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1 End User documentation for ConVic

The VICON Inclusive Design Support Toolset (VIST) provides a collection of software applications that product designers can use to integrate the VICON "Virtual User Model" approach into their product design process. The toolset is intended to support designers during the **sketch phase** when the product is being conceptualized, then during the **CAD design phase** when the product is in the process of being visualized as a CAD model (designed e.g. with Siemens NX) and during the **evaluation phase** when a designer aspire after a feedback from the group of potential users.
This document comprises user manuals for the three applications: **ConVic** application for sketch support and the **CAD design** application.

In the sketch phase the designer will work with the Virtual User Model to get recommendations and guidelines regarding the design of a specified product.

2 End user manual for sketch phase application ConVic

The sketch phase tool **ConVic** is a reference tool that designers can use to have a general overview of guidelines for the kind of product they want to develop. The sketch phase tool lets the designers consider recommendations based on device, task, environment, user model or a subset of the last three criteria. It is possible to export these recommendations to pdf or txt.
Note that only the "Recommendations"-tab is used in the Sketch phase. The other ones are used in advance for the creation of different User Models/Environments/Tasks.

To switch in between different device types use File -> Switch Device (Figure 1)

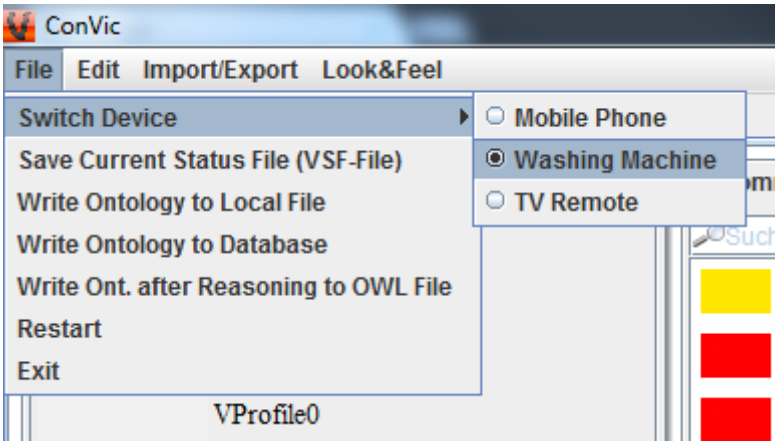


Figure 1: Switching between different devices

2.1 User model

User models represent sample user profiles (personas) characterized by disabilities. Currently thirteen (13) pre defined user profiles can be used to sample recommendations.
Click the User model button to expand it and choose a profile from the list. It will stay marked and detailed information will appear in the box above it if available (see Figure 2).
A typical user profile (persona) has demographic information, known disabilities and information regarding common bodily abilities quantified as thresholds etc (Figure 3).

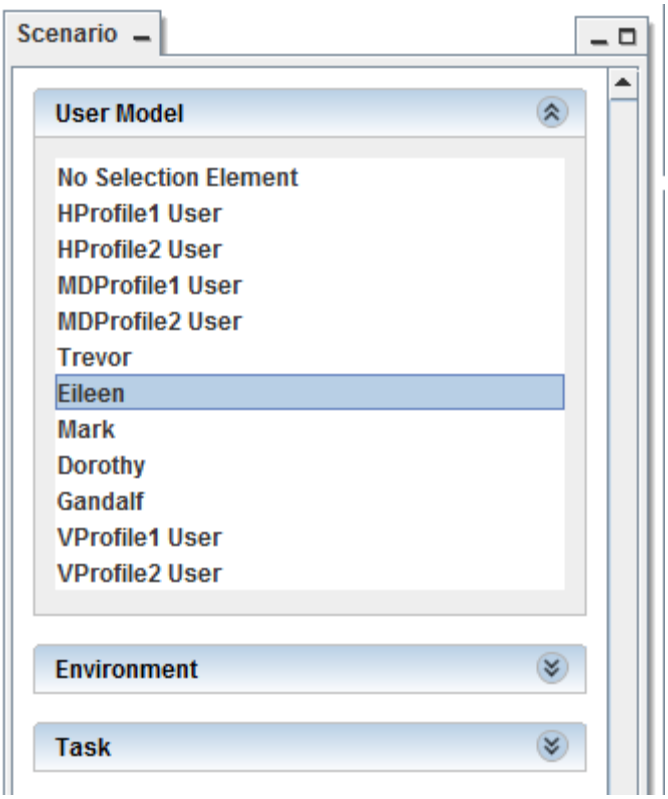


Figure 2: Selection of User Model Instances

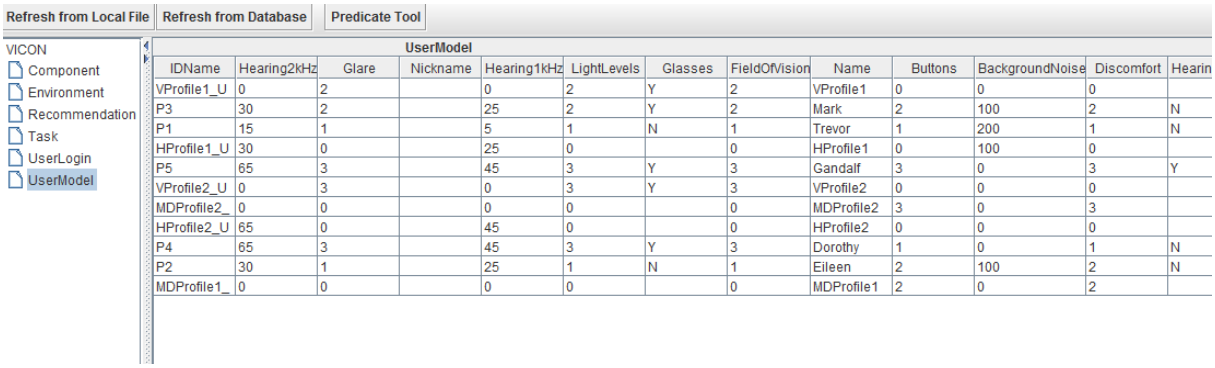


Figure 3: Knowledge Base View on User Models

2.2 Environment

Environment profiles serve as the surrounding context within which users might interact during product usage.
Click the Environment button to expand it and choose a surrounding from the list. It will stay marked and detailed information will appear in the box above it if available (Figure 4). Each environment instance contains attributes as seen in Figure 5.

