



VECTORWORKS®

interiorcad

Vectorworks interiorcad – Production Realism

## Tutorial Desk

Tobias Lambrecht  
Stephan Mönninghoff  
Hans-Martin Kern



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**extragroup** 

# 1 Goals and Introduction

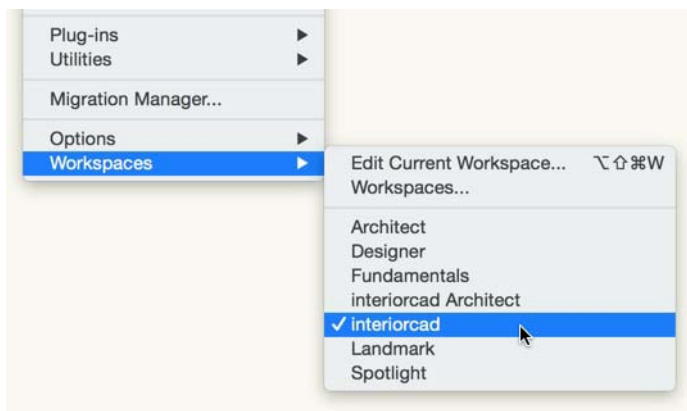
The goal of this tutorial is to model the construction and assembly of a desk with two lower cabinets. Here is a quick overview of what you will cover:

- Creation of cabinets and custom parts
- Light sources and photorealistic rendering
- Fittings, parts lists and CNC output

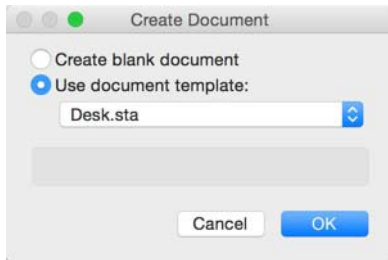
To complete this tutorial, you can use your commercial licence, but you can also use the demo or educational version of Vectorworks interiorcad. Don't hesitate to contact us for a free 30-day trial version.

The keyboard shortcuts used in this book are indicated as Windows shortcuts. If you use OS X operating system on a Macintosh computer, the «cmd» key replaces the «Ctrl» key. Otherwise, the commands are identical.

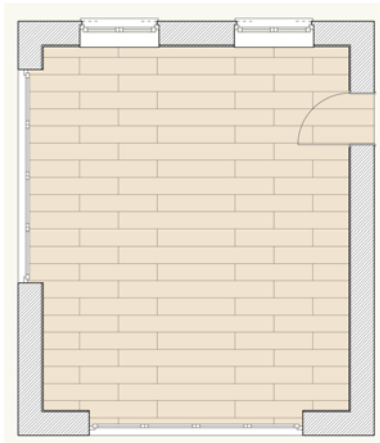
Before you begin, please open «Tools > Workspaces» and select the «interiorcad» workspace.



Please choose «File > New» and select the document template «Desk.sta».



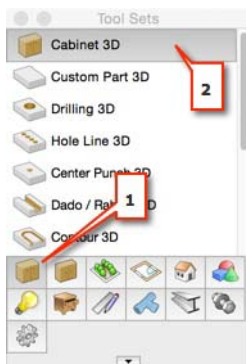
In this file, you'll find a pre-prepared plan of a room, which contains Walls, Doors, Windows and a Floor.



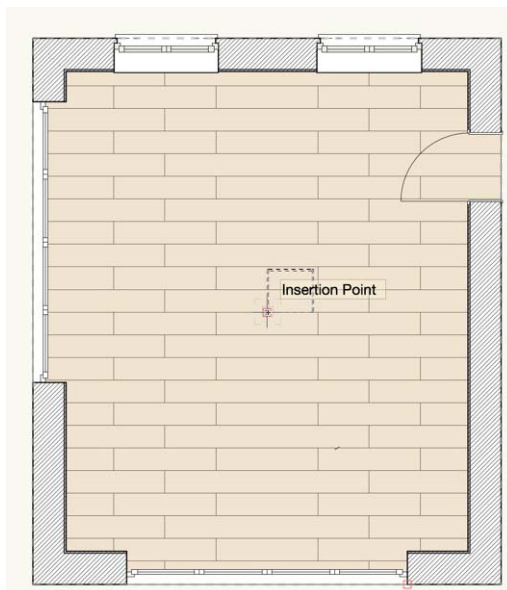
## 2 Desk construction

We will create one of the base units first.

- In the «interiorcad» tool set, select the «Cabinet 3D» tool

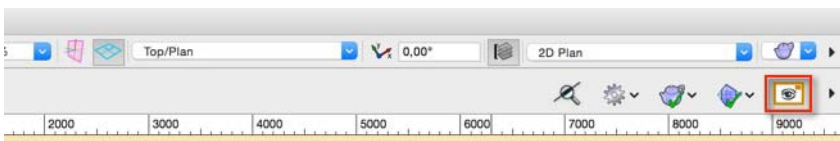


- The insertion point of the cabinet is its lower left corner. Insert the cabinet - with two clicks - on the «Insertion Point» approximately in the middle of the page.

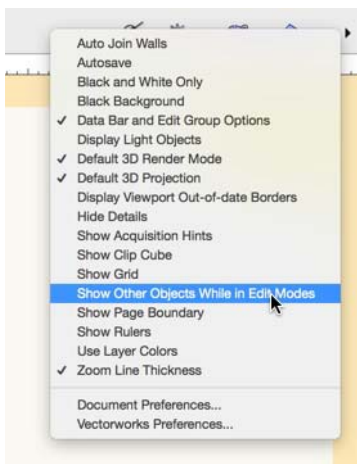


- Groups are a useful as a drawing aid, as they enable you to edit 3D geometry with the surrounding elements of the model hidden. Press «Ctrl + G» to create a group from the selected cabinet.
- Please press «X» to activate the «Selection» tool.
- Double click on an edge of the cabinet to enter the group.

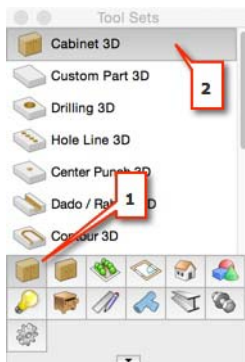
- Within the group, the space in the background is grayed out. To avoid accidentally snapping other objects in the model, disable the function «Show Other Objects While in Edit mode» to completely hide the room.



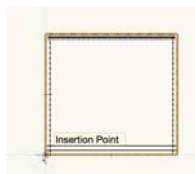
- If you cannot find this function on the top right of the drawing area, you can activate the Quick Preference by clicking on the small arrow to the right.



