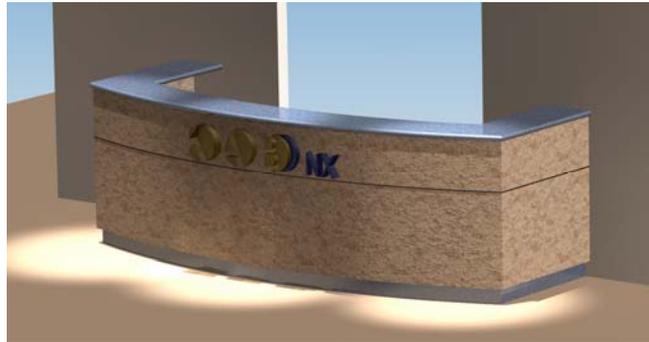




Knowledge Applied Building

seeing beyond the obvious

## PLM World '06



## Niche' Market Solutions for KF, Case Study

Dave Winze

[dwinze@kab-nx.com](mailto:dwinze@kab-nx.com)

630-562-1660

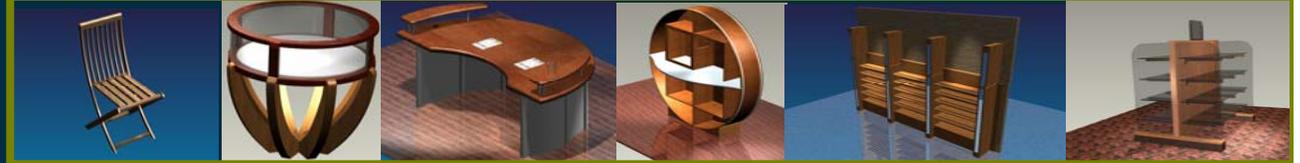
Premium Partners:



Microsoft

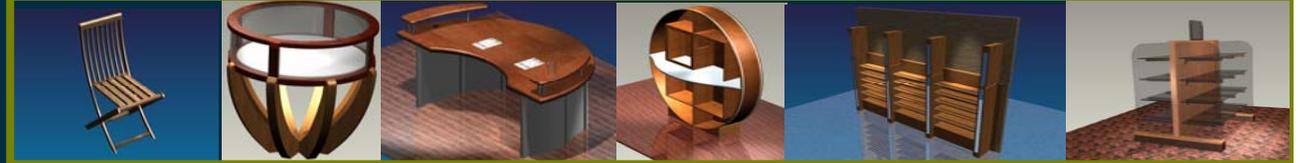


# KAB<sup>®</sup> NX



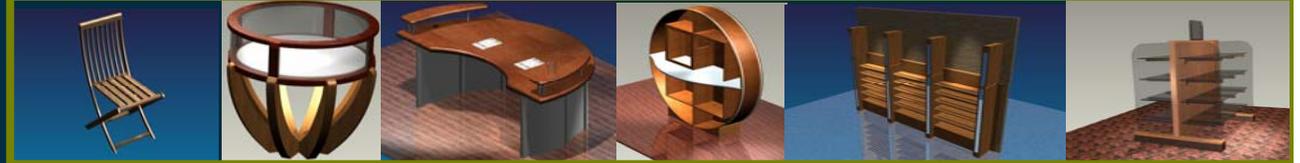
## KAB-NX Overview

- KAB-NX Objective: To provide an automated 3D Design to Manufacture Solution for the Woodworking and Associative Industries resulting in increased quality, standards, and most importantly rapid time to market for our customers.
- Development of KAB-Centric application, powered by UGS Knowledge Fusion 'KF' technology to automate NX design features.



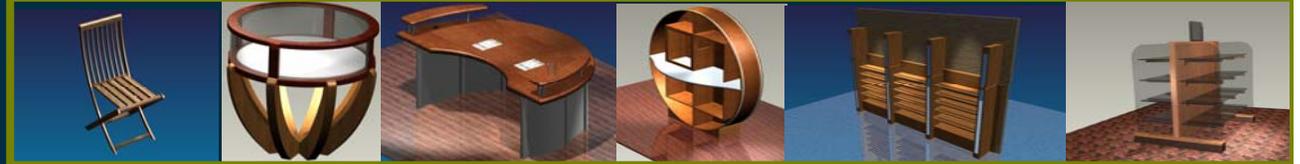
## Industry Challenges

- Industry currently primarily driven by 2D technology.
- Traditional 3D solid modeling is typically far too time consuming for project completion; Product lifecycles can sometimes be measured in days, not weeks or months.
- The learning curve for 3D is known as very lengthy.
- The engineering knowledge typically resides in manufacturing. Engineering Departments are more for Design only.
- Industry that is not heavily standards driven.
- Computer technology is relatively new in last 5-10 years.



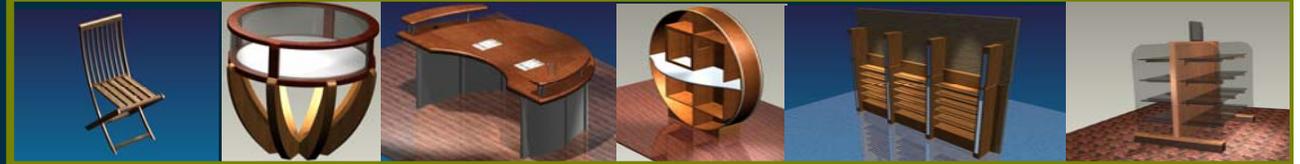
## Technological Challenges for the Industry

- Implementing complex technology without requiring personnel with many years of experience in 3D.
- Breaking down the 'Learning Curve' barrier to 3D.
- Capture and re-use of company best practices.
- Interface that makes sense to the user.
- The software must be very customer-centric, cannot make too many assumptions.
- Provide software with a short ROI.



