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Configuration Guide

Configuration and Customization of exocad's Dental CAD Platform

exocad.com

Configuration Guide by exocad GmbH

Content

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1 Introduction

This configuration guide targets our partners and test customers for our DentalCAD platform.

This guide is valid for software versions released since 2015.

exocad DentalCAD is an advanced CAD software platform for dental applications.

This document helps you to customize the exocad DentalCAD platform.

We presuppose that readers of this document:

- are comfortable with editing XML files and understand the basic structure of the format
- understand the XAML technology
- understand the basics of graphics files (pixel resolution, alpha channel/transparency)

> **CAUTION**
>
> The given examples of XML files in this document are incomplete. They are **not** intended to be copied into your configuration files verbatim.
>
> In particular, "..." denotes omissions that must be completed by you and is **not** literally part of the file. It is used to identify skipped elements that are irrelevant and would distract the readers attention while illustrating a specific part of the XML file.
> For creating your XML files, please use all information given in this document and regard the given fragments as examples.

1.1 How to Apply Changes to Configuration Files

Configuration files for the CAD software are stored in `DentalCADApp\config`. We ship a default configuration file named `defaultsettings.xml`; its content varies across different software versions delivered by us.

To make it easier for our customers to apply their own configuration changes to new exocad version, the software also checks and loads for a file called `settings.xml` in the same directory; if that file is present, the software loads it in addition to `defaultsettings.xml`. If the same configuration option is present in both `defaultsettings.xml` and `settings.xml`, the value defined in `settings.xml` will override the setting from `defaultsettings.xml`.

Therefore, it is not recommended to make changes directly in `defaultsettings.xml`. Instead, create a new file `settings.xml` (using `defaultsettings.xml` as template - you can remove all existing entries except for the lines starting with `<ApplicationSettingsCAD ...>` and `</ApplicationSettingsCAD>`) and add your changes there. This way, when you receive a new software version, you can simply copy your `settings.xml` file to the new version, without having to re-edit the `defaultsettings.xml` of the new version and apply your changes manually.

Note: When we mention `(default)settings.xml` in the following, we refer to an option that can be either configured in `settings.xml` or `defaultsettings.xml` - the recommended way is to add it to `settings.xml`.

The same concecpt applies to the color configuration (`colors.xml` / `defaultcolors.xml` as well as `colors.xaml` and `defaultcolors.xaml` in the UI skin configuration), although here we ship a `colors.xml` / `colors.xaml` file with the most commonly adjusted color configurations - you can simply overwrite the `colors.xml` / `colors.xaml` with your own version when you receive a new exocad version.

For DentalDB configuration, the file names are `DentalDB\config\defaultsettings-db.xml` (shipped with every new release) and `settings-db.xml` (the place to make your changes).

2 Colors

2.1 Skins (UI Elements)

Colors of UI elements such as buttons may be customized in the following files:

- `DentalCADApp\Skins\generic\Common\Brushes\(Default)Colors.xaml`
- `DentalDB\Skins\generic\Common\Brushes\(Default)Colors.xaml`

Skin colors[1] may be defined using one of the following formats:

- as RGB values coded as 6-digit hexadecimal numbers, such as `#f7abed`, or
- as aRGB values coded as 8-digit hexadecimal numbers, such as `#EF584f7c`.

> **INFO**
>
> You may use the same file in both directories to create the same style in DentalCAD and in DentalDB.

For customizing UI elements, please follow the comments given in the skin files. These give an overview about the colors that should be used (e.g. light or dark). In some cases, there are also explanations which parts of the UI are affected (e.g. Expert Mode Toolbar). Customization should be straightforward using these comments. We do not provide additional documentation beyond that.

> **CHANGING COLORS**
>
> We highly recommend that you do neither use a dark color where a light color is suggested nor the reverse!

2.2 Other Elements in DentalCAD

Colors of other elements in DentalCAD such as the 3D viewer background, meshes, menus or menu icons may be customized in `DentalCADApp\config\(default)colors.xml`.

The associated configuration entries in the XML file have the following structure:

```
<ArrayOfColorDefinition ...>

  ...

  <ColorDefinition>
    <Type>Antagonist</Type>
    <Color>#ff4800</Color>
    <SelectedColor>#e68bff</SelectedColor>
    <Opacity>0.5</Opacity>
  </ColorDefinition>

  ...

  <ColorDefinition>
    <Type>UnsegmentedJaw</Type>
```

---

[1]For details, see **w3schools.com/Html/html_colors.asp**. An online color selection tool is available under **2createawebsite.com/build/hex-colors.html**.

```
      <Color>#83827e</Color>
      <Shine>0</Shine>
   </ColorDefinition>

   ...

</ArrayOfColorDefinition>
```

The meanings of the individual tags are explained in Table 1.