- Choose the «Cabinet 3D» tool again.




- Move the mouse to the bottom left corner of the cabinet in the drawing area – so the preview of the tool is exactly aligned with the cabinet you inserted in the steps above (do not click yet!).



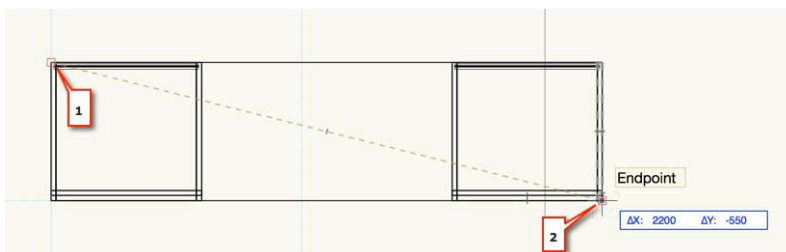
- Press «G», then the «Tab» key and type the value 1600 at «x» and confirm with the «Enter» key. The preview image is shifted 1600 mm to the right. Move the mouse to the right and double-click to insert the second cabinet when the message «Align V» is displayed.



- On the «Basic» palette, choose the «Rectangle»  tool.
- On the «Tool bar», select the «Corner to Corner» mode.

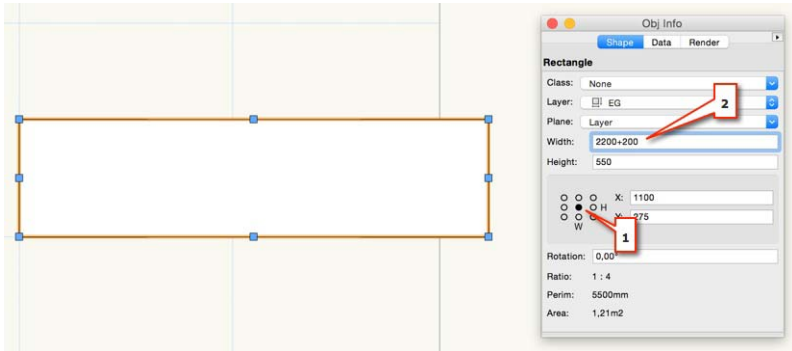


- Draw a rectangle with two clicks from the upper left to the lower right side of the two cabinets.

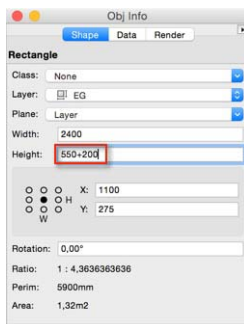


- On the «Object Info» palette (in the top right of your drawing area) set the insertion point to «middle». That way you can change the size of the rectangle evenly in all directions. Then type «+200» to the right of the existing «Width» value. The

rectangle's width increases by 100 mm respectively to the right and left beyond the furniture.



- Repeat this process in the «Height» field. The rectangle increases in size on the top and bottom by 100 mm.

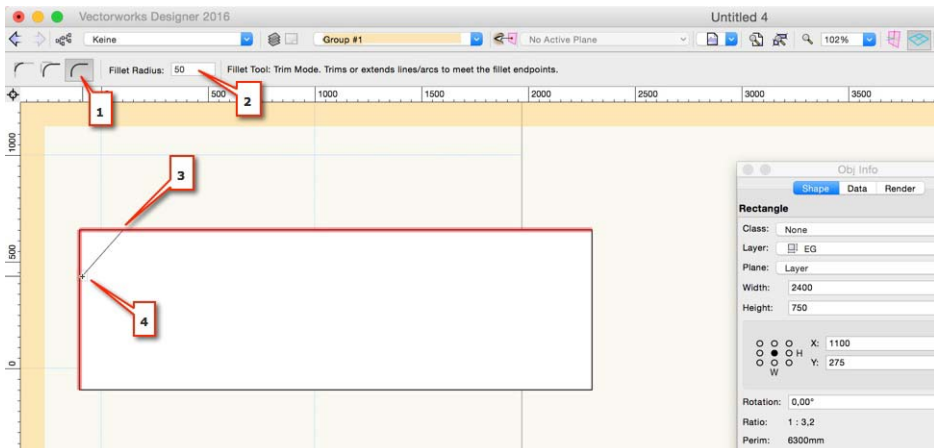


- Now we round the edges of the panel. On the «Basic» palette, please choose the «Fillet



» tool.

- On the «Tool bar», select the third mode and set the «Fillet Radius» to 50. Then click first on the back, then on the left edge.



- Round off the right back corner in the same way, so the result looks like the shape shown here.

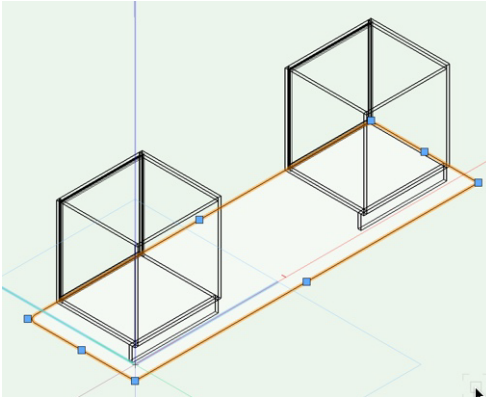


- Please press «X» to activate «Selection» tool and change the view to «Left Iso».

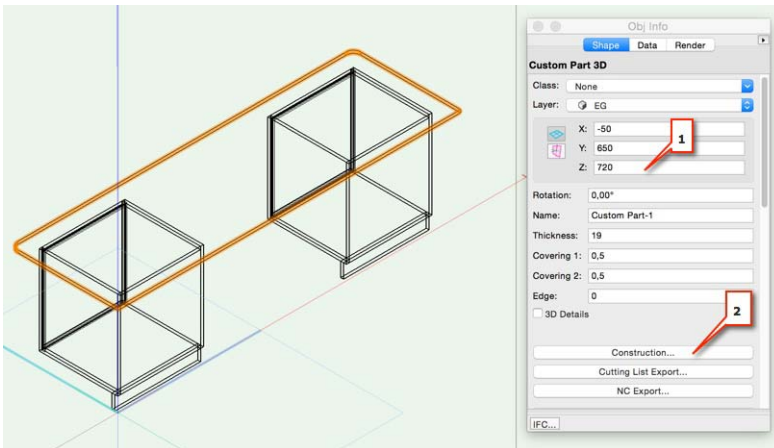




- Now the rounded rectangle is situated on the ground plane.