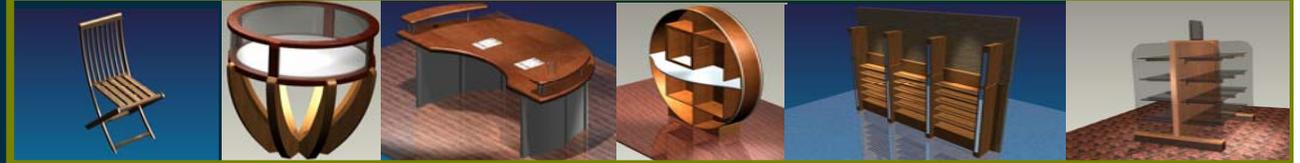
## Technological Challenges for the Developers

- Provide GUI's that are intuitive and provides clear direction for use.
- The software must be able to be used 'out of the box' with minimal setup.
- Does not require libraries of parts to create models.
- Provide a single interface portal.
- Connects with existing software in industry.
- Allows for scalability, depending on training and experience.
- A complete integrated 3D modeler that has the full advantages of the drafting, rendering, assemblies, etc..



## How KAB-NX Met the Challenge

- We utilized Knowledge Fusion to customize and automate NX.
- We created GUI's that are industry specific and allows the customer to use them as design tools.
- We break out the model into feature recognized output that can be imported to exact manufacturing specifications.
- We capture manufacturing best practices and allow for re-use, but do not require this information.



## Knowledge Fusion was the KAB-Centric development tool and allowed

- for feature creation that behaves like NX features through the use of `nx_application`.
- the ability to capture and re-use data within the features and outside data sources.
- the development of the product completely with source code while allowing interaction like a designer.



## Form, Fit, and Function is Key

### Single Panel / Rail Configurator

Panel Name: None | side

**Panel Parameters** | Rail Parameters

**Selection Type**

Select Curve / Edge

**Material Data**

Type: Sheetgoods  
Options: PB

Selected Material: 3/4\_PB\_material

**Panel / Rail Parameters**

Thickness: 0.7500  
Height (H1): 42  
Offset Height (S1): 0.0  
Offset Side (S2): 0.0000  
Offset End (S3): 0.0000  
Offset End (S4): 0.0000

Extrude Direction (DIR)

Reverse Panel / Rail  
 Centerline Positioning

Create/Update Panel

OK Apply Cancel

### Dado/Rabbet Joint Configurator

Select Preference: None

**Geometry Selection**

Healing

Both Panels  
 No Healing  
 Localized Healing  
 Curvilinear Joint

Joint Type

Dado  
 Rabbet

Dado Types: Blind W Pocket Screw

**Joint Parameters** | Location Parameters

Depth	(DP1)	0.1250
Depth	(DP2)	0.5000
Depth	(DP4)	0.5625
Distance	(P3)	1.7500
Distance	(P4)	1.7500
Diameter	(D1)	0.1875
Diameter	(D2)	0.4000
Width	(W1)	0.3750
Length	(L1)	2.0000
Angle	(A1)	20.0000

Spacing Rule: Option 3

Reference Edge

Number of Holes/Skips: 5

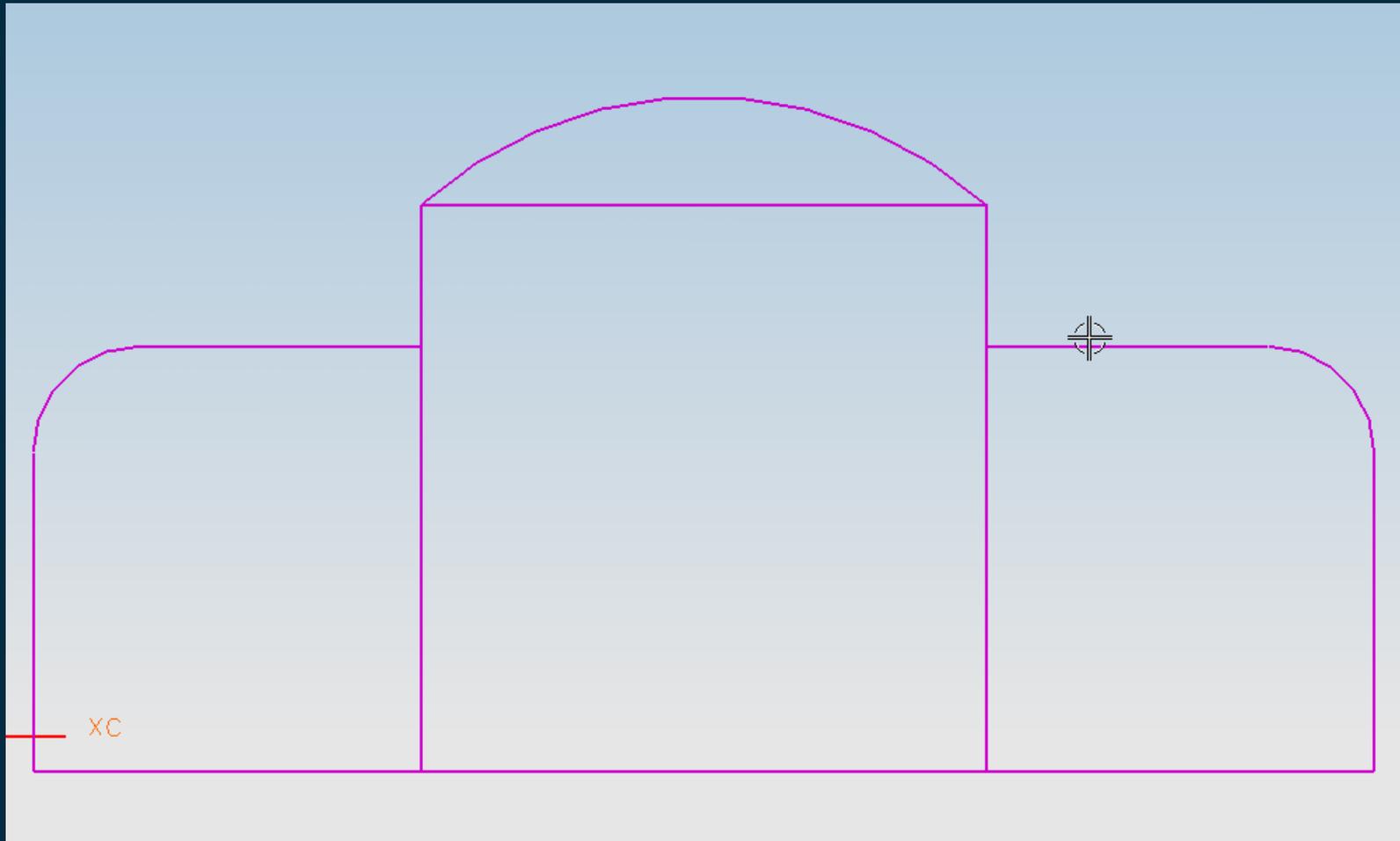
Dynamic Spacing Rule: 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 8