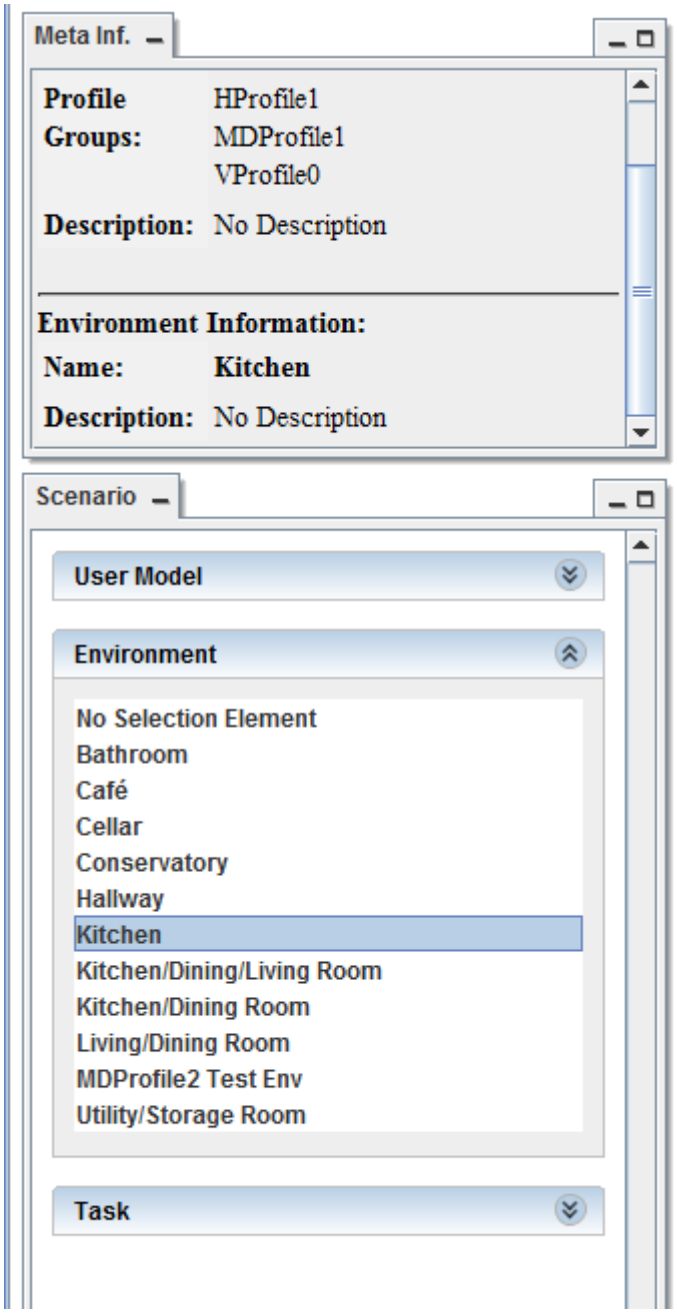
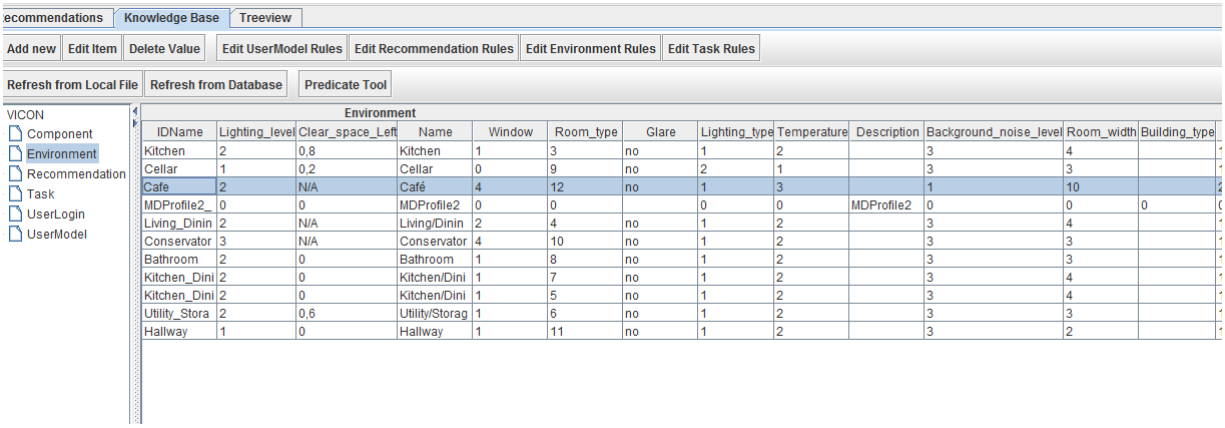


Figure 4: Selecting an Environment



Environment

IDName	Lighting_level	Clear_space_Left	Name	Window	Room_type	Glare	Lighting_type	Temperature	Description	Background_noise_level	Room_width	Building_type
Kitchen	2	0,8	Kitchen	1	3	no	1	2		3	4	
Cellar	1	0,2	Cellar	0	9	no	2	1		3	3	
Cafe	2	N/A	Café	4	12	no	1	3		1	10	
MDProfile2_	0	0	MDProfile2	0	0		0	0	MDProfile2	0	0	0
Living_Dinin	2	N/A	Living/Dinin	2	4	no	1	2		3	4	
Conservator	3	N/A	Conservator	4	10	no	1	2		3	3	
Bathroom	2	0	Bathroom	1	8	no	1	2		3	3	
Kitchen_Dini	2	0	Kitchen/Dini	1	7	no	1	2		3	4	
Kitchen_Dini	2	0	Kitchen/Dini	1	5	no	1	2		3	4	
Utility_Stora	2	0,6	Utility/Storag	1	6	no	1	2		3	3	
Hallway	1	0	Hallway	1	11	no	1	2		3	2	