- Press «Ctrl + Alt + 1» to create a «Custom Part 3D». Custom Parts are furniture components, similar to the workpiece on the CNC.
- On the «Object Info» palette, set «z» to 720. This will move the panel to the correct position, above the cabinets.



- Then click the «Construction» button. If you don't see the button, scroll down to the palette.

- Now, you can allocate materials to the worktop. First, select the preset «Beech Veneer», then enter the name «Worktop» in the «Description» field. To the right of the name «Board», click the magnifying glass icon.

Construction...

Favorite: Beech Veneer Save...

Construction

Description: Worktop

Board: Chipboard-19 Chipboard

Covering 1: Ve-Beech-0.5 Beech

Covering 2: Ve-Beech-0.5 Beech

Edging: Beech-24\*2 Beech

Finishing 1: Keine

Finishing 2: Polyurethan Keine

Finishing 3: Polyurethan Keine

Note:

Cancel OK


- Choose «Chipboard-38» and click «OK» to close both dialogs.

Board selection

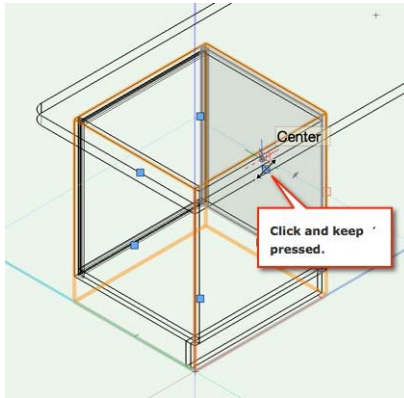
All material groups 19

Synchronized with profacto®

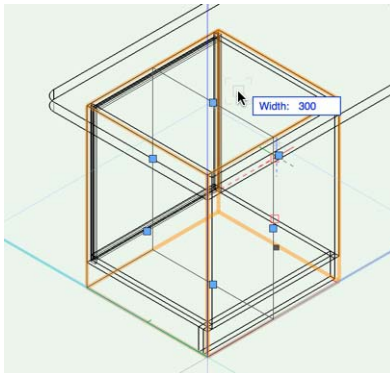
Article no.	Description	Thickness	Supplier	Texture
Chipboard-04	Chipboard	4	Fine Woods	Chipboard
Chipboard-06	Chipboard	6	Fine Woods	Chipboard
Chipboard-08	Chipboard	8	Fine Woods	Chipboard
Chipboard-10	Chipboard	10	Fine Woods	Chipboard
Chipboard-13	Chipboard	13	Fine Woods	Chipboard
Chipboard-16	Chipboard	16	Fine Woods	Chipboard
Chipboard-19	Chipboard	19	Fine Woods	Chipboard
Chipboard-22	Chipboard	22	Fine Woods	Chipboard
Chipboard-25	Chipboard	25	Fine Woods	Chipboard
Chipboard-28	Chipboard	28	Fine Woods	Chipboard
Chipboard-32	Chipboard	32	Fine Woods	Chipboard
Chipboard-38	Chipboard	38	Fine Woods	Chipboard
Chipboard-...	Chipboard v...	5	Fine Woods	Beech
Chipboard-...	Chipboard v...	8	Fine Woods	Beech

- The panel thickness has increased according to the chosen material.
- Now we match both cabinets.
- Press «X» to activate the «Selection» tool and click on the left cabinet.
- On the «Basic» palette, choose the «Reshape  » tool.

- Click on the right blue reshape handle.

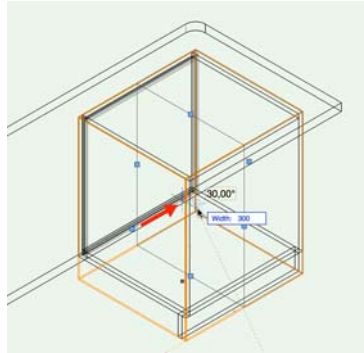


- Hold down the «'» backquote key to temporarily disable snapping and drag the mouse inside. Click when you have reached a cabinet width of 300. If you have problems hitting 300, you can enter the value directly by moving the mouse a little and confirming by tapping the «Enter» key twice.

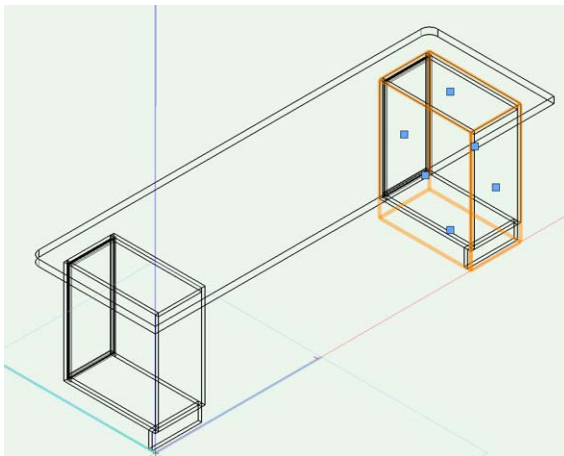


- If necessary, zoom closer to the right cabinet.

- Then click while holding down the «Alt» key on the right cabinet and shape it using left reshaping point to the width of 300. Hold down the «'» backquote - key during this action.

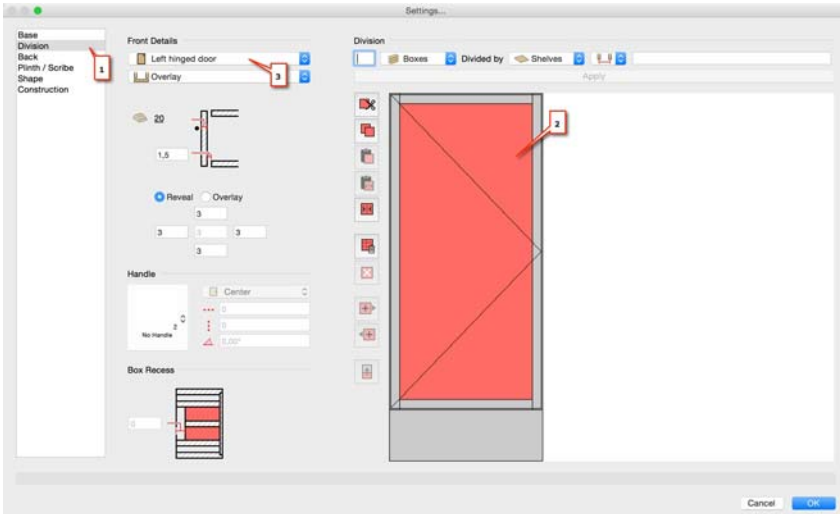


- The results look like this.

