



HEXAGON

Documentation

Basismodul Release Notes

BM 2020.0

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Introduction

This document explains the functionality of the Version 2020.0 of Basismodul, its compatibility and the installation with the corresponding configurations and scripts. The update to 2020.0 is also described.

Notice: Projects from the BM Classic cannot be transferred 1:1 and must be migrated. Therefore, the BM 2019.2 is recommended especially for new projects. Projects from BM2018 can be migrated to BM 2019.2 without any problems.

The following documentation is available and describes the range of functions of the Basismodul: BM Administration, BM Client, BM App API and the data model of the current version.

CONTENT

1	SCOPE OF FUNCTIONS.....	1
1.1	NEW FUNCTIONS	1
1.2	FIXED BUGS	2
2	DATA MODEL CHANGES 2020.0	3
3	COMPATIBILITY.....	5
3.1	BROWSER COMPATIBILITY	5
3.2	ADMINISTRATION DATABASE	5
4	INSTALLATION	6
4.1	REQUIREMENTS	6
4.2	INSTALLATION BM 2020.0	6
4.2.1	<i>BM 2020.0 Download.....</i>	<i>8</i>
4.2.2	<i>Set up Project.....</i>	<i>8</i>
4.2.3	<i>Create and Initialize Basismodul Databases</i>	<i>9</i>
4.2.4	<i>Configuration.....</i>	<i>10</i>
4.2.5	<i>PDF-Print Service.....</i>	<i>12</i>
4.2.6	<i>Update.....</i>	<i>13</i>
4.3	TIPS FOR SYSTEM CONFIGURATION	14

1 Scope of functions

The new functions and fixed bugs are described below. In addition to the enhancements described, the user handling and performance have also been optimized.

1.1 New Functions

- Mobile-Client
 - Optimization of the user interface for mobile devices
 - Implementation reports for mobile devices
- Support Dark Mode
- Dimension
 - Dimensioning functions incl. storage in dimensioning layer
 - Support dimensioning for printing
- Project information
 - Configuration of project information
 - Display of the configured project information in the client
- Enhancement project
 - Configuration of project title for display in the client
 - Configuration custom header for display in the client
 - Alphabetical order of projects
- Enhancement legend
 - Configuration and display of legend images for legend entries
 - Configuration and display of legend links for legend entries
 - Optimization legend groups / own layers without control
- Enhancement search
 - Implementation coordinate search
 - Implementation legend search (incl. aliases)
 - Aliases for searching for legend entries configurable
 - Display legend entries with search result
- Enhancement reports
 - Additional parameter for custom reports
 - Multiple reports per feature/layer possible
- Enhancement print
 - PDF as default
 - Addition of print template with parameters for map center
 - Free scale configurable

- Configuration permissions for standard tabs (measure, dimension, redlining...)
- Display order of the features within the WebMap layers
- Support of CurvePolygon for M.App Vector Tiles
- Support of GWM 2020.0
- Enhancements user authentication
 - Configuration of the URL for forwarding after logout
 - Delete token for direct access
- Global configuration for the client
 - Display name for login form
 - Support Dark Mode yes/no
- Enhancements APP API (see documentation *BM APP API*)
 - Query current user
 - Query current user legend
 - Loading a particular legend
 - Query Dark Mode
 - Query Mobile Mode

1.2 Fixed Bugs

Administration

	Support no.
In case of selections with many entries it is not possible to sort over several pages	58877

Client

	Support no.
Link selection not visible on the info button when searching	54016
Scale and map size do not match in in the print	58817 / 58406
Error while loading the project	55064
After call via direct link all layers are loaded upon refresh	58648

2 Data model changes 2020.0









In version 2020.0, adjustments were made to the data model. The data model changes are saved as *Migrations* in the database (`__MigrationHistory`)

An update executes pending *Migrations* so that the database is always up to date. *Migrations* are made automatically the first time the API is started. Therefore, it is not necessary to update the database manually each time.