Figure 5: Sample environment attributes

2.3 Tasks

Tasks are to be used in the evaluation phase when testing with virtual user models. A task profile has descriptions of a goal and a disability profile for which an ability the task to perform is considered critically. Click the task button to expand it and choose a profile from the list. It will stay marked and detailed information will appear in the box above it if available (Figure 6).
In Figure 7 the task: "Press the volume button up" has two disability profiles that are stated critical for evaluating a particular product. During the evaluation of a product the tasks will be assigned to "virtual users" with disabilities stated against the former.

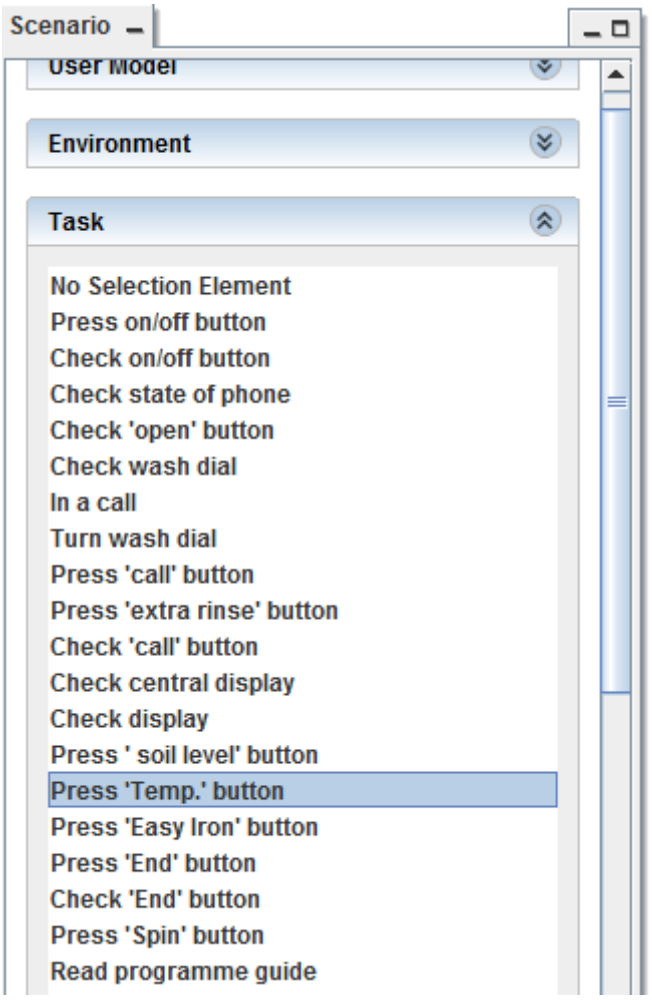


Figure 6: Selecting a task

Name	Impairment	Description
Press volume up button	,VI1,MD2	V 7.4.3:User has to monitor the button while carrying out this task, D 7.4.3: User has press button so that it, and no other button, activates,
Check display	,VI2,	V 1.2.2:User check/reads the display to determine status/softkey functions, etc,

Figure 7: Task profiles

2.4 Usage

The sketch phase tool displays recommendations in field 'E' (Figure 8) based on the criteria chosen in the 3 elements of field 'B'.
Field labelled 'B' lists user profiles, environment profiles and task profiles respectively.
Field 'A' sums up and displays the choices that the user did in the aforementioned field and gives a detailed overview of the criteria for recommendations retrieved.
A search box for recommendations is available in field 'C'.
By dragging the grey borderline between the fields with the mouse cursor, all fields can be changed in size, with the exception of field 'C'.

In the example given in Figure 8 the user profile (persona) 'Trevor', task profile “Press on/off button” and “Bathroom” as the environment profile are chosen as search keys for retrieving recommendations. A list of these is displayed in field 'D'. The selected recommendation is shown in detail in field 'E'. Here, the name, profiles, sources, a summary and a description are shown.

It is possible to export recommendations directly to a PDF file: If one or more list entries are selected (hold down ctrl or shift to select several entries at once) , click 'Import/Export' -> 'Export to PDF current recommendations' (see Figure 9).
The same procedure can be used to export the recommendations into a plain TXT file.

It is also possible to open single recommendations as a RTF file including exemplary pictures for each recommendation by clicking on the “Open as RTF” button in recommendation view as presented in Figure 11.

