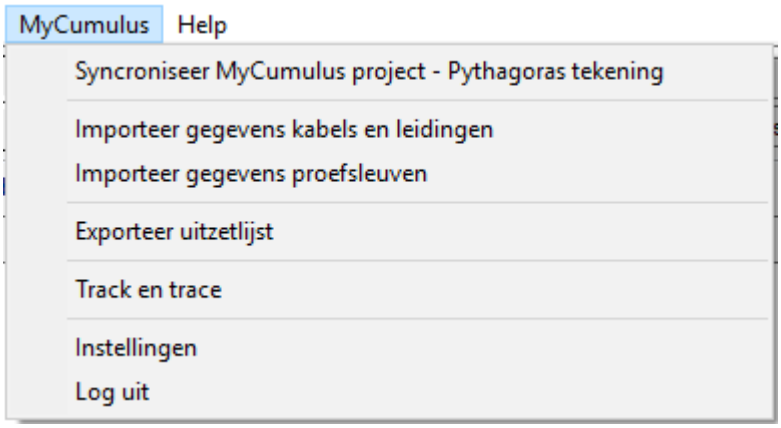
Pythagoras macro

6 Pythagoras macro

Pythagoras CAD+GIS is a program for land surveyors and municipalities.

The MyCumulus-Pythagoras macro is a VBA program that allows, among other things:

1. Synchronize geographic data between a Pythagoras drawing and a MyCumulus project. Syncronization means that changes made to MyCumulus and Pythagoras are synchronized. Objects created / modified / deleted in Pythagoras are created / modified / deleted in MyCumulus and vice versa.
2. Test trench measurement: the area and pipes of MyCumulus are measured for test trenches. The macro reads these in Pythagoras and makes a drawing with its own theme.
3. Pipeline measurement: for a multi-pipeline section, the characteristics of each of the pipelines are first entered into MyCumulus. The trace of each of the pipes is then measured. The macro makes a drawing in accordance with its own specific theme.
4. Import data from horizontal directional drilling. Automatically a Pythagoras drawing is made containing a location map, a cross section and a coordinate list.
5. Import sewage data: based on in- and outgoing pipes the sewage network is constructed.
6. Export stake-out list: a new form is created in MyCumulus and the selected points are exported.
7. Track and trace: the position of a MyCumulus employee can be tracked. Points can be made at the current location of the employee.



MyCumulus Desktop

7 MyCumulus Desktop

MyCumulus Desktop, is available as a Mac and Windows program.
It provides functions that are difficult or impossible to realize via the web app.
The program allows you to download photos from forms and to give meaningful names to these photos based on the values of fields in the form.

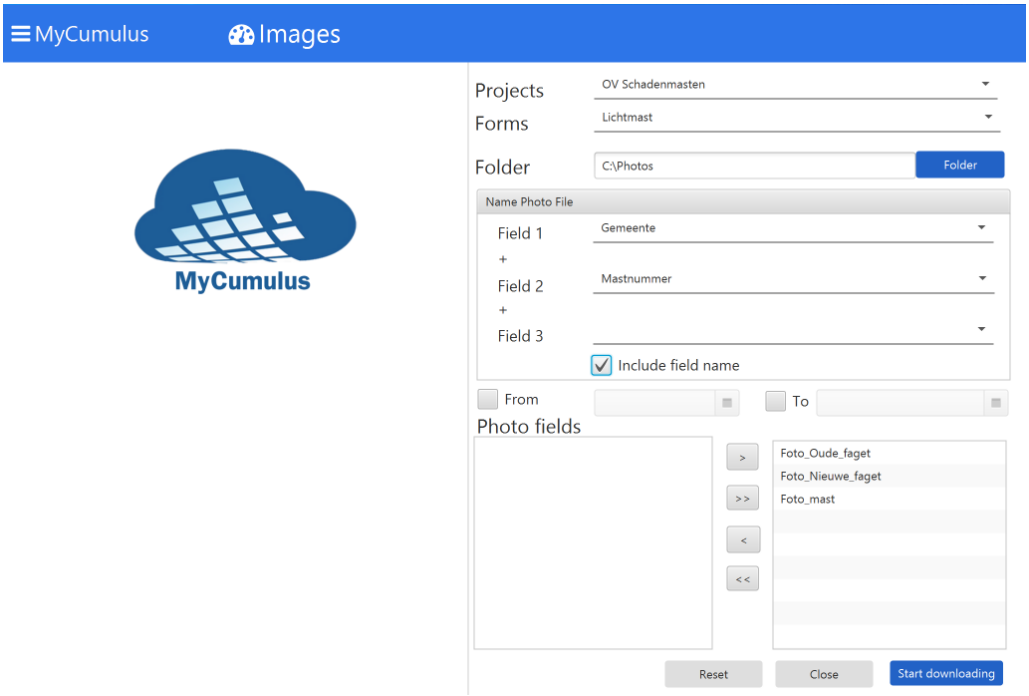
7.1 Installation

Windows

You need administrator permissions to install MyCumulus Desktop.
Run the MyCumulusSetup.exe program. This program will guide you step by step through the installation.

7.2 Download Photos

After logging in, the following screen will appear:



You choose a project and form and the folder in which the photos should be placed. This folder must first be created with the standard windows functions.

The name of each downloaded photo is formatted based on a sequence of maximum 3 fields.
In the example given, the name
<Gemeente>_<Mastnummer>_<Fotoveldnaam>

All photo fields appearing in the form appear on the right in the list "Photo fields". You can remove photos from this by using the < key.
If there are several photo fields, it is best to check the *Include field names* field.

Start downloading will download all photos in the requested folder.
After finishing the download you will get the photos in Windows Explorer as shown below.