Notice: If the first login fails, the *Migrations* may not have been executed (table `__MigrationHistory` is missing in the database). In this case, the corresponding application pool must be restarted. This is done automatically during installation, otherwise this has to be done manually.


The data model changes respectively migrations of version 2020.0 are listed in the following paragraph:

Basismodul database

	Table	Attribute	Comment
AddCustomLegendImageToLegendGroup			
	LegendGroupSet	CustomLegendImage	New attribute for defining own legend images
AddLegendGroupLegendLink			
	LegendGroupLegendLinkSet		New table for defining own legend links
AddProjectInfos			
	ProjectInfoSet		New table for defining project information
AddMorePropertiesToProjectInfo			
	ProjectInfoSet	Project_Guid → ProjectGuid	Renaming attribute
AddTabPermissionPropertiesToPermissionSet			
	PermissionSetSet	IsMeasureTabVisible IsRedliningTabVisible IsMapConfigTabVisible IsExternalServicesTabVisible	New attributes for the permission of standard tabs
AddedLogoutRedirectUrl			
	AuthenticationSettings	LogoutRedirectUrl	New attribute for configuring a URL for forwarding after logout
RenameLegendSearchToLegendEntrySearch			
	SearchSet_LegendSearch → SearchSet_LegendEntrySearch		Renaming table for the search for legend entries
AddLegendSearch			
	SearchSet_LegendSearch		New table for legend search

AddAliasesToLegend			
	LegendSet	Aliases	New attribute for creating aliases
AddAliasesToLegendGroup			
	LegendGroupSet	Aliases	New attribute for creating aliases
AddedLayerOrFeatureSetIdsToSearches			
	SearchSet	LayerOrFeatureSetIds	New attribute for the display of legend entries when searching
AddConnectionNameToGwmSearch			
	SearchSet_GwmSearch	ConnectionName	New attribute for creating WebMap searches
AddCoordinateSearch			
	SearchSet_CoordinateSearch		New table for coordinate search
AddHeaderAndTitleToProject			
	ProjectSet	Title HeaderUrl	New attributes for configuration of title and custom header in project
AddPermissionForDimensionTab			
	PermissionSetSet	IsDimensionTabVisible	New attribute for the permission of the dimension tab
AddManyToManyRelationReportsFeatures			
	FeatureSetReportFeatureSets		New table to support multiple reports per layer
AddManyToManyRelationReportsSources			
	AuthenticatingLayerSourceCustomReports		New table to support multiple reports per layer
AddFreePrintScale			
	PrintScaleSet		New entry for free scale configuration

Basismodul custom database

	Table	Attribute	Comment
AddDimensionToCustomDatabase			
	DimensionSet		New table for saving the dimensions in the client

3 Compatibility

3.1 Browser Compatibility

The following browsers have been tested with the current versions and are recommended to use with the Basismodul.

Administration

- Google Chrome
- Mozilla Firefox
- Microsoft Edge

Client

- Google Chrome
- Mozilla Firefox
- Microsoft Edge
- Internet Explorer 11

3.2 Administration database

- MS SQL Server from Version 2008 R2
- MS SQL Server Express from Version 2008

4 Installation

4.1 Requirements

- .Net 4.7.2 Framework ([Link](#)): Runtime Version is sufficient
- IIS → min. ASP .Net 4.6 Support activated (Windows Features)
- URL Rewrite ([Link](#))
- SQL Express ([Link](#)) and Microsoft SQL Management Studio ([Link](#))
- GeoMedia WebMap from 2016 EP04

BM2020.0 basically supports all GeoMedia WebMap versions from 2016 EP04 onwards, but problems have been found in WebMap 2018/2020 when editing PostGIS data. If you have any questions regarding the update of the GeoMedia WebMap version, please contact your customer advisor.

BM2019.2 can also be installed and used without GeoMedia WebMap. However, WebMap functionalities cannot be used. This means that components such as data sources, reports, digitizing or searches are not fully available.