Reverse Joint

OK Apply Cancel

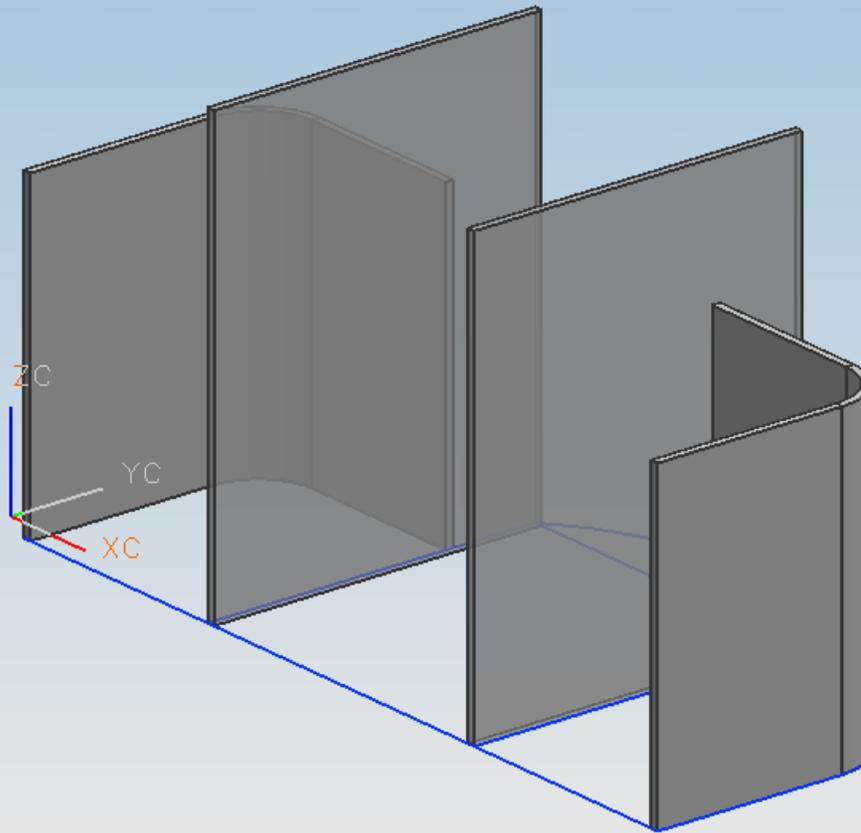


## It All Begins from the Top



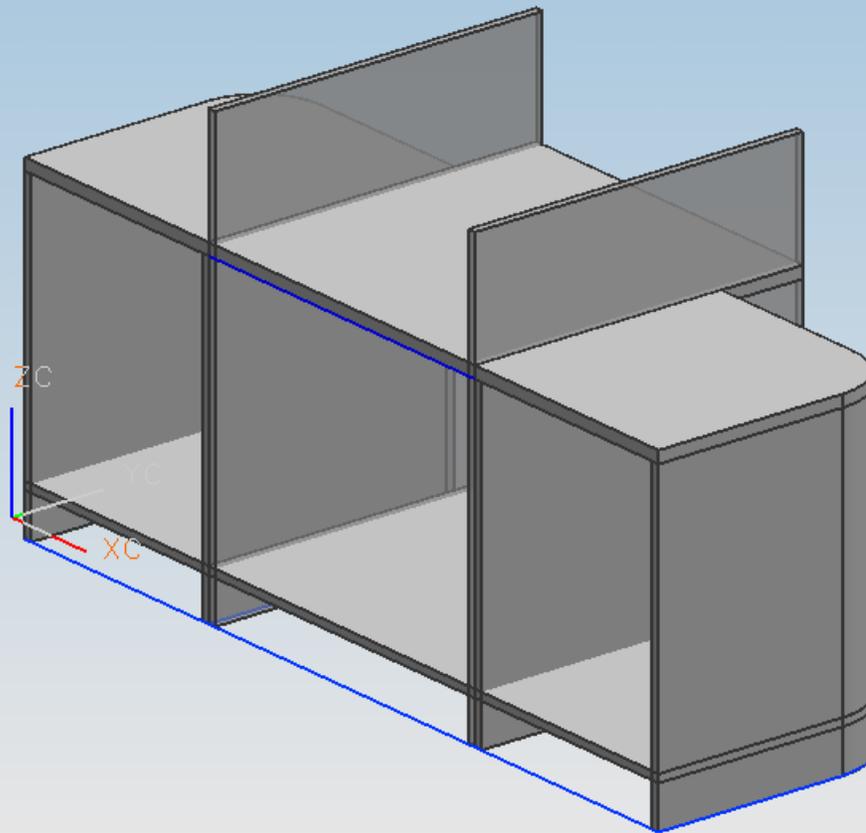


## Vertical Panels are Placed



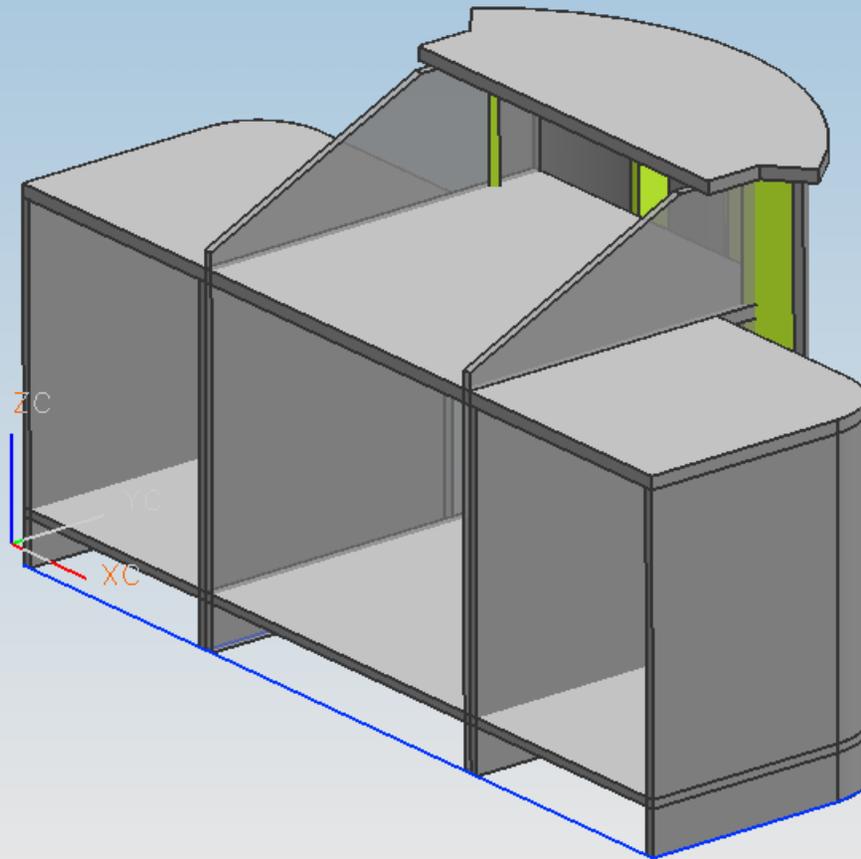


## Then Horizontal Panels



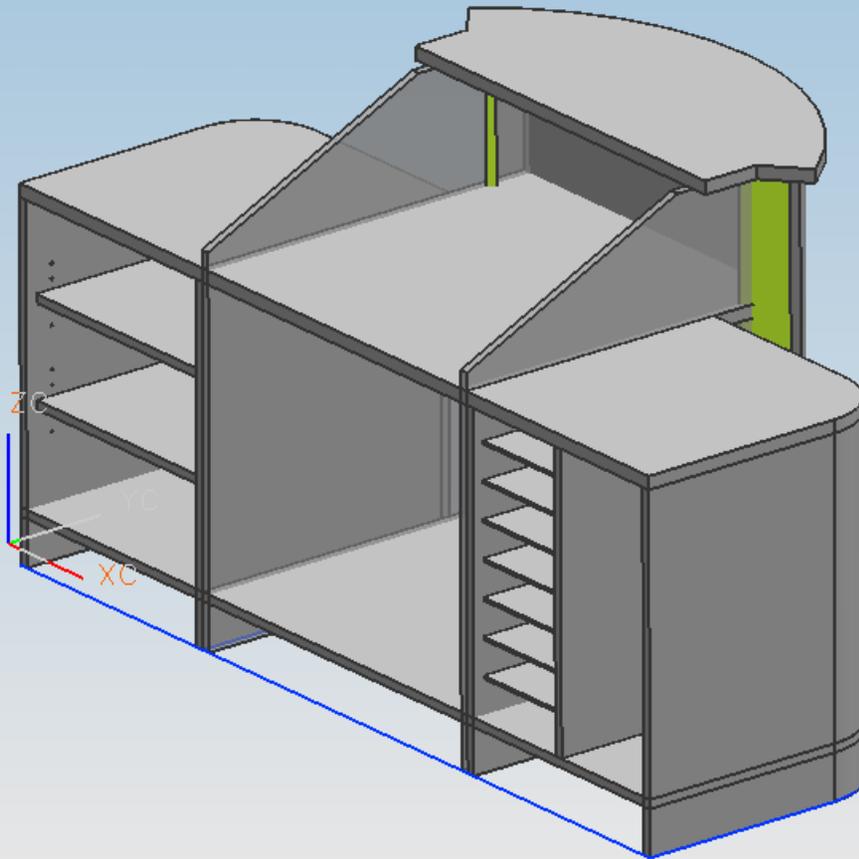


## Special Features are Added



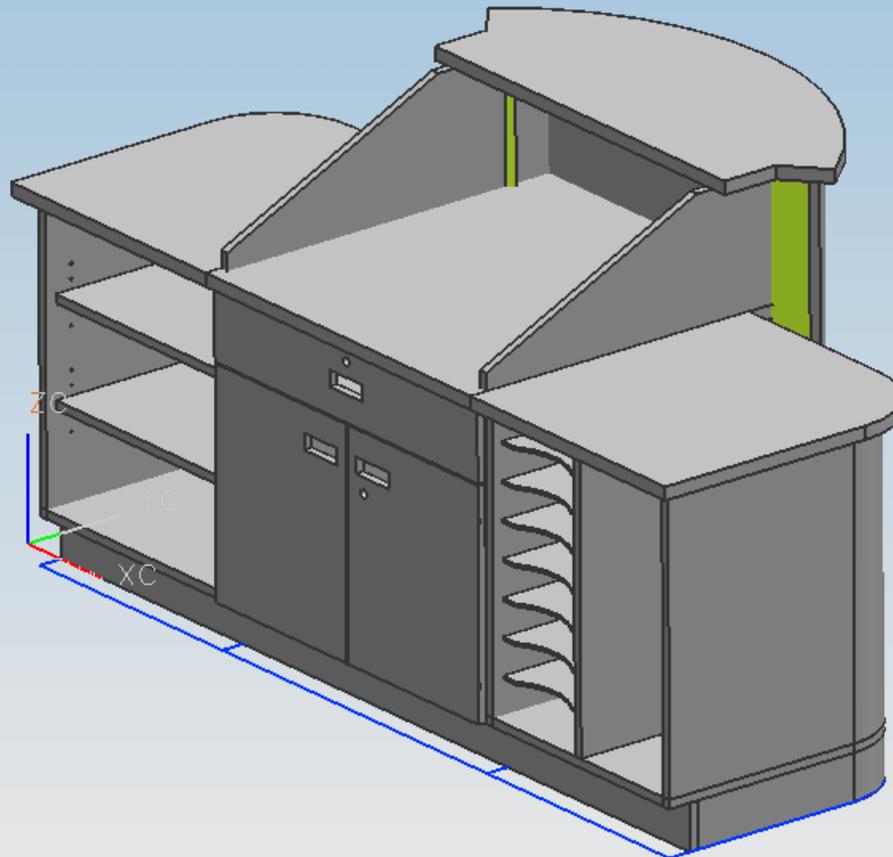


## Functionality Begins



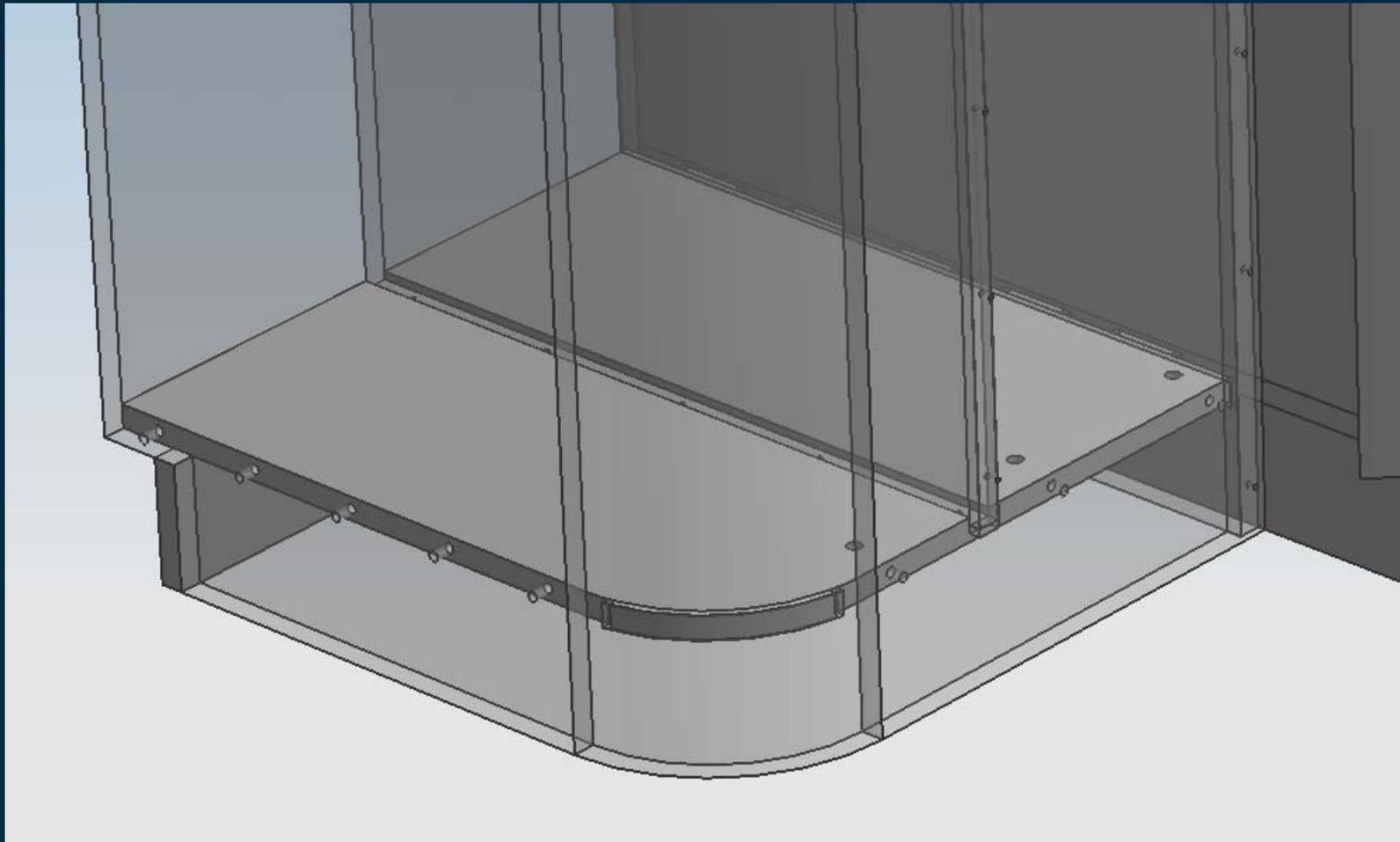


## Functionality Completed





## Panel Joinery is Determined





# BOM Reported

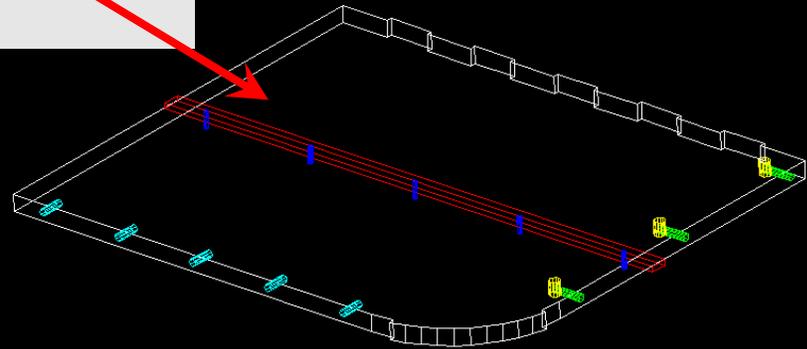