Tag	Meaning
ArrayOfColorDefinition	Root element
Type	The 3D data type identifier. For examples of values and meanings, see Table 2
Color	Defines the color in HTML-style notation[2], i.e. as RGB values coded as 6-digit hexadecimal numbers, such as #f7abed
SelectedColor	Defines the color to be displayed if the mesh is selected
Opacity	Defines the transparency (accepts values in the range of [0..1])
Shine	Defines the brightness (accepts values in the range of [0..1])

Table 1: Explanation of the color configuration file tags

Tag	Meaning
Antagonist	Scan data of antagonist
UnsegmentedJaw	Scan data of a (partial) jaw
UnsegmentedTooth	Scan data of a single tooth
Gingiva	Scan data of a gingiva
ViewerBackgroundTop	Color of background (top of screen)
ViewerBackgroundBottom	Color of background (bottom of screen)
CutViewBubbleBackground	Color of bubble background (during margin line detection)
CutViewBubbleArrow	Color of bubble arrow
MarginColorOfLine	Color of margin line
MarginColorOfDetectorLine	Color of margin detector line
MarginColorOfControlPoint	Color of margin control point
MarginColorOfControlPointSelected	Color of selected margin control point
DefaultViewer3DTextColor	Color of Text

Table 2: Examples of values for Type

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[2]For details, see w3schools.com/Html/html_colors.asp. An online color selection tool is available under 2createawebsite.com/build/hex-colors.html.

BACKGROUND COLOR GRADIENT

Set `ViewerBackgroundTop` and `ViewerBackgroundBottom` to different values to create a color gradient.

NO CHANGE of the freeforming color

Do not change the freeforming color for teeth (yellow), as it is often referred to in our documentation!

Show/Hide Window

The colors for groups in the SHOW/HIDE window are set by the associated mesh color. These may be customized by changing the colors for the `GroupColor.*` entries in `DentalCADApp\config\(default)colors.xml`.

If you wish to change the background color of the menu title bars, you may customize the value of the tag `Gray7` in `DentalCADAPP\Skins\generic\Common\Brushes\(Default)Colors.xaml`.

If you prefer the SHOW/HIDE window to become monochrome, set `<ForceGroupSelectorSingleColor>` to `true` in `DentalCADApp\config\(default)settings.xml` and define the desired color as `GroupSelectorDefaultColor` in `DentalCADAPP\Skins\generic\Common\Brushes\(Default)Colors.xaml`.

2.3 Menu Style

Additional settings that affect the UI such as the menu configuration may be defined in `DentalCADApp\config\(default)settings.xml`

The associated configuration entries in the XML file have the following structure:

```
<ApplicationSettingsProviderCAD>

  ...

  <MenuItemFontSize>12</MenuItemFontSize>

  ...

</ApplicationSettingsProviderCAD>
```

The following XML tags can be added to override defaults for menu styling:

Tag	Meaning
MenuItemFont	Font for the menu. Default value is `Segoe UI`. Use only fonts that are shipped with Windows by default, no user-installed TrueType fonts! However, we recommend not to change the menu item font
MenuItemFontSize	Font size for menu. Default value is 10
MenuItemCenterText	Defines the alignment of the text. Default value is `false` (i.e. aligns the text to top). Set to `true` to center vertically

Table 3: Menu style tags *(continued on next page)*

Tag	Meaning
DisableMenuBorder	Default value is `true` (i.e. disables the menu border). Set to `false` to add a border
InvertIconsInMenu	Default value is `true` (i.e. inverts the colors of the menu icons - so that the black icons will be displayed in white). Set to `false` to disable inverting of icons (icons will then be displayed either in the original color from the icon file, or in the color `MenuIconColor` if `ColorizeMenuIcons` is set to `true`)
ColorizeMenuIcons	Default value is `false` (i.e. colorizes menu icons in a specific color). You will need to set the specific color in `colors.xml` (keyword `MenuIconColor`). Set to `true` to color icons
MenuIconColor	Defines the color of menu icons. This will only be applied if `ColorizeMenuIcons` is set to `true` and `InvertIconsInMenu` is set to `false`
MenuIconFrameColorCount	Defines the number of colors for menu icon frames (icon background box). The default value is 8. If you wish to use more than 8 colors, add additional `IconBackgroundMultiColor.*`-entries to `colors.xml` (add `.8`, `.9`, `.10` ...). *Hint*: Set to zero to disable colored icon frame completely