4.2 Installation BM 2020.0

The installation and configuration of the BM 2020.0 are described below. In chapter 4.2.1

If you do not have Geomedia WebMap, you can ignore all configurations concerning the IIS instance *WebMapApi* and the files of the folder *WebMapApi* during the installation.

BM 2020.0 to chapter 4.2.6 *Update* all steps for a new installation of BM 2020.0 are explained. Customers who have installed a BM version as of 2018 can continue directly with chapter 4.2.6.

4.2.1 BM 2020.0 Download

Download and unpack BM release (<http://www.basismodul.ch>).

The download package includes the folders shown in the figure. For the installation of BM 2020.0, all displayed files must be adapted to your environment.

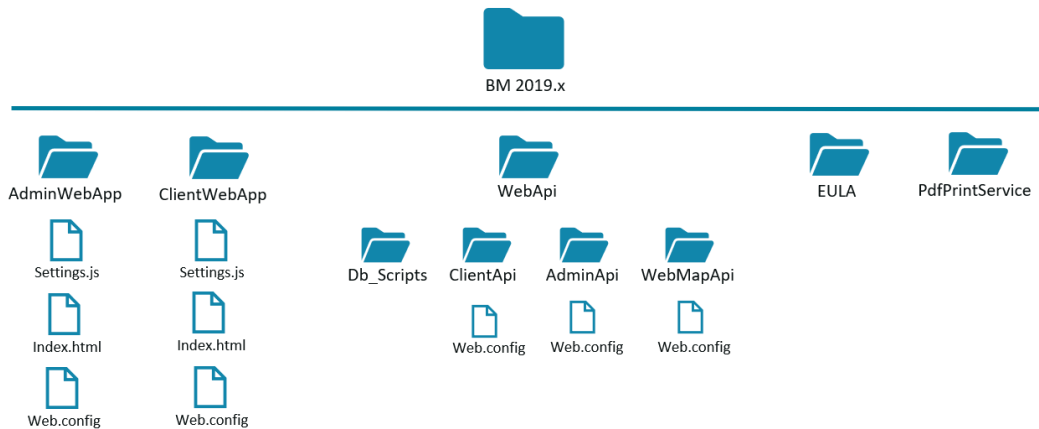


Figure 1: Folder structure BM 2020.0 and overview of files that need to be adapted for installation.

4.2.2 Set up Project

The installation of the BM2020.0 requires different applications of the Internet Information Service (IIS).

IIS






-  ClientApi
-  AdminApi
-  WebMapApi
-  AdminWebApp
-  ClientWebApp

Figure 2: Overview of the IIS applications to be created

WebApi's

- Create an application for ClientApi in IIS that points to the WebApi/ClientApi folder
- Create an application for AdminApi in IIS that points to the WebApi/AdminApi folder
- Create an application for WebMapApi in IIS that points to the WebApi/WebMapApi folder

Notice: The assigned AppPool must be **32bit and integrated** (it is possible to configure one AppPool per API, or to use the same AppPool for all of them).

AdminWebApp and ClientWebApp

- Create an application for ClientWebApp in IIS that points to the ClientWebApp folder
- Create an application for AdminWebApp in IIS that points to the AdminWebApp folder

The assigned AppPool does not need any special settings.


4.2.3 Create and Initialize Basismodul Databases

SQL scripts are available for the creation of the databases including populating initial values.

The DB scripts are stored in the WebApi/_DbScripts folder. With the following instructions, the required databases can be created and populated.


Basismodul Database

- Open SQL Management Studio and create a new DB instance (name freely definable)

 *BasismodulModel.edmx.sql*
Create the schema of the BM-DB with the script *BasismodulModel.edmx.sql* (adapt instance name)

Basismodul Custom Database (for data generated by the end users)

- Open SQL Management Studio and create a new DB instance (name freely definable)

 *BasismodulCustomModel.edmx.sql*
Create the schema of the BM-DB with the script *BasismodulCustomModel.edmx.sql* (adapt instance name)

Notice: Replace instance name *Basismodul* respectively *BasismodulCustom* in the script with the previously created instances.