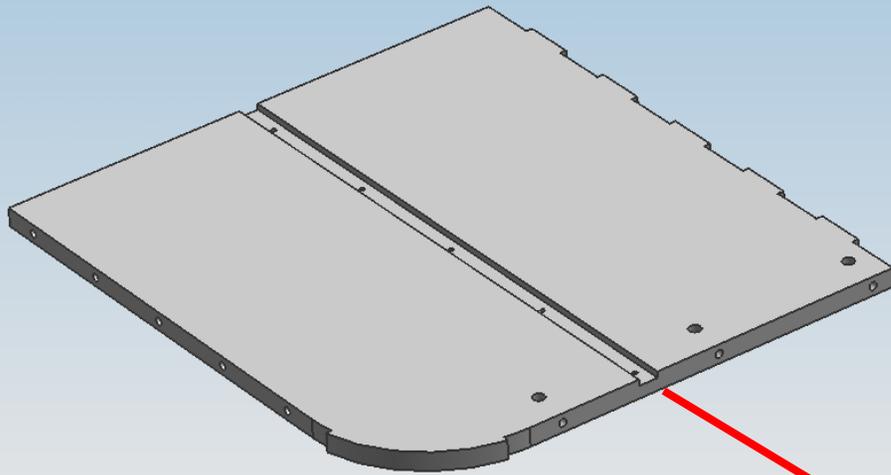
## KAB Centric Bill of Materials

General Data	
Designer	Dave Winze
Date	4/14/2006
Time	06:42:45
UG Part File	plm_world.prt

Quantity	Thickness	Width	Length	Component Name	Material Name	Material Type
2	0.750	15.781	19.500	Door - 3/4_slab_overlay_full	3/4_PB_material	PB
2	0.500	5.000	21.250	Drawer - 4-pc_6x22_overlay_1/8_reveal-BoxSidePanel	1/2_PB_material	PB
2	0.750	32.000	42.000	Panel - side	3/4_PB_material	PB
2	0.750	16.000	30.000	Panel - sides	3/4_PB_material	PB
2	0.750	18.000	30.000	Panel - sides	3/4_PB_material	PB