Table 3: Menu style tags

The following tags in `DentalCADApp\config\(default)colors.xml` also affect the coloring of menu items:

- `MenuTextColorSelected` *(for hover effect)*
- `MenuTextColorUnselected`
- `MenuBackgroundColorSelected` *(for hover effect)*
- `MenuBackgroundColorUnselected`
- `MenuSeparatorColor`
- `MenuInfoTextFontColor`

2.4 DentalDB

Colors for the tooth definitions in DentalDB may be configured in `DentalDB\config\(default)colors-db.xml`. However, we do not recommend to change them.

2.5 Other Elements in DentalDB

Changing the material buttons may be done in:
`DentalDB\Skins\generic\DentalDB\NamedStyles\IndicationDefinitionDialogStyles.xaml`:

For changing the height of the material buttons, adapt the value under `DataTemplate` > `Grid` > `Height`.

For changing the number of columns, adapt the value under `ItemsPanelTemplate` > `UniformGrid` > `Columns`.

2.6 Nesting Materialblock Library

The text color for the material block names is configurable in `DentalCADApp\config\(default)colors.xml`. The associated tags are: `Nesting.DisplayBlockNameBrushDefault`, `Nesting.DisplayBlockNameBrushSameFile`

and `Nesting.DisplayBlockNameBrushSameID`.

3 Data Storage Paths and Files

Paths for data storage are configured in `DentalDB\config\(default)settings-db.xml`.

3.1 File Storage

The associated configuration entries in the XML file have the following structure:

```
<ApplicationSettingsDB ...>

   ...

   <DataStoragePath>C:\CAD-Data</DataStoragePath>

   ...

   <PathTemplate>%d_%n-%s</PathTemplate>
   <ExternalNestingQueueDir>C:\TEMP\QUEUE</ExternalNestingQueueDir>

   ...

</ApplicationSettingsDB>
```

The meanings of the individual tags are explained in Table 4.

Tag	Meaning
ApplicationSettingsDB	Root element
DataStoragePath	Defines the main path where all job related files will be stored. Relative or absolute path specifications are allowed, e.g. ".\CAD-Data" or "C:\exocad\CAD-Data". This may even point to a network drive
PathTemplate	Defines the naming scheme for project directories (which will be created as subdirectories of `DataStoragePath`). For the available placeholders, see below
ExternalNestingQueueDir	Sets the directory for distributed production queue management (common exchange format between hyperDent and exocad). This may also point to a network drive. For important information concerning this tag, see below

Table 4: Explanation of the data storage path tags

Setting `ExternalNestingQueueDir`

Setting `ExternalNestingQueueDir` needs to be done

- in the `DentalDB\config\(default)settings-db.xml` file and
- in the `DentalCADApp\config\(default)settings.xml` file.

Both values must be configured the same way.

Also, note that subdirectories matching the material short name of all locally produced materials (e.g. TI, ZI, ...) must be created within the queue directory.

Placeholders

The following placeholders are available for `PathTemplate`:

- `%d`: date (e.g. 2015-01-19)
- `%n`: practice number
- `%p`: practice name
- `%f`: patient first name
- `%l`: patient last name
- `%c`: country
- `%s`: sequential number when multiple jobs with the same practice number and date are created

> ⚠ **CHANGING THE PLACEHOLDERS**
>
> It is highly recommended that you use the default setting `%d_%n-%s` as `PathTemplate`.
> This will lead to directory names like `2015-01-19_00001-001`.
>
> You may introduce an additional doctor/patient hierarchy by setting `PathTemplate` to `%p\%l,%f\%d_%n-%s`.
> This will lead to directory names like `Dr. Smith\Doe, John\2015-01-19_00001-001`.

3.2 Database Storage

The location of the database file (`DentalDB_V3.sqlite`) may also be customized.