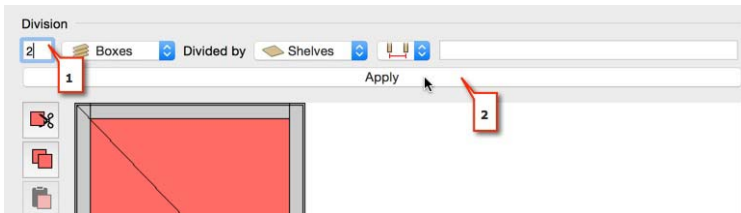


- Press «X» to choose the «Selection» tool, zoom out to the left cabinet and double-click on its edge. You are now going to edit the cabinet to include a cable outlet and a door without handles.

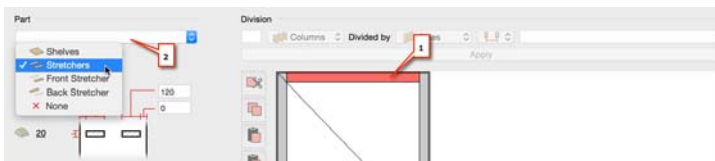
- Click on the «Division» tab. Below «Front Details», choose «Left Hinged Door». The preview will update to display a door on the front of the cabinet.



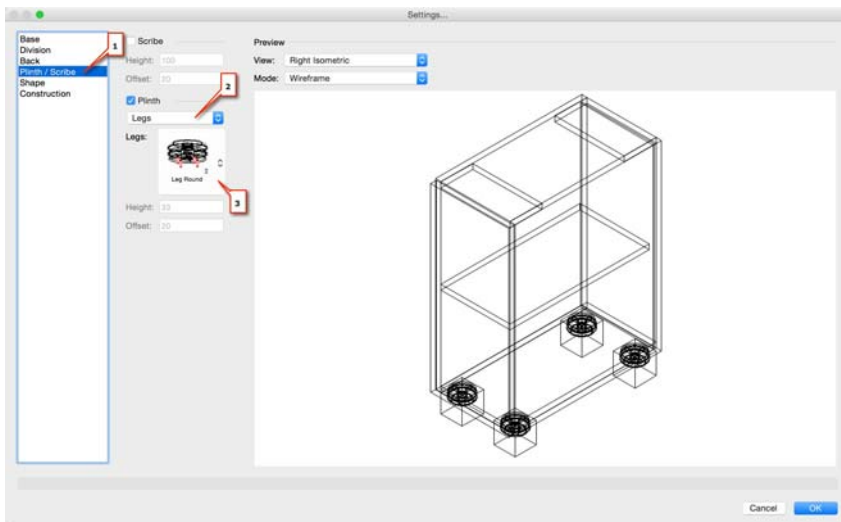
- Below «Division» and to the left of «Boxes», enter «2» and click on «Apply» to add a shelf.



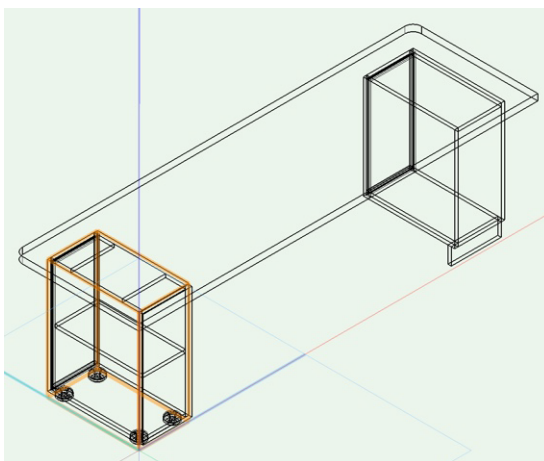
- To allow space for cable management we will put the cabinet top on stretchers. Click on the top first, and then select «Stretchers» from the «Part» menu.



- Click the «Plinth / Scribe» tab. Select «Legs» from the Plinth pop-up menu, and then click the Legs symbol selector, and choose «Leg Round». Click «OK» to close the dialog.

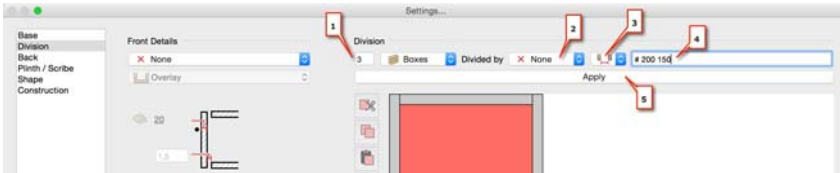


- The cabinet is updated and shows the new settings.

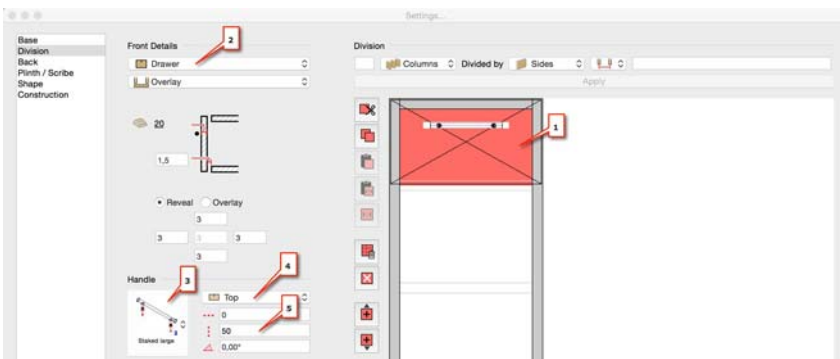


- Now double-click on an edge of the right cabinetto open the «Settings» dialog. Click the «Division» tab and click on the cabinet preview.
- Enter «3», and then choose «Boxes». Change «Measurements include proportionate side/shelf thickness», to «Inside distances between side/shelves are equal» (Steps 1, 2 and 3).

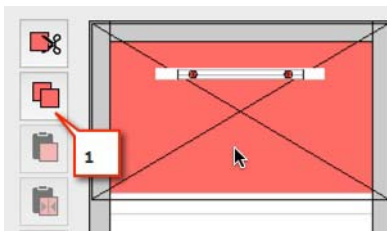
- Enter the division «# 200 150» (Step 4), then click on «Apply». The values are allocated from the bottom of the cabinet to the top. The top compartment becomes 150, the middle 200 and the lower drawer is assigned the remaining space.