2	1.125	23.500	27.000	Panel - top	1-1/8_PB_material	PB
2	0.750	20.500	22.250	Shelf - 5-hole	3/4_PB_material	PB
7	0.250	9.875	22.250	Shelf - None	1/4_PB_material	PB
4	0.750	4.000	37.250	Stud - None	3/4_PB_material	PB
1	0.750	30.000	30.000	Panel - curve_end	3/4_PB_material	PB
1	0.750	9.425	30.000	Panel - curve_end	3/4_PB_material	PB
1	0.750	22.000	24.000	Panel - bottom	3/4_PB_material	PB
1	0.750	21.000	23.250	Panel - bottom	3/4_PB_material	PB
1	0.750	32.000	38.111	Panel - bottom	3/4_PB_material	PB
1	1.125	32.000	33.500	Panel - None	1-1/8_PB_material	PB
1	1.125	18.361	41.907	Panel - top	1-1/8_PB_material	PB
1	0.750	32.000	42.000	Panel - back	3/4_PB_material	PB
1	0.750	4.000	76.000	Panel - toe	3/4_PB_material	PB
1	0.750	23.500	25.750	Divider - divider	3/4_PB_material	PB
1	0.500	5.000	29.500	Drawer - 4-pc_6x22_overlay_1/8_reveal-BoxBackPanel	1/2_PB_material	PB
1	0.750	6.000	31.750	Drawer - 4-pc_6x22_overlay_1/8_reveal-FrontPanel	3/4_PB_material	PB
1	0.250	21.250	29.500	Drawer - 4-pc_6x22_overlay_1/8_reveal-BoxBottomPanel	1/4_PB_material	PB
1	0.750	23.750	30.000	Panel - sides	3/4_PB_material	PB
1	0.750	24.000	30.000	Panel - sides	3/4_PB_material	PB