The associated configuration entry in the (`default`)`settings-db.xml` file has the following structure:

```
<ApplicationSettingsDB ...>

  ...

  <SQLSettings>
    <ConnectionString>Data Source=..\db\DentalDB_V3.db;Version=3</ConnectionString>
    <SQLDialect>NHibernate.Dialect.SQLiteDialect</SQLDialect>
    <DriverClass>NHibernate.Driver.SQLite20Driver</DriverClass>
  </SQLSettings>

  ...

</ApplicationSettingsDB>
```

The meanings of the individual tags are explained in Table 5.

Tag	Meaning
`ApplicationSettingsDB`	Root element
`ConnectionString`	Defines the location of the database file (`DentalDB_V3.sqlite`). Replace the `..\db\DentalDB_V3.db` part by the desired path (may be relative or absolute). This may even point to a network drive to allow access by multiple machines. Do not omit the part "`;Version=3`"

Table 5: Explanation of the data base storage path tags *(continued on next page)*

Tag	Meaning
SQLDialect	Defines the SQL dialect. Might need to be replaced by the settings for your database backend [3]. See below for a list of exocad's supported database backends
DriverClass	Defines the driver class. Might need to be replaced by the settings for your database backend [3]. See below for a list of exocad's supported database backends

Table 5: Explanation of the data base storage path tags

For large installations (over 20 machines accessing the same database), sharing an sqlite file on a network drive is not an ideal solution, due to performance/scalability constraints. For those large installations, exocad's DentalDB also supports the following database backends:

- Microsoft SQL Server 2000 and 2005
- mySQL Enterprise
- Oracle 9i and 10g

4 Buttons (DentalDB)

Buttons may be customized in `DentalDB\config\(default)settings-db.xml`.

4.1 Adding Launch Buttons

Add or remove items within `<StartButtonList>` to add or remove buttons. The associated configuration entries in the `(default)settings-db.xml` file have the following structure:

```
<ApplicationSettingsDB ...>

  ...

  <StartButonList>

    ...

    <StartButton>
      <Icon>ScanIcon</Icon>
      <Caption>Scan</Caption>
      <ExecPath value="C:\Scanner\Scanner.exe">
        <Params value="%p"/>
      </ExecPath>
    </StartButton>

    ...

  </StartButonList>

  ...

</ApplicationSettingsDB>
```

The meanings of the individual tags are explained in Table 6.

---

[3]Additional information concerning the SQL configuration options is available under developer.jboss.org/wiki/DatabasessupportedbyNHibernate.

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Tag	Meaning
`ApplicationSettingsDB`	Root element
`Caption`	Defines the text displayed next to the button. This might be a keyword (e.g. `ScanButton`) that refers to a translation in the language file(s). The tooltip displayed to the user will be the translation of `ScanButton.ToolTip`
`ExecPath`	Defines the path to the file to be launched. This may be specified relative to the location of `DentalDB.exe` (e.g. "`..\..\DentalCADApp\bin\DentalCADApp.exe`")
`Params`	Defines the command line arguments. `%p` will be replaced by the path of the currently loaded project file (`.dentalProject`). For further options, see the comments in the XML file

Table 6: Explanation of the launch button tags

4.2 Enabling / Disabling Import From Intraoral Scanner ("iTero Import")

Upload and import buttons may be disabled.
The associated configuration entries in the `(default)settings-db.xml` file have the following structure:

```
<ApplicationSettingsDB ...>

   ...
   <ScanImport01Enabled>0</ScanImport01Enabled>

   ...
</ApplicationSettingsDB>
```

If you wish the import button to be enabled, set `ScanImport01Enabled` to `1`.

4.3 FTP Server

By default, the FTP upload button is not displayed. If you wish to display the FTP upload button, you need to rename the file `ftpconfig.xml.sample` in `DentalDB\config` to `ftpconfig.xml`.

FTP server configurations may be set in `ftpconfig.xml`. Under `<FTPAccess>`, set `<ftpHost>` to your desired server, including the `ftp://` prefix.
Example: `<ftpHost>`ftp://ftp.examplecompany.com`</ftpHost>`.

The `<ftpdir>` tag defines the target directory on the ftp server. Typically, you will want to set this to `/`. `<ftpuser>` and `<ftppass>` may be used to force a specific username/password; if left empty (recommended!), the user can type in username and password himself.

If you have trouble with your firewall not letting encrypted FTP connections through, you can configure encryption using the `<FTPEncryptionType>` tag (commented out by default – remove the `<!--` and `-->` to enable the option).
Possible values are:

- `ForceEncryptAll` (safe – default)
- `ForceEncryptControlConnection` (encrypt only login, don't encrypt transferred data. Unsafe!)
- `NoEncryption` (do not encrypt anything. Very unsafe!)