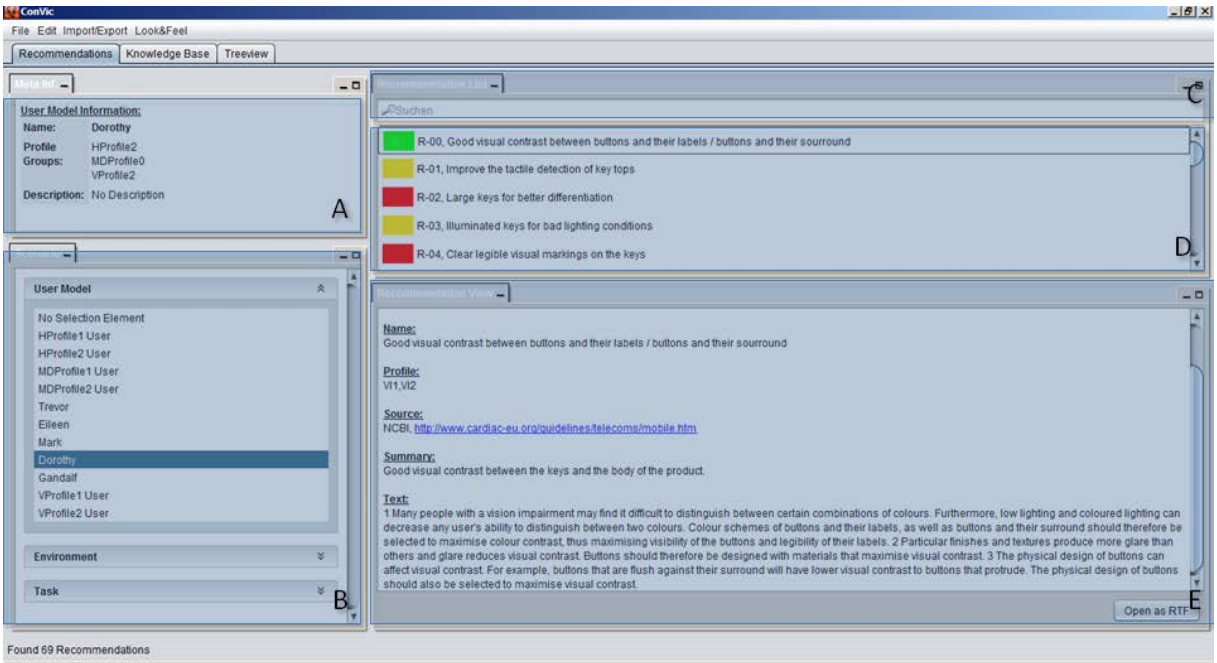


Figure 8: ConVic Sketch Design Tool including Meta information (A), Scenario selection (B), fulltext search (C), recommendation list (D) and single recommendation view including “Open as RTF” Button (E)

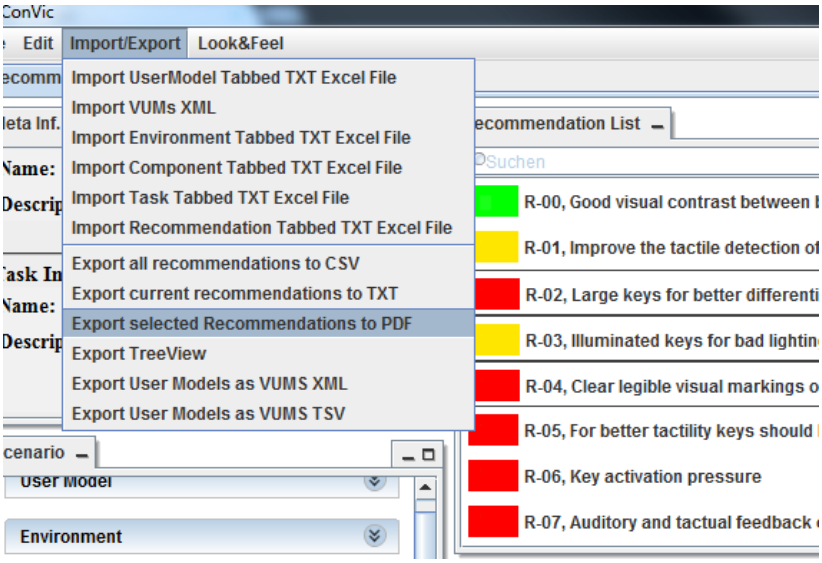


Figure 9: Selecting recommendations and export to PDF

Figure 10: Single recommendation view

R-3 – Illuminated keys for bad lighting conditions

RANKING: 2

CONTEXT

Profile: VI1,VI2

EnvRule: lessThan(?lighting_level,2)

Component: press button

PROBLEM

A benefit to internal illumination of keys exists in lower ambient lighting conditions, at night time, in dark natural lighting conditions or where artificial lighting may be low or non-existent. In contrast, in bright ambient lighting, there may be a slight disadvantage to having internal illumination. The darker the ambient lighting, the more beneficial internal illumination of keys will be.

SOLUTION

Ideally the keys should be internally illuminated, but the internal illumination should not reduce the legibility of the labels in artificial light or daylight.

Figure 11: RTF of recommendation 3

3 End user manual for design phase application “CAD Design”:

3.1 The "CAD Design" tool:

The Vicon CAD Design tool maps recommendations from the knowledge base to elements within NX models. The repository has a set of thirty pre-defined component types that designers can use to annotate their models. By declaring a particular model element as a type-of one of the pre-defined components, designers can get recommendations from the system.

Before one can work with the VICON CAD Design tool, Siemens NX needs to be started. After the software was loaded please open a product data model (Figure 12).