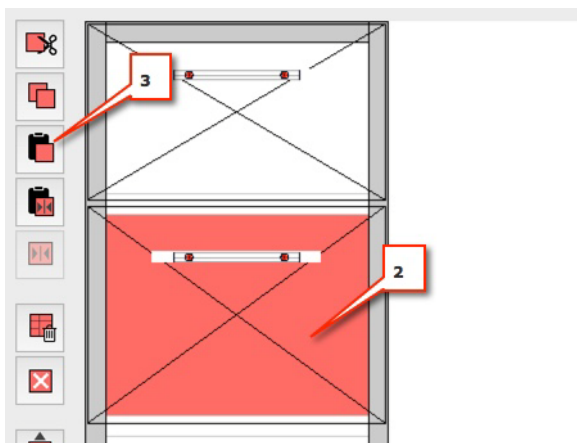
- Now, we will assign drawer fronts. In the preview window, click on the top division, in the Front Details pop-up menu, choose «Drawer».
- Click the Handle symbol selector and choose the «Staked large» handle. Place it 50 mm from «Top».



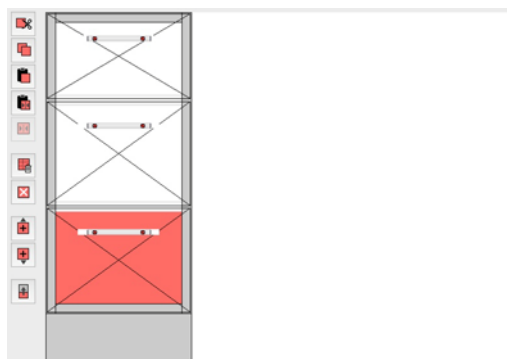
- Now you can copy all settings so that they can be transferred to the other divisions....



- ... and click in the middle drawer/division and click «Paste».

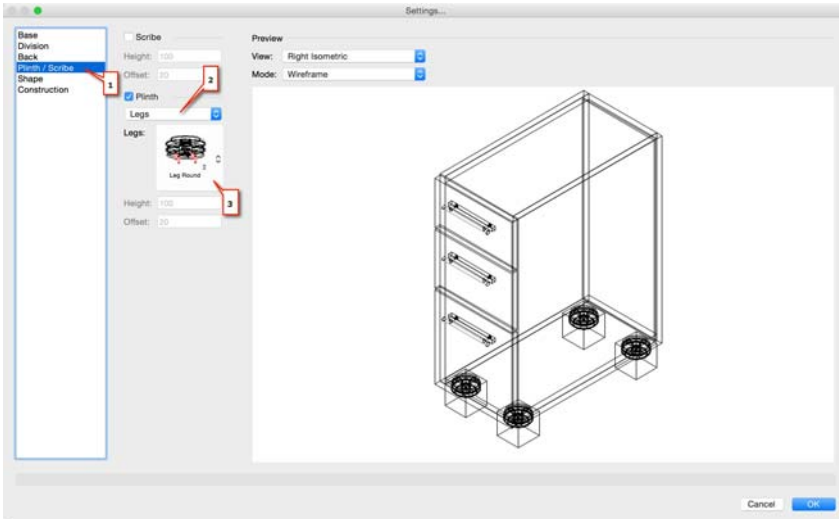


- Repeat the same procedure for the third drawer/division.





- Now we will assign the feet. Click the «Plinth / Scribe» tab and select the feet, using the same process as you used for the left cabinet.

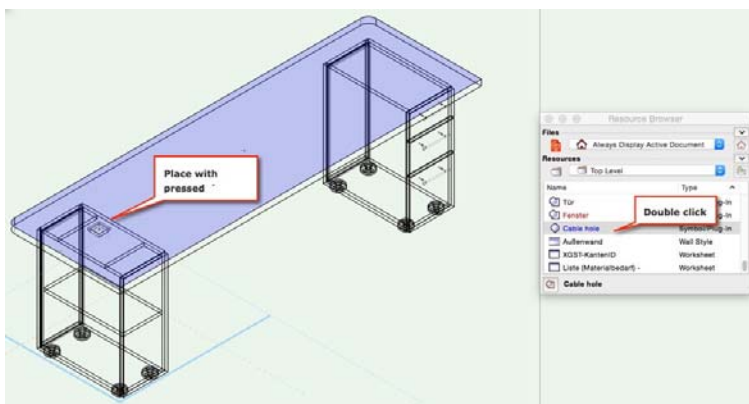


- Click «OK» to close the dialog.

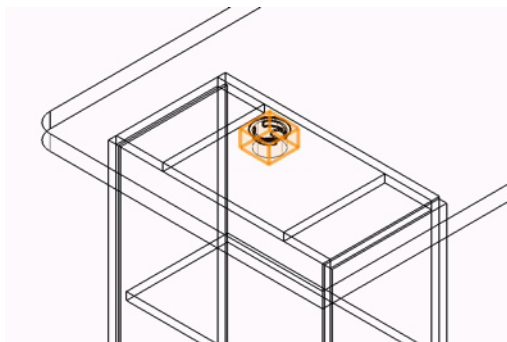
We are now back on the drawing area. Now, the only thing missing in the design, is the cable outlet. The geometry of the passage we have downloaded from Häfele and is furnished with a hole. Later, in the CNC version, that is where the working surface will be drilled.

- Double-click on the symbol «Cable hole» in the «Resource Browser».
- Zoom in on the left cabinet.
- Hold down the «'» backquote - key to temporarily disable snapping. The cable outlet should be inserted between the two crossbars. The exact position is not important.

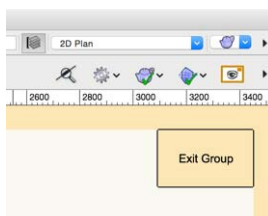
- Click twice as shown to insert the cable outlet symbol.



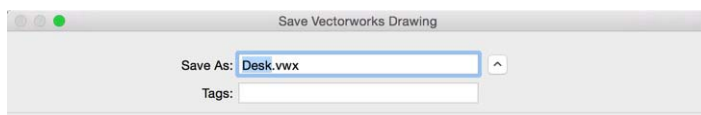
- The cable outlet is complete.



- Click the orange «Exit Group» button at the top right of the screen, to return to the drawing area.