Upload file selection presets may be set under `<StartUploadFiles>`. Please look at the existing entries for examples.

> **IMPORTANT**
>
> Encrypted FTP is troublesome when firewalls are involved!
>
> If you want a file transfer solution that is both secure and trouble-free, use dentalshare instead. Thanks to better compression algorithms, this will also result in much faster transfer speeds.

4.4 dentalshare

All dentalshare users are assigned to a group. These groups are configurable for both up- and download.

4.4.1 Configuring a Group

> **INFO**
>
> This is only relevant if "dentalshare Project-Import" is enabled in user configuration.

Configurations for dentalshare groups may be set in `DentalDB\config\defaultsettings-DentalShare.xml`. Change the content of the `DefaultUserDomain` tag to your dentalshare domain.

If you prefer different configurations for upload groups, you may set this in:
`DentalDB\config\uploadsettings-DentalShare.xml`.
Change the content of the `Domain` tag to your dentalshare domain.

4.5 Disabling dentalshare Button

By default, dentalshare is enabled and the upload button is visible in the DentalDB tool bar. To disable it, simply delete the `uploadsettings-DentalShare.xml` file.

5 Switching Between Different Material or Indication Configurations

For editing the list of materials, parameters and indications, we provide the following tool:
`DentalDB\bin\WorkParamsConfigTool.exe`. This tool should not be delivered to end users.
The storage location of materials, parameters and available indications is `DentalDB\config\WorkParamsDB.xml`.

Additional presets for materials, parameters and indications may be set by creating additional files in the `DentalDB\config` folder, following the naming scheme `WorkParamsDB-<XYZ>.xml`. `<XYZ>` needs to be replaced by an appropriately chosen keyword, e.g. `WorkParamsDB-MyMillingCenter.xml`. This will appear as "MyMillingCenter" in the configuration dialog which is presented to the user to choose from.

6 Changing the Material Selection Layout

The layout for the material selection may be customized in:
`DentalDB\Skins\generic\DentalDB\NamedStyles\IndicationDefinitionDialogStyles.xaml`.

Images of materials are placed in the `DentalDB\icons\material` folder. The image needs to be a 400x400 pixel graphic. The naming scheme is `NAME.Material.png`. DentalDB will automatically select material images to be displayed with tag `Material/ShortName` from `config\WorkParamsDB.xml`. In order to match a new material image to the corresponding material, the new image simply needs to be correctly named and placed in the `material` folder.

7 Changing the Tooth Selection Control

For customers with high-volume orders, we offer customization of the tooth selection control. Please contact us for details.

8 Background Images and Logos

8.1 CAD Module Background

Save your background image as `BackgroundImage.xaml` and place it in the `DentalCADApp\icons` folder. It will be automatically loaded instead of the exocad logo.

If you wish to use a PNG instead of a XAML file, you may store your image as `BackgroundImage.png` and delete the `BackgroundImage.xaml` file. The image will be loaded in the original size, with no scaling applied. Make sure that the alpha channel (transparency) is properly set. This is especially required if you wish a color gradient as background.

The position of the background image may be customized in the `DentalCADApp\config\(default)settings.xml` file as follows:

```
<ApplicationSettingsCAD ...>

   ...

   <BackgroundImagePosition>TopLeft</BackgroundImagePosition>

   ...

</ApplicationSettingsCAD>
```

Possible values are:

- `TopLeft`
- `TopRight`
- `LowerLeft`
- `LowerRight`

8.2 DentalDB Bottom Logo

In order to change the DentalDB bottom logo, replace the `DentalDB\icons\BottomLogo.xaml` file by your logo.
If you wish to use a PNG instead of a XAML file, you may store your logo as `BottomLogo.png` and delete the file `BottomLogo.xaml`.

NOTE

Sample files for customizing background logos are available for download in the secure area of our website.

COPYRIGHT

Do not put misleading copyright notices in the logos (e.g. "Copyright © [Your Company Name]")!

The exocad Dental CAD platform is copyrighted by exocad GmbH and Fraunhofer IGD. If you wish to include a copyright notice, use "Copyright © exocad GmbH. Licensed to [Your Company Name]".

9 Changing the Product Names

Product names for DentalDB and DentalCAD may be customized.