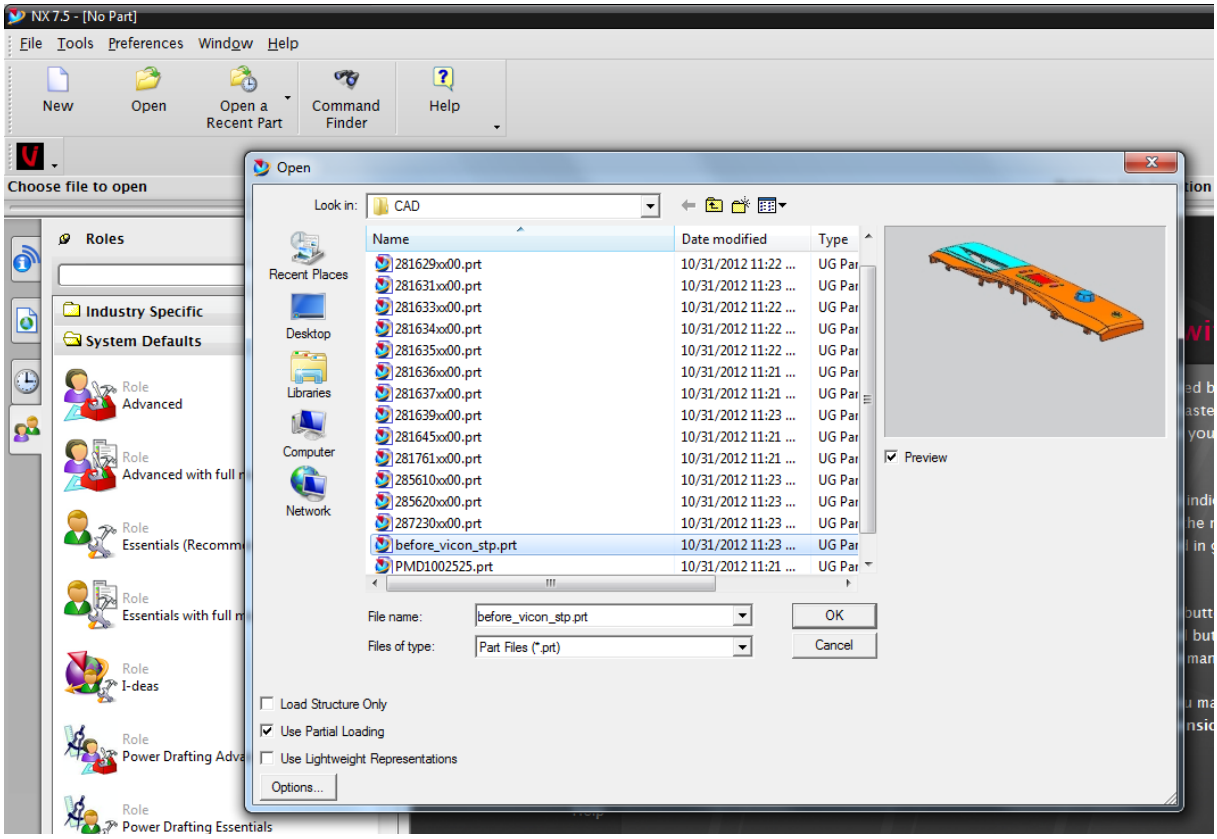


Figure 12: Siemens NX, Open File Dialog Box

If you import a STEP (*.stp) file, Siemens NX will create all necessary part files (*.prt) on its own. When this task is finished these individual parts will become visible in the Part Navigator (Figure 13).

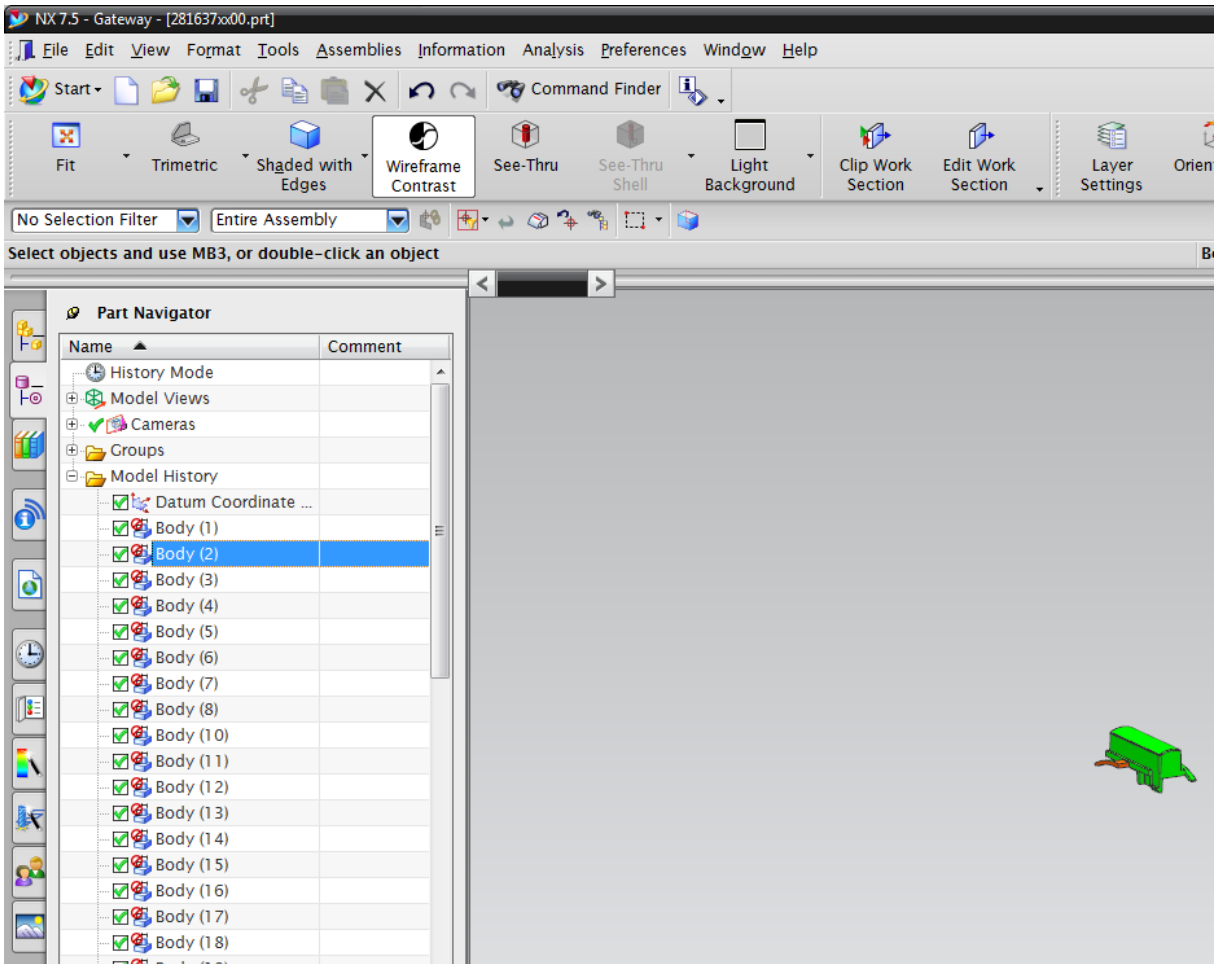


Figure 13: Part Navigator showing individual parts is depicted on the left hand side

By now, everything is prepared to successfully start the VICON CAD Design Tool, Figure 14 presents the location of the Vicon button in Siemens NX. To see the button, you may need to change the working role in Siemens NX to "VICON Toolset" (Figure 15).