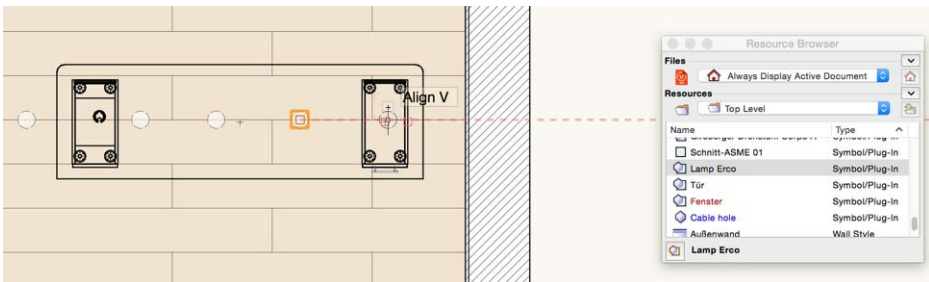
- Save your design with «Ctrl + S» and name the file «Desk.vwx».



### 3 First photorealistic Illustration

Now we'll add some lights and an office chair. Then we will start the first rendering.

- Press «Ctrl+5», to return to the «Top/Plan» view.
- In the «Resource Browser» double-click on the symbol named «Lamp Erco».
- Then, with two clicks for each symbol, add five lamps over the desk. The exact positioning is not relevant in this example. When you release the mouse but remain for a moment on the center of the last lamp used, an extension line for aligning the next lamp appears. Thus, all lamps are perfectly aligned.



- Finally, we will place the office chair. As usual, double-click in the «Resource Browser» to choose.
- Now, click in front of the desk, move the mouse pointer until the chair has rotated into the position as shown, and then click again.

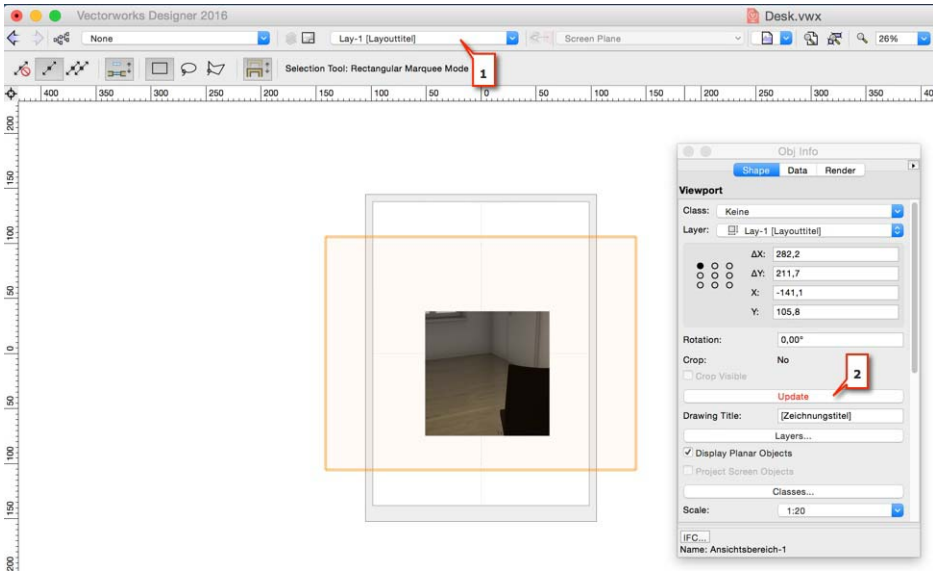


Now we will begin the rendering

- Vectorworks interiorcad distinguishes between «Design Layers» and «Sheet Layers». Design Layers are planes on which you create your mode. Sheet Layers represent physical sheets of paper on which you will present views of the model. When you create photorealistic images on Sheet Layers, they will not affect the presentation

mode on the Design Layer, so you can continue to work on the model without affecting any views you have already rendered. Select the Sheet Layer «LAY1».

- Press «X» to activate the «Selection» tool and select the viewport with one click.
- In the «Object Info» palette click on «Update».



- The rendering may take a moment to complete. The emerging image should look something like this.

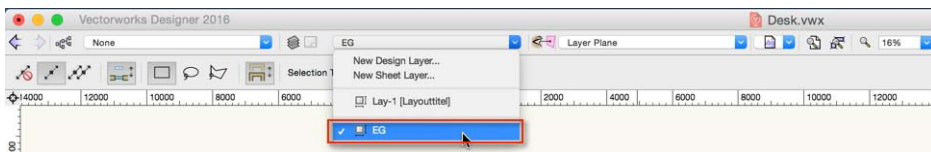


## 4 BOMs and CNC output

Everything we have built already contains BOMs (bill of materials) and CNC data. The cable outlet is supplied with its hole and the handles and feet are supplied with all the necessary information.

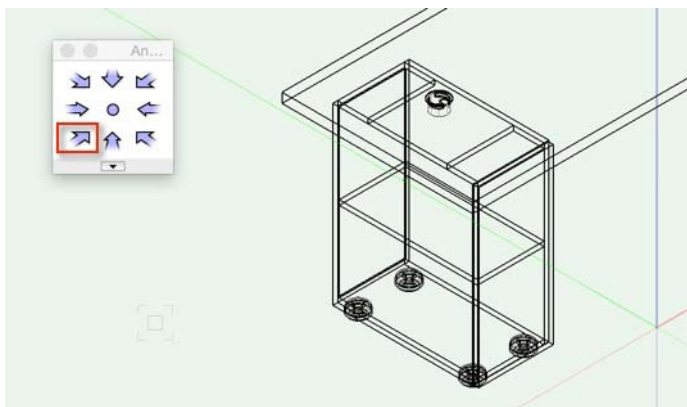
To obtain a complete bill of materials and a CNC output, we now only need to add fixtures for the cabinet and countertop, bands and drawer extracts.

- Make «EG» the active design layer.



- Double-click on the desk to enter the group.

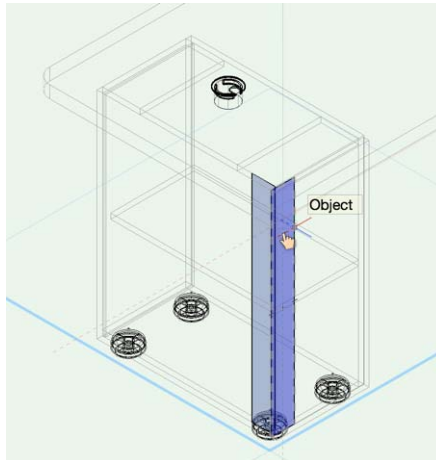
- Please change view to «Left iso» and zoom in on the left cabinet, as shown.



- On the «interiorcad» toolset, choose the «Hinge 3D» tool. This tool enables you to position hinges on doors.