DentalCAD

In `DentalCADApp\config\(default)settings.xml`, add/edit the content of the `VendorProductName` tag to a name of your choice, e.g. `<VendorProductName>`My Company Dental CAD`</VendorProductName>`.

DentalDB

In `DentalDB\config\(default)settings-db.xml`, define `VendorProductNameDB` the same way.

10 Integration of Splash Screens; Disabling Customization Options

Splash screens may be customized for DentalDB, DentalCADApp and for several modules. You may change the splash screens by replacing the default files.

The `DentalDB\icons` folder contains the default splash screen for the DentalDB (`splash.png`).

The `DentalCADApp\icons` folder contains the default splash screens for:

- DentalCADApp (`splash.png`)
- Nesting (`splash\nesting.png`)
- ModelCreator (`splash\modelcreator.png`)
- ExoViewer3D (`splash\viewer.png`)

We can also disable the possibility to change CAD background icon and product names in customer specific versions compiled for large OEMs. Therefore, the configuration options described here may not work with all releases of our software.

> **NOTE**
>
> Sample files for customizing background logos are available for download in the secure area of our website. Since you cannot change the splash screens yourself, we also provide a „preview tool" (available in the secure area of our website as well), which allows you to preview your splash screens, before sending them to us for the purpose of integration with the executable file.

11 Replacing Icons

Vector icons are stored in XAML format. Although it is possible for you to replace icons yourself, please note that special considerations are necessary to generate the XAML files correctly. If you have difficulties generating correct files, we provide you contact information of an icon designer who has experience creating XAML icons for exocad. We strongly recommend to use Inkscape 0.48 to create the XAML files. Other programs or software versions may or may not work.

It is important that the XAML icons you replace have the exact same dimensions as the original icons. To find out what these are, open the original XAML file in a text editor, and look for the `Width` and `Height` fields of the first `Canvas` tag in the file. Then, create a new file with the same dimensions.

Please make sure that the vector graphics do not contain any text fields; if you use fonts during the design of your icons, use Inkscape's "Path->Object to Path" function to convert it to a path. Also, make sure that there are no invisible layers before saving to XAML, as this will bloat the size of the XAML file and slow down startup of the exocad software.

Converting SVG to XAML

If your icons are not provided in XAML format but as SVG, you may perform the following steps in Inkscape to convert these icons to XAML:

Step 1:   Load the SVG file in Inkscape.

Step 2:   Set the color to the original color.

Step 3:   Set the size to the original size of the XAML file you are replacing (`32x32` for most icons). Refresh the centering of the graphic.

Step 4:   Perform "Path > Object To Path".

Step 5:   Export the image as Microsoft XAML.

Converting XAML to PNG

We use XAML for our icons for several reasons, e.g. their scalability. As some icon designers use other file formats, you may wish to provide them the icons in a format they can handle. This will help your designer to understand what the icon names stand for.

We offer a tool for converting the icons from XAML to PNG format which you may activate by using the following command line option: `DentalCADApp.exe /ConvertXamlIconsToPNG`

> ⚠️ **IMPORTANT**
>
> Delete the PNG files in the `icons` folder before delivering! As the software loads all icons in this folder when starting, having the icons saved as both XAML and PNG format will slow down the starting process!
> We do not recommend to replace the XAML icons by PNG files!

11.1 Arrow Icons

The arrow icons are stored in `DentalCADApp\icons`.
In detail, these are: `InArrowIcon`, `OutArrowIcon`, `DownArrowIcon`, `UpArrowIcon`, `LeftArrowIcon`, `RightArrowIcon`.

11.2 Toolbar Icons

When changing the toolbar icons, please consider the following:

- To ensure, that the toolbar icons fit to the new software look, the software will turn colored icons to monochrome icons. It is recommended to choose a monochrome icon design from the start. For shading, please use the alpha channel.

- Some icons are displayed within a circle. This circle is not part of the icon file and is not customizable. If you prefer toolbar icons without circles, you may choose one of our alternatives which you will find in the following directory: `DentalCADApp\Skins\generic\Common\NamedStyles`.

  We offer the following files for toolbar button styles:

  - Standard: `ToolBarButtonStyle.xaml`

  - Alternative: `ToolBarButtonStyle_alternative.xaml`

  - Alternative 2: `ToolBarButtonStyle_alternative2.xaml`

  By default, we use the first file. If you decide to choose one of the alternative files, you need to rename the XAML file name to `ToolBarButtonStyle.xaml` (overwriting the old file) to apply the change. For screenshots showing the

different styles, see Figure 1.