Chapter 4.2.4 defines the specifications for the previously created databases for the Web.config files.

Populate Tables


 *initial-values.sql*
The script populates the following values (to be applied to the database created under Basismodul Database)

Table	Content
User	AdminUser: Username = Admin, Password = admin Anonymous: Anonymous User
Map extents	Schweiz LV95, Schweiz LV03
Projections	LV95, LV03, WGS84
Scales	1:250, 1:500, 1:10000, 1:50000, 1:100000
Print templates	A4: portrait/landscape A3: portrait/landscape
VectorStyles	Redlining Style Print Style Hotspot Style Search Style Measurement Style Overview Map Style
Searches	OpenStreetMap, legend entries


4.2.4 Configuration

For a successful installation some files have to be adapted to your environment. The configurations of the various components (see Figure 1) are described below.

AdminApi





Web.config

- <BasismodulContext> adapt ConnectionString to SQL Server Admin-DB
 Basismodul database adaptations: data source, initial catalog 'DB_Name', user id, password
- <adminApiSettings> - password, pattern for password security (no adaptation necessary)
- <adminApiSettings> - httpProxy: Referrer: Is set for requests that run using the proxy. Is required, for example, for Swisstopo services if these are routed through the proxy.

ClientApi





Web.config

- <BasismodulContext> adapt ConnectionString to SQL Server Admin-DB
 Basismodul database adaptations: data source, initial catalog 'DB_Name', user id, password
- <BasismodulCustomContext> adapt ConnectionString to SQL Server Custom-DB
 Basismodul custom database adaptations: data source, initial catalog 'DBCUSTOM_Name', user id, password
- <Referrer>: Is set for requests that run using the proxy. Is required, for example, for Swisstopo services if these are routed through the proxy. Notice: the Referrer must be a valid URL
- <PdfServiceUrl>: The URL to the PdfService, which the server must be able to reach
- <PrintConfigDebugging>: If True, the configuration is kept in the cache and the print template can be reloaded as often as you want (helpful if you want to design a print template). Should be set to *False* in the production.
- <RootUrl>: Needed for printing. URL for the local call of the Basismodul on the server (usually works with localhost)

WebMapApi



Web.config

- <BasismodulContext> adapt ConnectionString to SQL Server Admin-DB
 Basismodul database adaptations: data source, initial catalog 'DB_Name', user id, password
- <BasismodulCustomContext> adapt ConnectionString to SQL Server Custom-DB
 Basismodul custom database adaptations: data source, initial catalog 'DBCUSTOM_Name', user id, password

In chapter 4.2.2 different IIS applications were set up. These must be specified in the following configurations.

ClientWebApp



settings.js

- Adapt URL to IIS-ClientApi
Attention: relative path, without localhost (e.g. `'/ClientApi/api'`)
- Adapt URL to IIS-WebMapApi
- `darkModeEnabled`: Should the client also be available in dark mode
- `appTitle`: Display name in login form



Index.html

- Add `<base href='/Name-IIS-ClientWebApp/'>` (e.g. `'/ClientWebApp/'`)
- `<title>Basismodul</title>` can be customized as desired



Web.config

- Adapt `<rewrite url>`: name of the IIS-ClientWebApp

AdminWebApp



settings.js

- Adapt URL to IIS-AdminApi
Attention: relative path, without localhost (e.g. `'/AdminApi/api'`)
- Adapt URL to IIS-WebMapApi
- Adapt URL to IIS-ClientApi
- `numberOfRows`: Change maximum number of entries per page in the overview tables, default value is 10



Index.html

- Add `<base href='/Name-IIS-AdminWebApp /'>` (e.g. `'/AdminWebApp/'`)
- `<title>Basismodul</title>` can be customized as desired



Web.config

- Adapt `<rewrite url>`: name of the IIS-AdminWebApp

Tip: To test the configuration of the AdminApi/ClientApi, you can add `→ /Swagger` to the URL in your browser. If the different methods are listed, the configurations of the APIs are correct. (e.g. `http://localhost/AdminApi/Swagger`)

4.2.5 PDF-Print Service

To be able to use PDF printing, you need to install the following print service.

