

Virtual Interactive Model of Tokamak Golem

In this tutorial will be explained everything that needs to be known to operate/explore the virtual model of tokamak Golem (Golem VW) created in Virtual Reality Modeling Language (VRML).

Requirements to fluently play Golem VW

Computer (tested) – minimal requirements

Intel (R) Core(TM) 2 Duo CPU T7300 2x2GHz

RAM 2GB

Mobile Intel(R)965 Express Chipset Family - graphic memory (RAM 358MB)

Computer (tested) – optional

Intel (R) Core(TM) i7 CPU Q 740 4 Cores @ 1.73GHz

RAM 4GB

ATI Mobility Radeon HD 5730 (RAM 1GB)

VRML Browser

Cortona 3D – very powerful viewer for VRML (tested and preferred)

BS Contact – fast browser with a lot of functions (tested and recommended)

more browsers/viewers <http://www.parallelgraphics.com/products/vrmlpad/browsers>

Common viewers settings and in-world options

There are several different VRML viewers but all of them have similar basic functions. It is recommended to keep the **default settings**. They are optimal for exploring Golem VW and there is no need to change them in viewer/browser. The most common settings that are accessible from the viewer/browser are:

Type of movement

- **walk** – gravitational force and object collision is turned on
- **game** – improved walk with more flexibility (BS Contact)
- **fly** – object collision is switched on but avatar can fly
- **examine** – no restrictions on movement are applied when avatar moves

Default type of movement is “game” in BS Contact. (See the browser documentation how to use the game-like movement.) “Walk” is a default way to move when the viewer cannot use game-like type of movement.

Speed

- Fastest – avatar moves with the highest speed available
- Fast – Avatar moves with the second fastest speed
- **Normal** – default option for normal human walking speed
- Slow – avatar moves with a speed slower than normal human pace
- Slowest – avatar moves with the slowest possible speed

Headlight

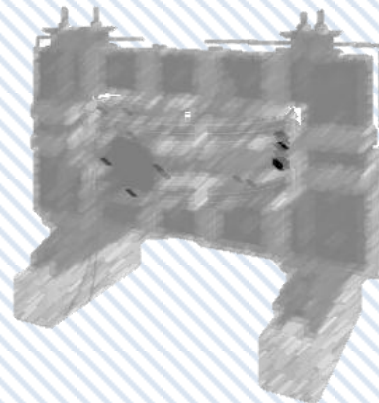
- Headlight on – avatar has light source at his head. It simulates real person wearing the head flashlight
- **Headlight off** - there is no additional light source in the scene.

Viewpoints

It is recommended not to use browsers viewpoints option. All the viewpoints in the scene can be accessed from the head up display HUD (explained lower). If the browsers viewpoints are used the HUD buttons for changing viewpoints will not work correctly.

Features of Golem VW

Golem VW serves as a virtual laboratory/education tool. It contains two rooms and a corridor joining them. One room is an infrastructure room located at the basement of the virtual world. The other room is the room with the actual model of tokamak Golem placed in the first floor. Red animated arrows show the directions.