● Colors of icon, circle and background are customizable for both the toolbar (on the right) and the expert mode toolbar. Entries that are related to the expert mode toolbar are marked with `Expert*` in `(default)colors.xaml`. Other elements such as the "Back" button in DentalDB dialogs use one of the basic colors (e.g. `BrandColor1`) for icon and circle.
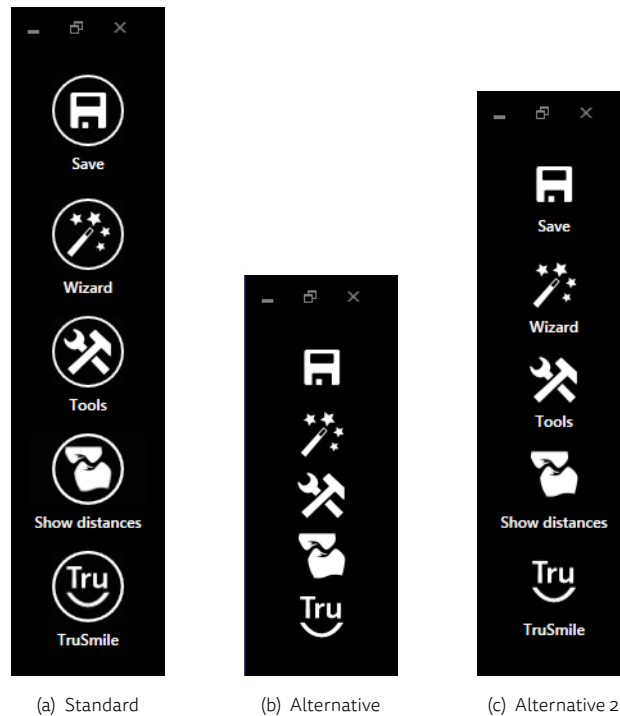

(a) Standard   (b) Alternative   (c) Alternative 2

Figure 1: Toolbar button styles

11.3 Main Window Icon

The `MainWindow.ico` file is placed in the `DentalCADApp\icons` folder. While the software is running, this icon will be displayed in the top left and in the Windows task manager.

The icon of the executable itself cannot be changed. However, you may create a shortcut (manually or using Windows installer) to the executable and then replace its icon[4].

12 Changing Behavior of Certain Design-Related Algorithms

The behavior of certain algorithms that effect the output characteristics can be adjusted to match your preferences. If you are willing to experiment and run test series to find out what works best for you, you can change the parametrization of some of the internal algorithms used.

12.1 Cement Gap Transition Smoothness

Recent exocad versions (since 2015) generate smooth cement gap transitions by default, so configuration of this option should no longer be necessary.

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[4]See **7tutorials.com/how-change-icon-shortcut**

12.2 Shape Preservation During Adaptation of Tooth Models to the Preparation

You can configure the algorithm's behavior during the adaptation of the model teeth using two parameters, to control the trade-off between "best possible preservation of the original tooth shape" (less adaptation) and "smoothest adaptation to the individual patient situation" (more adaptation).

This can be adjusted in `DentalCADApp\config\defaultparameters.xml`. There are two parameters:

`CrownAdaptationMarginForShapePreservation`

This defines the zone around the margin line that may have its shape heavily changed during adaptation, in millimeters.
Higher value = a larger portion of the tooth will be deformed
Lower value: a larger portion will have its original shape preserved (thus resulting in an overall more edgy and less smooth shape).

`CrownAdaptationShapePreservation`

This defines the strength of the shape preservation.
Low value = Less shape preservation, more round and smooth result.
Larger value = More shape preservation, thus more edgy transitions. Note that the scale is nonlinear!
Useful values to experiment with are 0, 0.0001, 0.001, 0.01, 0.1. Higher values are not recommended.

12.3 Margin Line Smoothness / Control Point Distance in Margin "Edit" Mode

When editing the margin line using the „edit" tab, some customers prefer to have many control points with narrow spacing, for high accuracy (default configuration), whereas others like to have a larger spacing between control points, resulting in a more smooth margin line (less accuracy, default behavior of many competitors' products).
This can be controlled using three parameters:

1. `PreparationMarginControlPointInitialDistanceStepDistance`
   Maximum distance of two control points, independent of the shape of the curve.

2. `PreparationMarginControlPointRefinedDistanceStepDistance`
   Minimum distance between two control points, in areas of high curvature.