- Download Node.js and install (<https://nodejs.org/en/>), LTS Version ≥ 10 is sufficient
- Copy the PdfPrintService folder from the download package into any directory (this is also the installation directory)
- Open CMD console as administrator,
 - change to the directory where the package.json file is located and run 'npm install' as a command
 - then execute the command 'node windows-service.js' in the console
 - console can be closed
- Check whether the service 'Hexagon.SI.CH.PdfService' has been created in the services and is running

Additional information

- The PDF service can also be started in the console for debugging: 'node pdf-service.js'
- In config.json you can change the port of the service but you have to change the config of the API
- In config.json you can change the timeout (ms) (the maximum waiting time until the website is completely loaded)
- The service is independent from the BM and can also be used by other applications.

4.2.6 Update

For updating BM (from 2018) to BM 2020.0 and migrating the projects, the following points must be considered.

IIS-Application (only Update from BM 2018)

WebMapApi

- Create an application for WebMapApi in IIS which points to the WebApi/WebMapApi folder.

Configurations

The configurations when updating must be made according to a new installation. This means that all files in the existing folder must be replaced with the new download package and all adjustments from chapter 4.2.4 must be done again. The already existing databases can be used in the files.

Data model changes

The changes to the data model are made automatically the first time the WebApi is started. Any updates of data are also done automatically. All migrations done are listed in the configuration database in the `__MigrationHistory` table. What the individual migrations mean is described in more detail in Chapter 2 Data model changes 2020.0.

Notice:

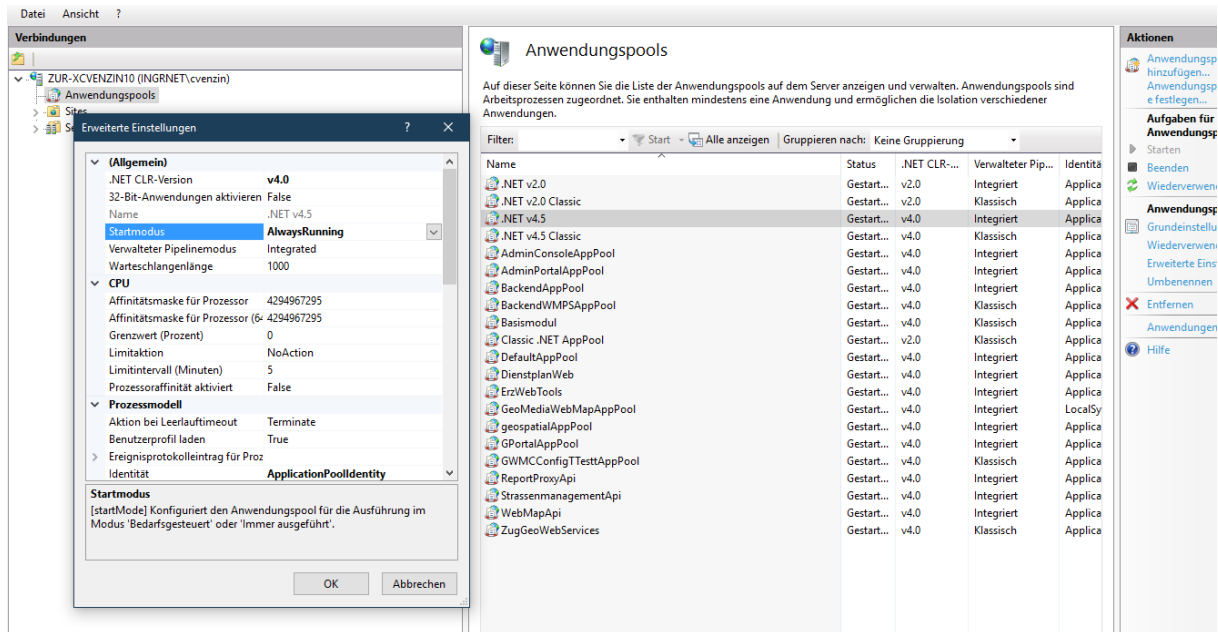
- If the initial login fails, the *migrations* may not have been executed (table `__MigrationHistory` missing in database). In this case, the corresponding application pool must be restarted. This is done automatically during installation, otherwise it must be done manually.
- When BM 2020.0 is opened for the first time, adjustments are automatically made to the databases. This means that the databases are no longer compatible with older BM versions.