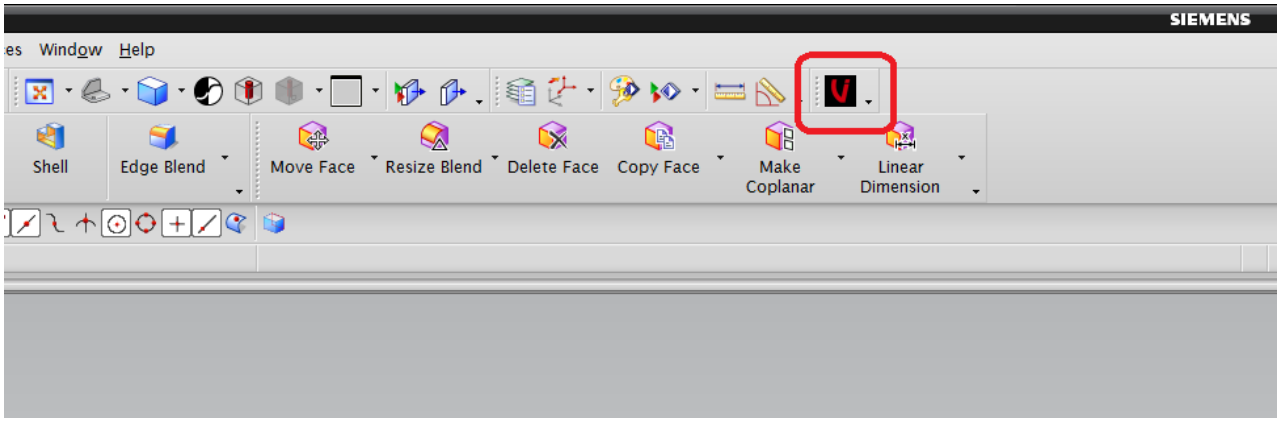


Figure 14: NX toolbar with button to activate the Vicon CAD Design tool

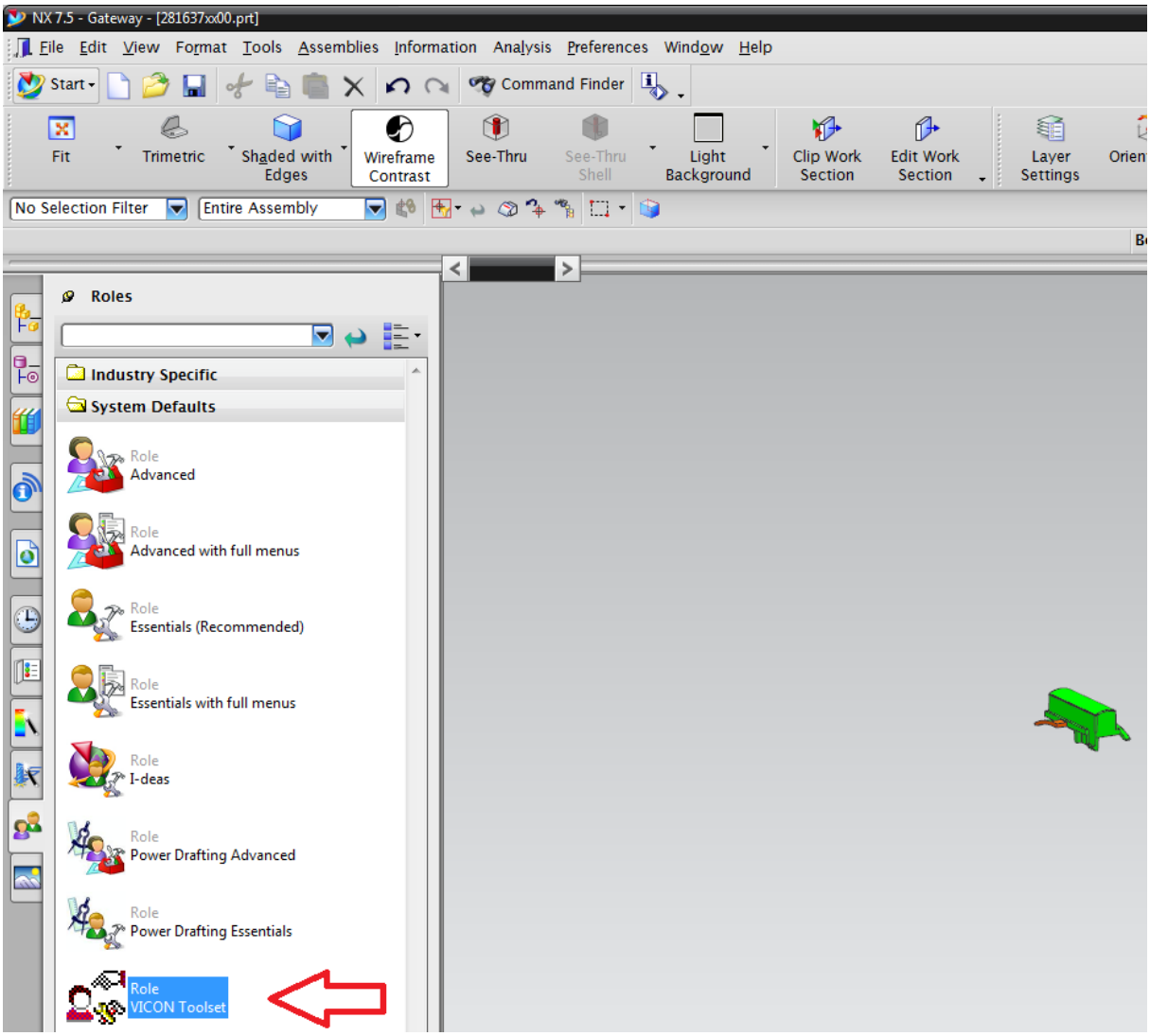


Figure 15: Changing the working role in Siemens NX

After clicking this button (Figure 14) the CAD Design tool set will appear on screen. It is comprised of an annotation tool, a recommendation-viewing tool, a tool to import VICON Status Files (VSF) and a settings tab.
If a VSF file is available one should import it first (Step I), when no such file is available Step I can be skipped.