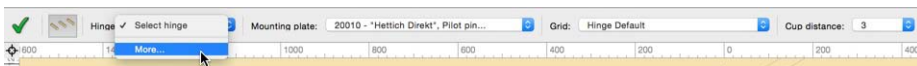
- The first click determines on which door front the hinges should be positioned.



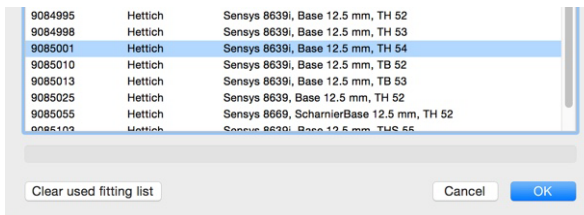
- On the tool bar, use the content browser pop-up menu to select the appropriate hinges for the door type. Use the tool bar to set the cup distance. Click «Insert a hinge on every grid point» to insert both hinges simultaneously.



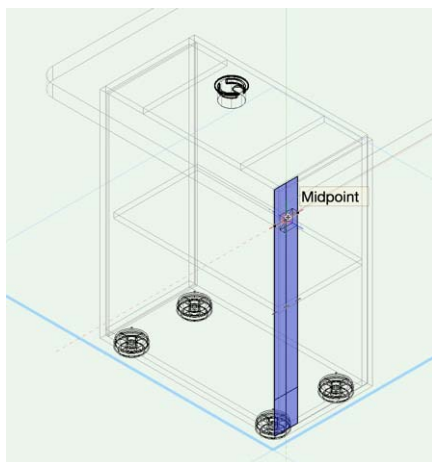
- The pop-up menu «Hinge» contains the hinges last used. If your list is empty, please select «More...» to select an alternative.



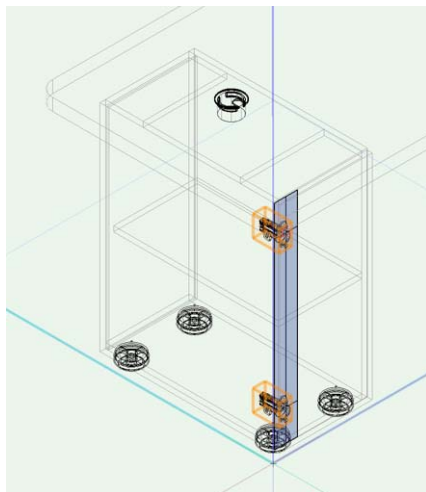
- Choose «Hettich Sensys 8639i, TH 54» or the «Blum Clip-top 110°» and click «OK».



- Move the mouse until the «Midpoint» cue is displayed, and then click.



- Both hinges will now be inserted in the appropriate position.



The drawer slides are placed in a similar manner.

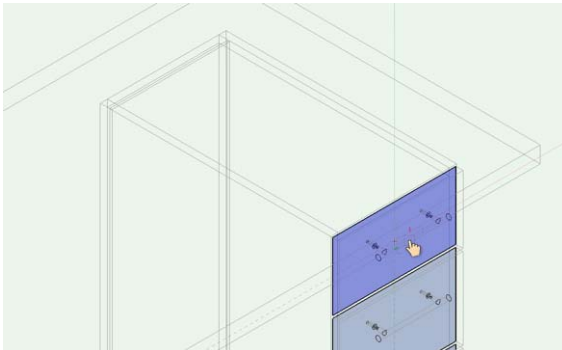
- Please press «X» to activate the «Selection» tool.
- Use the mouse to zoom in on the right cabinet.



- In the «interiorcad» tool set, click the «Drawer 3D» tool.



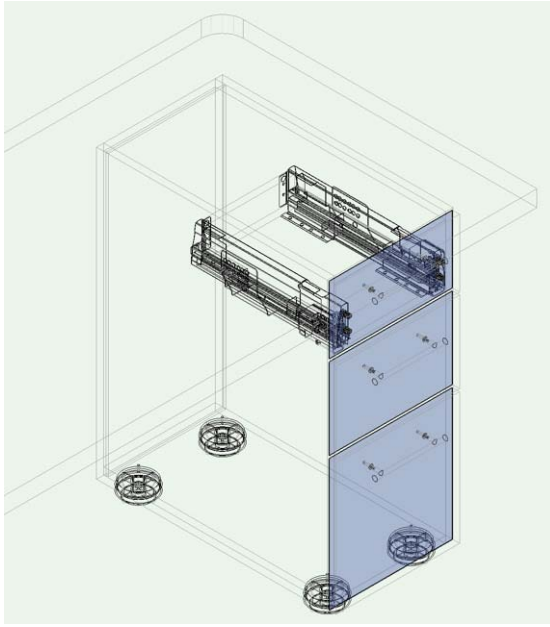
- Click on the top drawer front. This determines, where you want to install a drawer system.



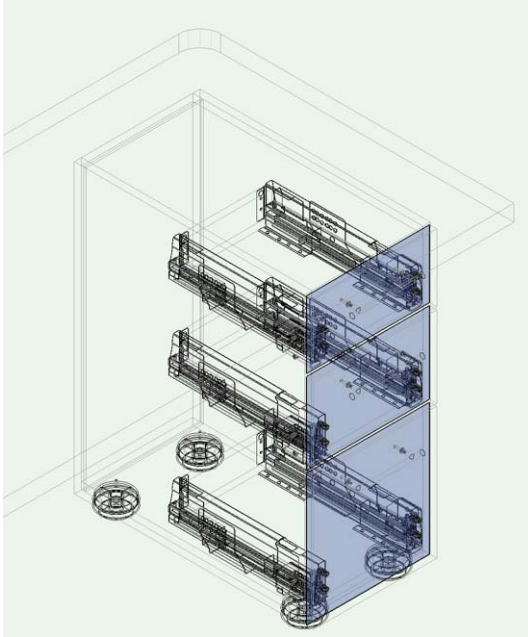
- Now, select the drawer profile and slider as shown and press the enter key or the green check mark in the tool bar.



- The drawer profiles and sliders will now be installed.



- Then click on the middle drawer front, choose «Moovit» and confirm with «Enter». The last drawer is positioned in the same way. The result now looks like this.

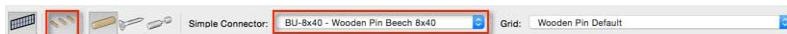


Finally, we will insert the dowels.