4.3 Tips for System Configuration

The initial loading of the client can take some time depending on the complexity of the projects. This can be optimized with the following settings:

Application Pool Configuration in IIS

By default, the IIS turns off the application pool as soon as the application is not used for a while. It may take a few seconds to start the application pool. This time can be saved if the application pool is running permanently (see screenshot for IIS configuration).



The screenshot shows the IIS Manager interface. A dialog box titled 'Erweiterte Einstellungen' is open, showing the configuration for an application pool. The 'Startmodus' is set to 'AlwaysRunning'. The background shows a list of application pools with columns for Name, Status, .NET CLR-Version, and Verwalteter Pip... (Managed Pipeline Mode).

Name	Status	.NET CLR-Version	Verwalteter Pip...	Identität
.NET v2.0	Gestart...	v2.0	Integriert	Applica
.NET v2.0 Classic	Gestart...	v2.0	Klassisch	Applica
.NET v4.5	Gestart...	v4.0	Integriert	Applica
.NET v4.5 Classic	Gestart...	v4.0	Klassisch	Applica
AdminConsoleAppPool	Gestart...	v4.0	Integriert	Applica
AdminPortalAppPool	Gestart...	v4.0	Integriert	Applica
BackendAppPool	Gestart...	v4.0	Integriert	Applica
BackendWMPSAppPool	Gestart...	v4.0	Klassisch	Applica
Basismodul	Gestart...	v4.0	Klassisch	Applica
Classic .NET AppPool	Gestart...	v2.0	Klassisch	Applica
DefaultAppPool	Gestart...	v4.0	Integriert	Applica
DienstplanWeb	Gestart...	v4.0	Integriert	Applica
ErzWebTools	Gestart...	v4.0	Integriert	Applica
GeoMediaWebMapAppPool	Gestart...	v4.0	Integriert	LocalSy
geospatialAppPool	Gestart...	v4.0	Integriert	Applica
GPortalAppPool	Gestart...	v4.0	Integriert	Applica
GWMCConfigTTestAppPool	Gestart...	v4.0	Klassisch	Applica
ReportProxyApi	Gestart...	v4.0	Integriert	Applica
StrassenmanagementApi	Gestart...	v4.0	Integriert	Applica
WebMapApi	Gestart...	v4.0	Integriert	Applica
ZugGeoWebServices	Gestart...	v4.0	Klassisch	Applica

Configuration HTTP2 in IIS

HTTP2 protocol can be used for BM (no big impact on performance). The current IIS version supports HTTP2 out-of-the-box and no configurations are necessary. Requirement is a HTTPS connection ([Link](#)).

Use of HTTPS

If the project runs under https, all services should also run under https, otherwise "mixed content" will occur and the browser will use protection mechanisms. E.g. http services are not loaded and geolocation is blocked ([Link](#)).

ABOUT HEXAGON

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Geospatial division creates solutions that deliver a 5D smart digital reality with insight into what was, what is, what could be, what should be, and ultimately, what will be.

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