3.1.1 Step I - Import VSF Files:

Open the tab "VSF-Recommendations" and navigate the file browser to the directory the Vicon Status File (VSF) file is located in. Select the file and click "import" to load the recommendations which shall be applied to the model.

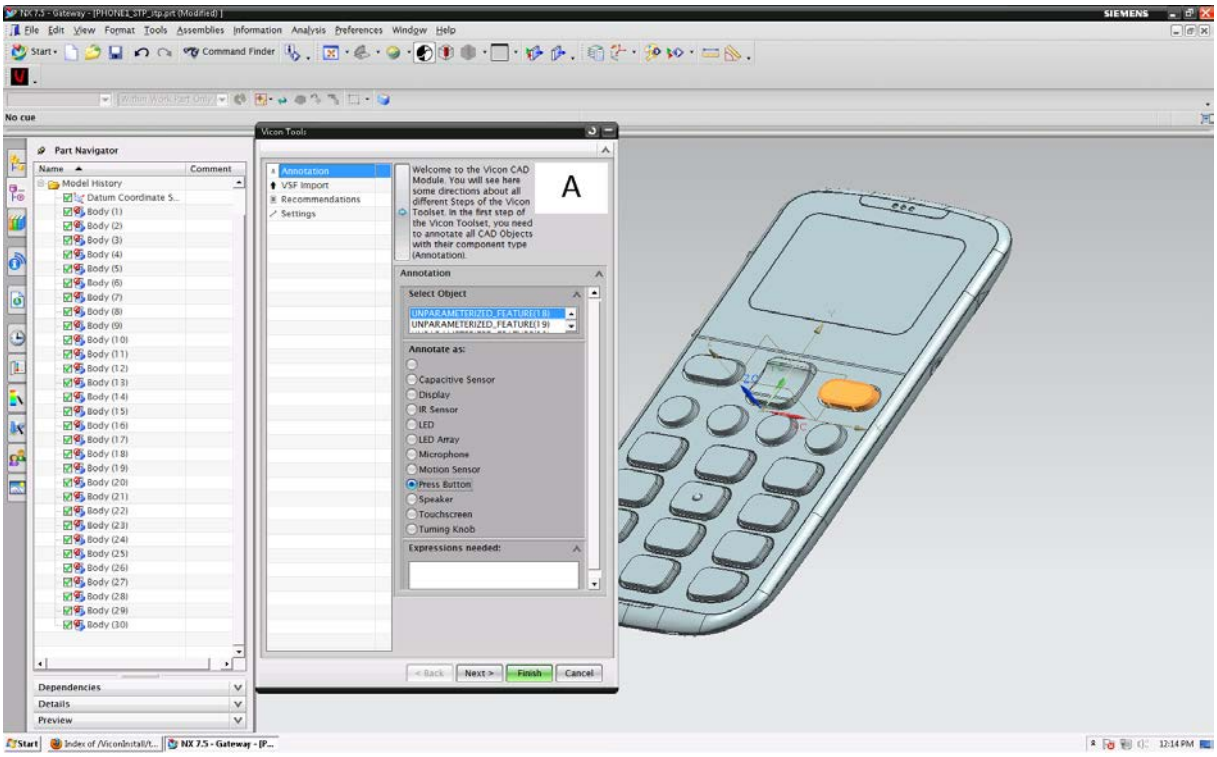


Figure 16: Annotation of objects

3.1.2 Step II - Annotation tool:

Figure 16 shows the annotation tool displaying information regarding the active model, the possible annotations and the recommended design parameters for the elements within. As an annotation semantic information is added to the model representing its component type. Changes are applied immediately into the model.
Please note the blank annotation button: It is used to undo a previously made annotation

3.1.3 Step III - Recommendation Viewer:

The tab labelled “Component-Recommendations” activates the recommendation viewer.