3. `PreparationMarginControlPointRefinementDeviation`
   If point on detected margin has higher a distance than this value from the straight line between two control points, an additional control point will be inserted.

Two examples:

Even distribution of control points with distance 1mm:

```
PreparationMarginControlPointInitialDistanceStepDistance = 1.0
PreparationMarginControlPointRefinedDistanceStepDistance = 1.0
PreparationMarginControlPointRefinementDeviation= 1000
```

Typically, distance 1mm, but going as low as 0.5mm distance in zones of high curvature:

```
PreparationMarginControlPointInitialDistanceStepDistance = 1.0
PreparationMarginControlPointRefinedDistanceStepDistance = 0.5
PreparationMarginControlPointRefinementDeviation= 0.05
```

12.4 Behavior of the "Additional Spacing / Occlusal" Setting

By default, when using the "occlusal" slider under "additional spacing", an additional spacing in occlusal direction will be applied evenly everywhere – also near the margin line.

If you do not like the default behavior, you can change this in the `(default)settings.xml` file by setting the option `<AdditionalSpacingZNearPrepline>`false`</AdditionalSpacingZNearPrepline>` to change the behavior. After setting this option, no additional Z spacing will be applied in "the untouchable near margin line", defined by the setting "Don't block out near prepline" in the crown bottom dialog.

> ### NOTE
>
> We added a new option "Occlusal (top)". Try using this option first (available in the GUI) before changing the `AdditionalSpacingZNearPrepline` option.

12.5 Tooth Model Smoothing

If you prefer more smooth anatomic shapes, there are options to smooth tooth models on load.

Smooth models (range 0.0-1.0):
`<ToothModelSmoothing>`1.0`</ToothModelSmoothing>`

Chewing surface (range 0.0-1.0):
`<ToothModelSmoothingChewingSurfaceFactor>`1.0`</ToothModelSmoothingChewingSurfaceFactor>`

Radius (recommended to be left at 0.5):
`<ToothModelSmoothingRadius>`0.5`</ToothModelSmoothingRadius>`

12.6 Close the Top of the Screw Holes for Implant Based Structures

If you wish to close the top of the screw holes for implant based structures, you may add the following tag into `DentalDB\config\(default)settings-db.xml`: `<ImplantCloseHoles>true</ImplantCloseHoles>`

13 Controlling Coordinate System of Output Files

13.1 Aligning to Scan Data

By default, the output STL files are rotated so that the insertion axis is aligned with the Z axis. In some cases, it may be desirable to keep the original coordinate system, so that the output files remain properly aligned to the scan data.

This can be controlled with the following option, respectively:

For ‚normal' restorations:
`<RotateRestorationsToZAxis>`false`</RotateRestorationsToZAxis>`

For abutments and screw retained crowns:
`<RotateAbutmentsToZAxis>`false`</RotateAbutmentsToZAxis>`

13.2 Keeping Implant-Based Restorations in Implant Library Coordinate System

If you wish to retransform the output files of implant-based restorations (abutments and screw retained crowns) to the original coordinate system of the implant library, use this option:

`<RotateAbutmentsToImplantLibrary>`true`</RotateAbutmentsToImplantLibrary>`

14 Miscellaneous

14.1 Dongle Information

In order to write out the dongle information, you may use the parameter `WriteDongleInformationFileAndExit` when starting the `DentalCADApp.exe`. This will cause the executable to only write the dongle information into a file with-

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out starting the DentalCAD software.

Example: `DentalCADApp.exe /WriteDongleInformationFileAndExit=C:\temp\xyz.xml`

15 Support

We provide 3rd level support in case of technical questions/ issues related to our products, usage of the software, exoportal or the like. Our software trainers can also be contacted for quick on-line demonstrations of new features. To contact our support team, please send an email request to the email address of your region. Your email will automatically create a ticket in our support system exoportal. To follow-up, you can reply to our response email.

> ⚠ IMPORTANT
>
> **To resolve your issue quickly and smoothly, please:**
>
> ● send a separate email for each issue. Please do not introduce new topics to an existing email conversation!
>
> ● do not modify the subject line of the support reply email!
>
> ● provide all necessary data (project file, scan data, construction files) and additional information (software build number, OS etc). Without this data, a problem (technical or usage) cannot be reproduced and will not be handled!

For the contact information for your support region, please visit **exocad.com/secure-area/support**.

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