Virtual Scene

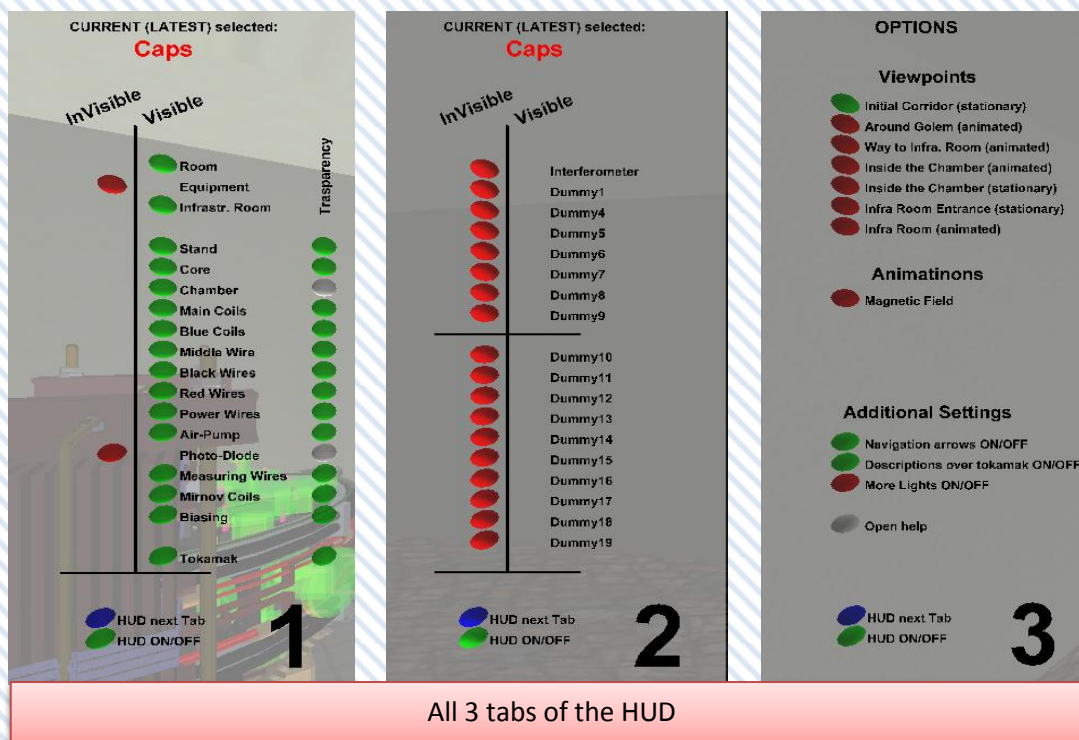
The model of tokamak Golem has several interactive functions. Different parts can be turned on and off (visibility). There is also an option to make them semi-transparent. When mouse cursor is over almost any visible part, name of the part is displayed on the HUD and a description of the part appears above the tokamak. Furthermore, if there is more detailed information about the part, the part pulsates. Pulsating parts can be clicked at /activated by the left mouse button. A PDF file will open, if the part is activated. There are also a few other objects that can be interacted with. Each door is movable, LCD screen shows different movies when clicked, keyboard serves as access point to control panel for the real tokamak Golem, some parts in the infrastructure room can be moved and etc.

HUD

HUD is an interface of most of the Golem VW functions. It is movable and its location can be adjusted by the user. HUD can also be turned off. Viewpoints, animations and some other options are activated by using HUD. It has buttons changing the visibility (transparency) of tokamak and its parts. This help file can be also opened from HUD.

Head Up Display (HUD) and Interactivity of Golem VW

HUD consists of 3 tabs which are sequentially cycled by button „HUD next Tab“. The first tab contains buttons for interacting with the tokamak model. The second tab has pre-designed buttons for extension works on the model and for addition of new parts. The last tab contains viewpoints selection, animations selection and additional settings.



HUD

The whole HUD area is semi-transparent and movable except the two buttons "HUD next Tab" and "HUD ON / OFF". The position of the HUD can be changed any time by dragging the mouse over the grey rectangle (the same principle as changing the position of the icons on windows desktop).

Visibility control (visible)

These buttons turn off and on the visibility of different parts of tokamak Golem.

(Equipment group and Photo-Diode are currently invisible)

Visibility control (invisible)

When the visibility a certain part is turned off by pressing on the green button, that particular part becomes invisible and is shown on the 'Invisible' column in red.

Interactive naming

It shows the name of any part of tokamak Golem when the mouse cursor is over that part.

Transparency control

When the buttons from transparency labeled column are turned on (grey color) the adequate part of tokamak Golem is semi-transparent.

Chamber is semi-transparent. Photo-Diode is semi-transparent but also invisible.