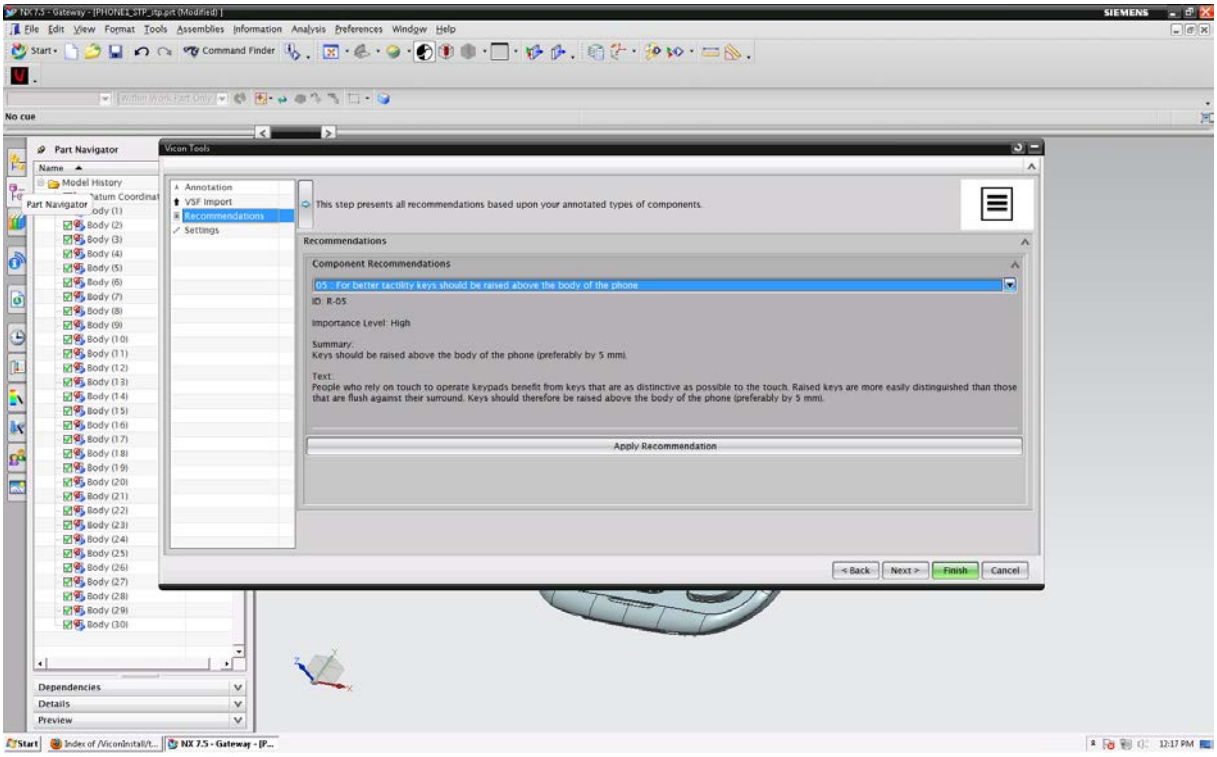


Figure 17: The Recommendation Viewer

The recommendation viewer lists summaries of the recommendations applicable to any previously annotated elements (see Figure 17) within the active model.

Upon selecting a particular recommendation, the corresponding text is displayed for viewing (Figure 18).

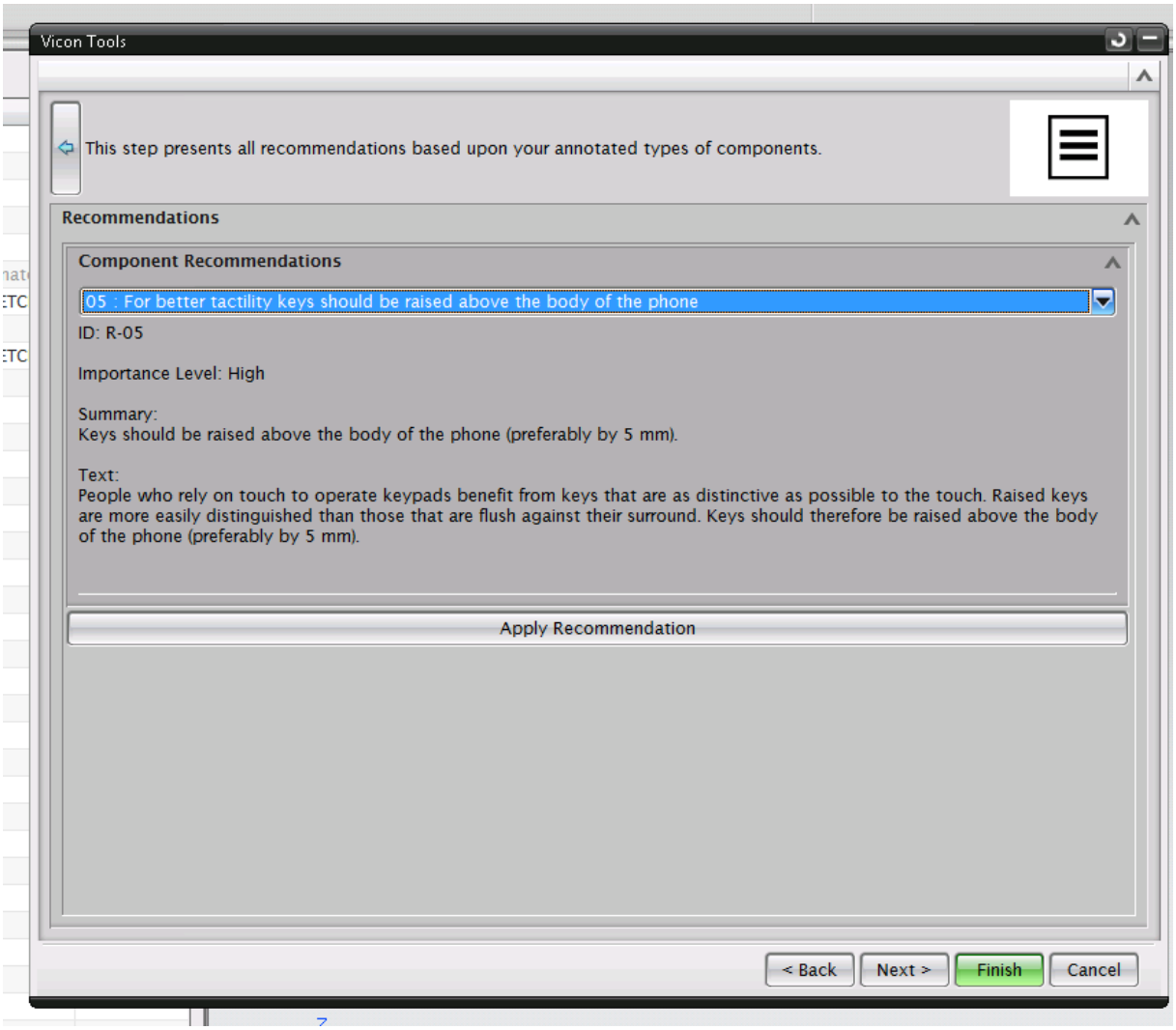


Figure 18: The Recommendation Viewer