## Manufacturing Output Generated

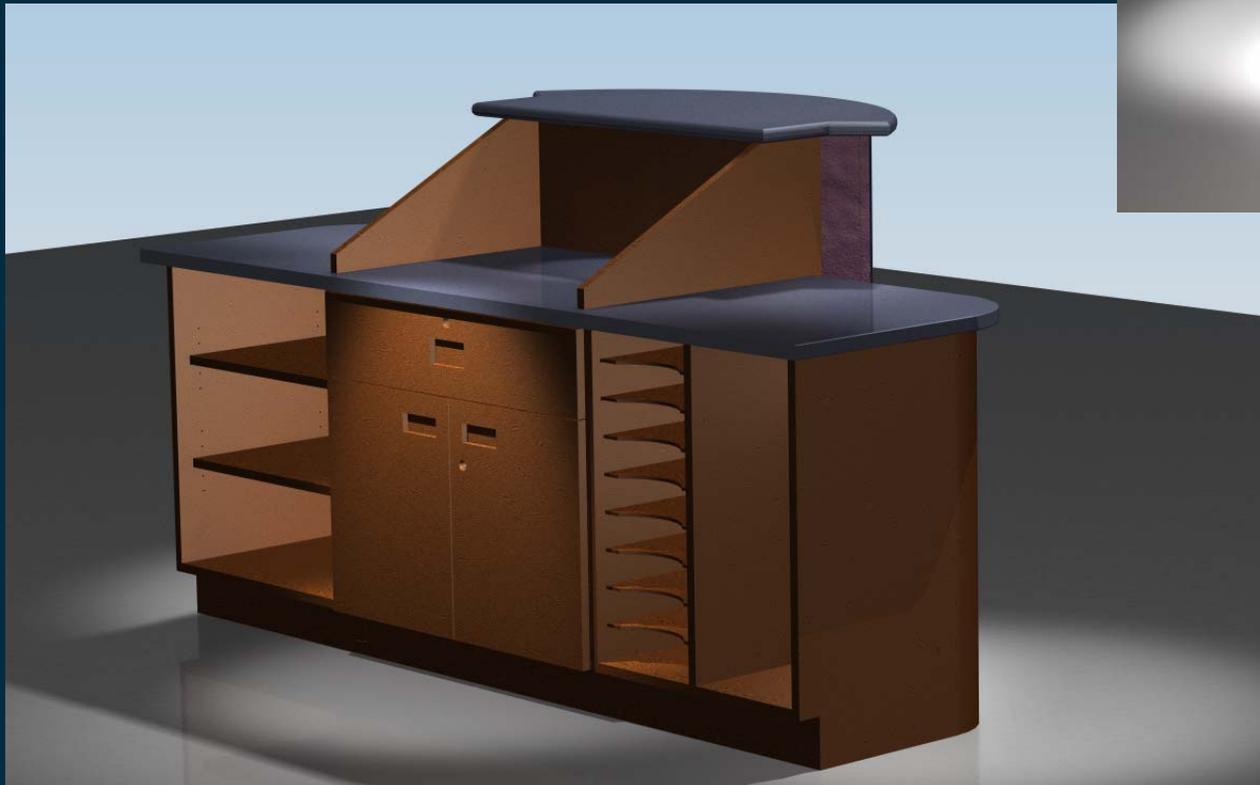
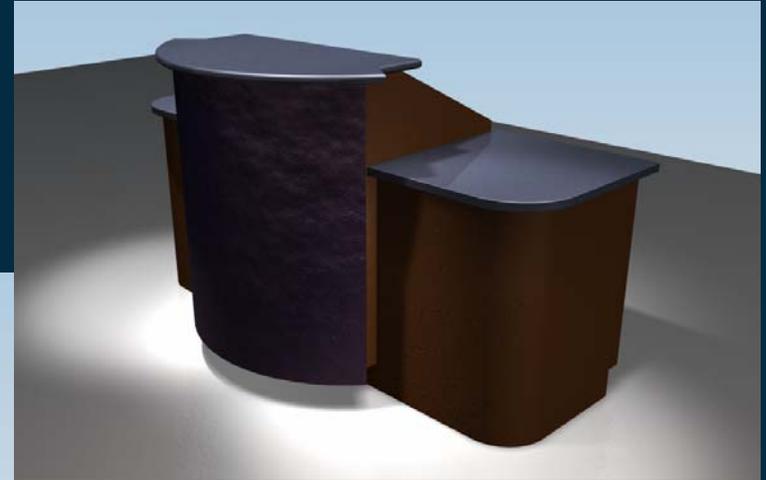