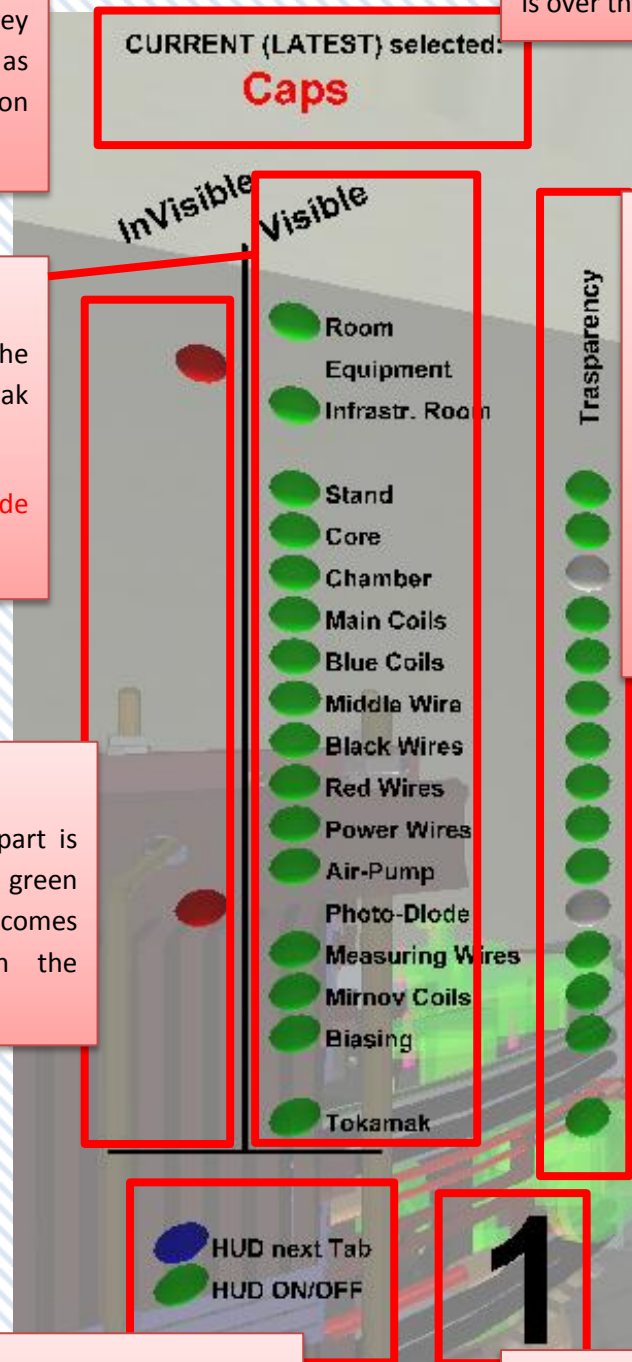
HUD control

The blue button changes/cycles the tabs of the HUD (first tab -> second tab->third tab->first tab).

The second button turns the visibility of whole HUD (except these two buttons) on and off.