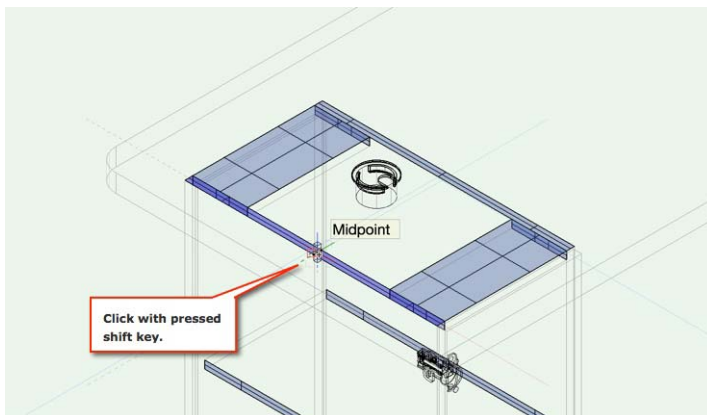
- Please press «X» to choose the «Selection» tool.
- Zoom in on the left cabinet.
- Please choose the «Simple Connector 3D» tool from the «interiorcad» tool set.



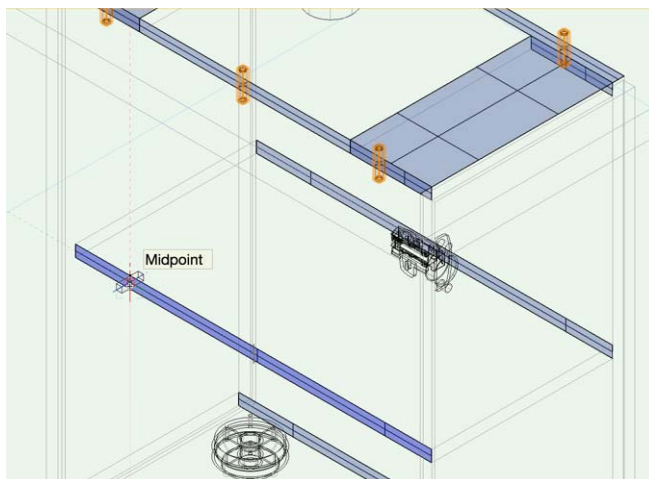
- Choose the dowel «Wooden Pin Beech 8x40» and the mode «Insert a simple connector on every grid point».



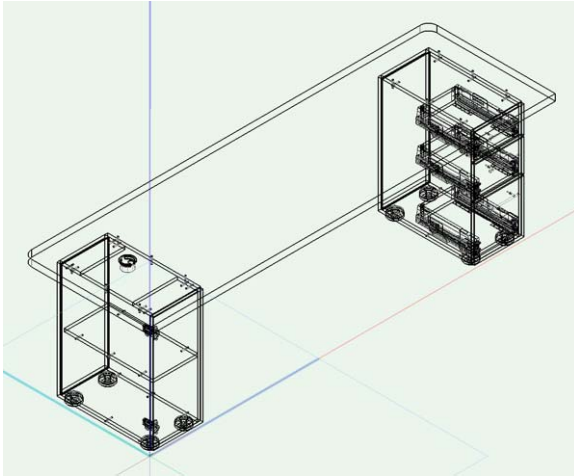
- Click while holding down the «Shift» key on the grid intersection in the center of the support of the tabletop. The worktop is automatically pegged on all contact surfaces.



- To dowel both cabinets, zoom in with the mouse on the left cabinet side. Move the mouse until the «Midpoint» cue is displayed. Press and hold «Shift», and click to place the dowels.

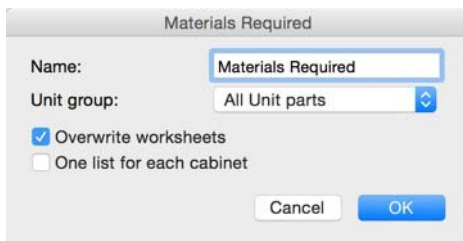


The desk with all hardware looks like this:



To create the bill of materials or BOMs, you must still be in the group in which you have designed the desk:

- Please press «X» to activate the «Selection» tool.
- Press «Ctrl+A», to highlight all objects.
- Choose «interiorcad > Documents > Materials Required». Enter a name for the list, then click «OK».

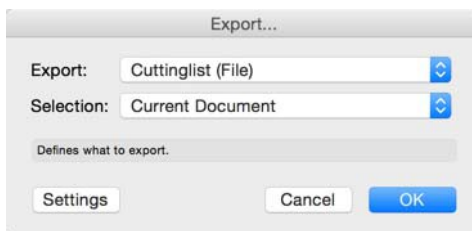


- A bill of materials is created in a Vectorworks worksheet.

List (Materials Required) - Materials Required @ 100%

File Edit View Insert Format										
A1 X Material										
	A	B	C	D	E	F	G	H	I	J
1	Material									
2	Project No.	Proj-ID n/a								
3	Customer	Project n/a								
4	Project	Construction n/a								
5										
6										
7	Item	Description	Amount	Waste %	Amount incl. Waste					
8										
9	Board Materials									
10	Chipboard-38	Chipboard	1,800000 m2	10,00 %	1,980000 m2					
11										
12	Covering									
13	Ve-Beech-0.5	Veneer Beech-0.5	3,600000 m2	40,00 %	5,040000 m2					
14										
15	Finishing									
16	Polyurethan	Polyurethan	0,364 l	20,00 %	0,437 l					
17										
18	Functional Hardware									
19	Ru-640	Wooden Pin Beech 6x40	44 piece	0,00 %	44 piece					
20	953.59.990	Front fixing Mount knob-in	10 piece	0,00 %	10 piece					
21	953.52.022	Profile Mount steel 80/350mm	10 piece	0,00 %	10 piece					
22	955.93.310	Mittelschleier	8 piece	0,00 %	8 piece					
23	9.071.578	Cross, Screw on, Distance 1.6 m	2 piece	0,00 %	2 piece					
24	117.66.026	Handle stainless steel, matt finish	3 piece	0,00 %	3 piece					
25	953.90.022	Sider Mount galvanneel 50kg 3l	6 piece	0,00 %	6 piece					
26	9.065.001	Sensys 8639, Base 12.5 mm, Th	2 piece	0,00 %	2 piece					
27										

- To export the list, choose «interiorcad» Export» Export Cutting List». If necessary confirm the «Production Settings» dialog with «OK». Export a «Cutting List (File)» and confirm with «OK».



- This creates a folder containing the exported files and you can use the BOM with Excel, OpenOffice, etc.
- If you are using VectorWOP, you can create the CNC output via «interiorcad» Export»Export NC». Since the CNC output requires a customization to your CNC machine, a test version of VectorWOP is not available yet.