KAB<sup>®</sup> NX



Product Completed





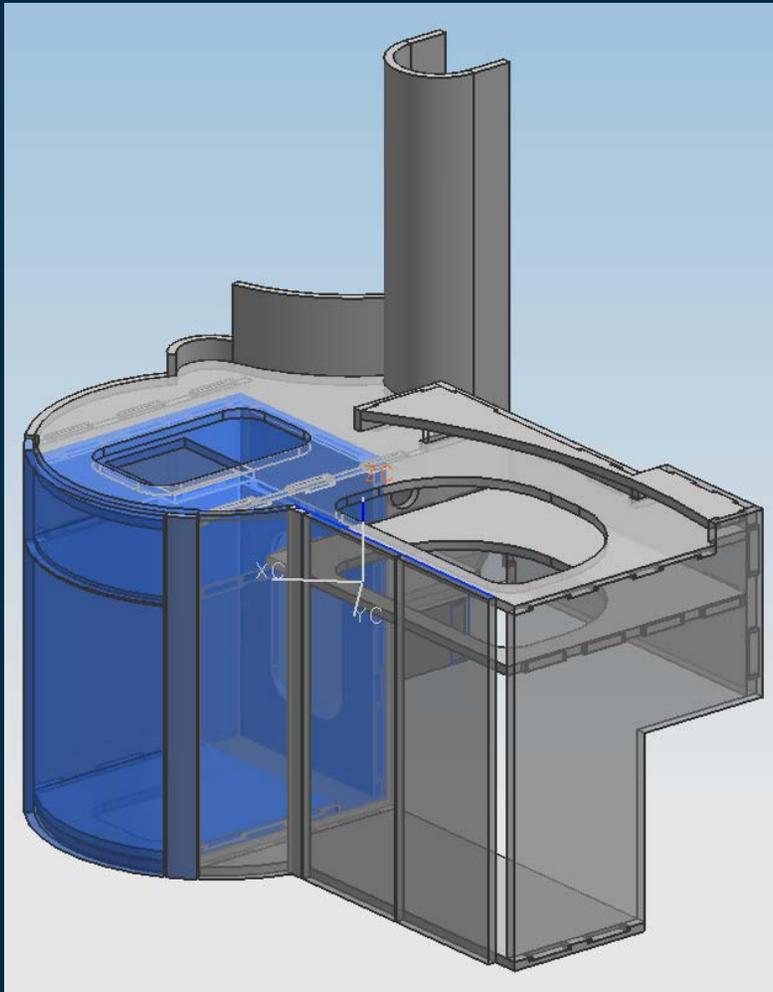
# KAB-NX: From the Start

The image displays a collection of overlapping software configuration windows from the KAB-NX application. The windows are arranged in a collage, showing various settings and options for configuring different components of a cabinet or shelving system.

- BOM Configurator:** Shows fields for Job Number, Output Fields (Quantity, Thickness, Width, Length, Component Name, Material Name, File Name, Purchased, Manufactured, Customer Name, Comments, Cost), and Report Fields. It includes Filter Options (DXF and CutList), Format Type (Horizontal), and Save Output To File (HTML).
- Banding Configurator:** Features a preview of a banded surface. Settings include Banding Selection Type (Banding (Open) or Moulding), Banding Style (Rectangular), Geometry Selection (Select Faces), Material Data (Type: Sheetgoods, Options: PB), and Banding Parameters (Unit of Measure: Pieces, No of Bandings: 1, Thickness (T1): 0.0000, Width (W1): 0.0000, Depth (DP1): 0.0000, Radius (R1): 0.0000, Miter Angle: 0.0000). It also has checkboxes for Add Banding to Panel, Reverse Quarter Round Banding, and Split Banding Between Faces.
- Shelf Configurator:** Includes Geometrical Selection, Select Placement Face, Pocket Parameters (Diameter), Pocket Location Parameters (Distance from Point P (P1), Distance from Point P (P2)), and buttons for OK, Apply, and Cancel.
- Butt Joint Configurator:** Shows Select Preference (None) and buttons for OK, Apply, and Cancel.
- Job Configurator:** Contains fields for Job Number, Customer Name, Customer Address, Street Name, City, State, and Comments. It also has a DXF Layer Preference (None) and a list of components in the assembly.
- Generate DXF:** Features Job Number, Preference Name (output\_layers), and options for With Line Thickness, Without Line Thickness, Positive Thickness, and Thickness "OFF" in Layer name. It includes Selection Type (Create DXF by Material, Create DXF for All Parts) and buttons for Create DXF for Selected Parts, Create DXF for Selected Faces, OK, and Cancel.
- Stud Rectangular Pockets:** Shows Geometrical Selection, Select Placement Face (F1), Pocket Parameters (Length (L1): 1.5000, Width (W1): 1.5000), and Pocket Location Parameters (Distance from Point P (P1): 1.0000, Distance from Point P (P2): 1.0000). It includes buttons for OK, Apply, and Cancel.
- Other Windows:** A 'Wall/Floor' window shows a diagram of a wall with studs and dimensions (H1, E1, E2, P1, P2, S1, S2). A 'Number of Holes/Skips' window is also visible.



## To the Finish



Customer Time Design to  
Manufacture: 4-1/2 days

KAB-Centric Time, Design to  
Manufacture: 1 day



Thank You!

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