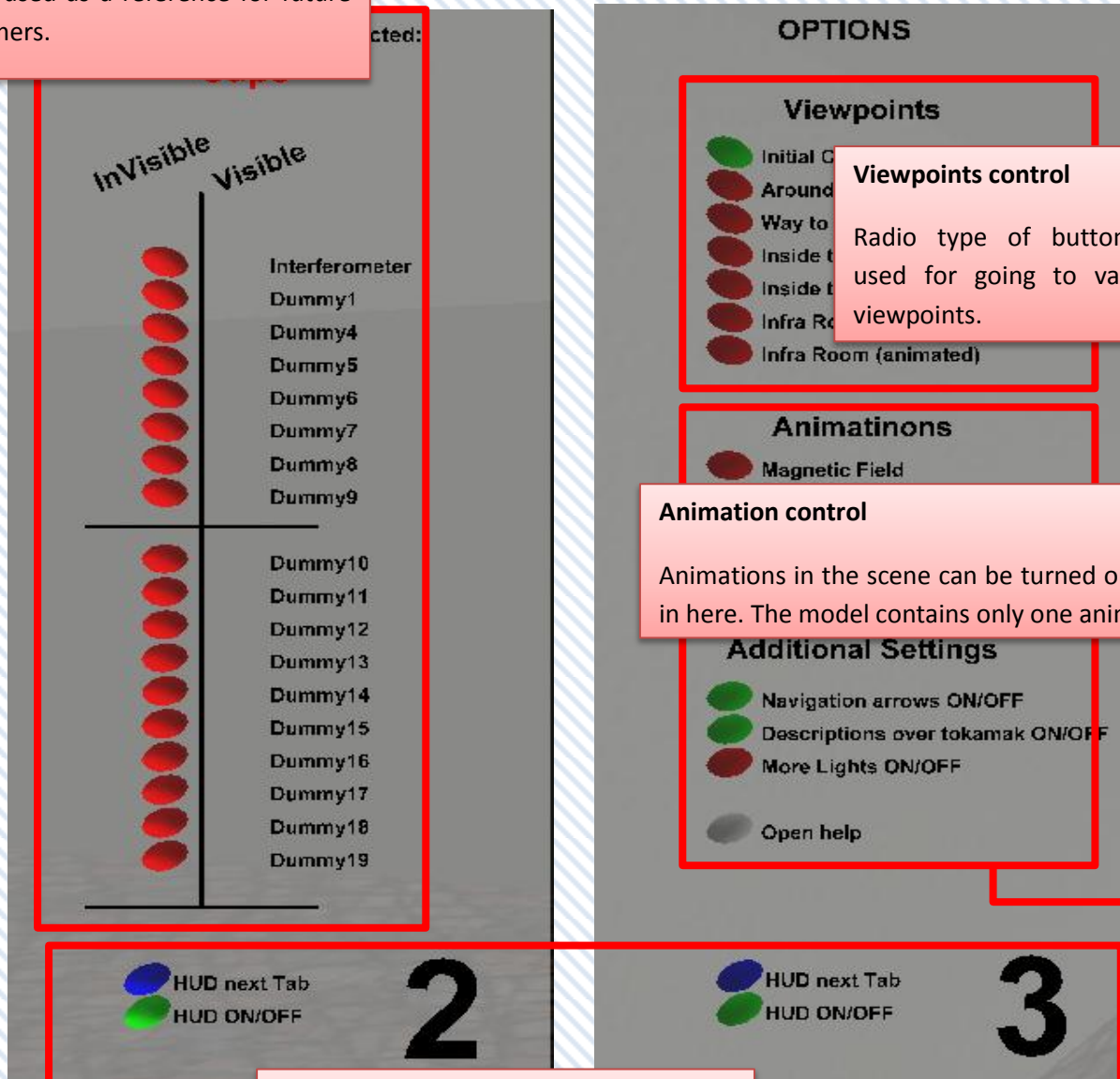
Tab number

Number of the current HUD tab
(this is the first tab out of three)



HUD tab 2

This part of the HUD has the same structure as the first tab. The buttons mostly don't work because they need to be assigned to newly added objects. They act like dummy objects. "Dummy1" button is assigned a box dummy object. It can be used as a reference for future programmers.



Viewpoints control

Radio type of buttons is used for going to various viewpoints.

Animation control

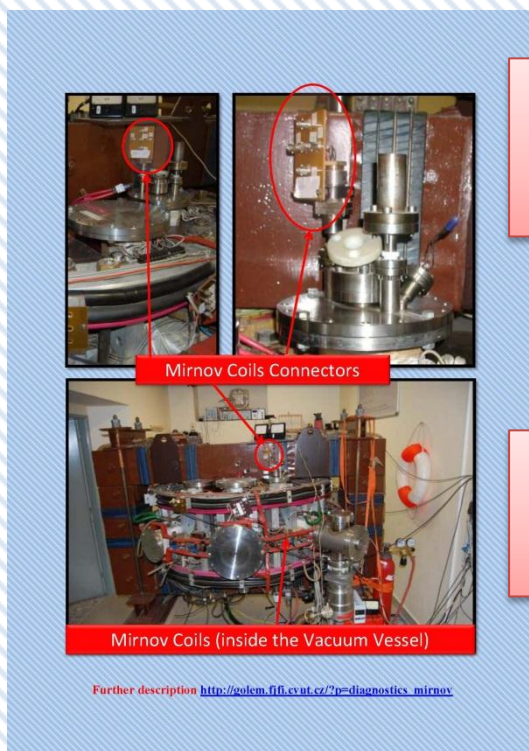
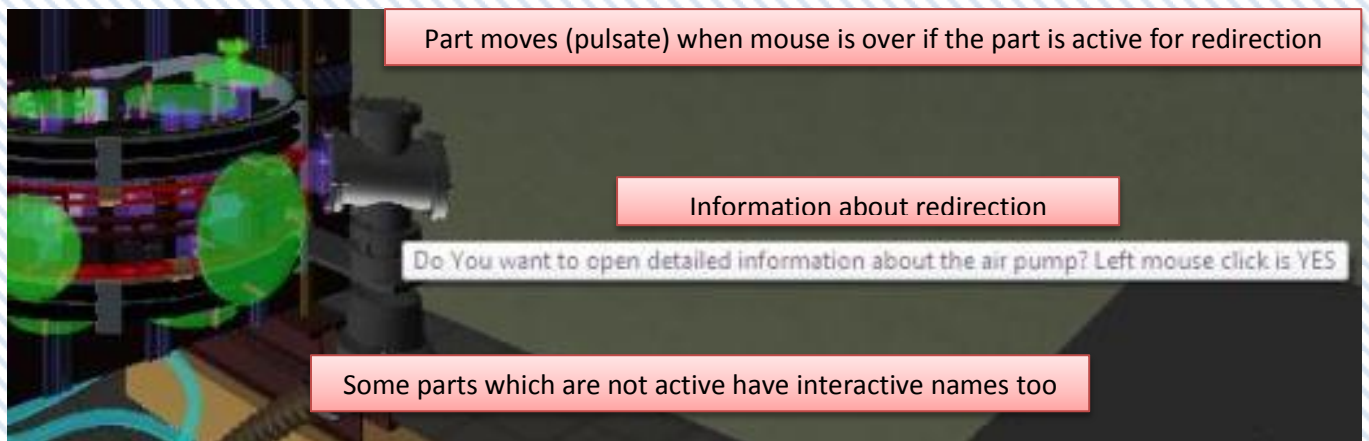
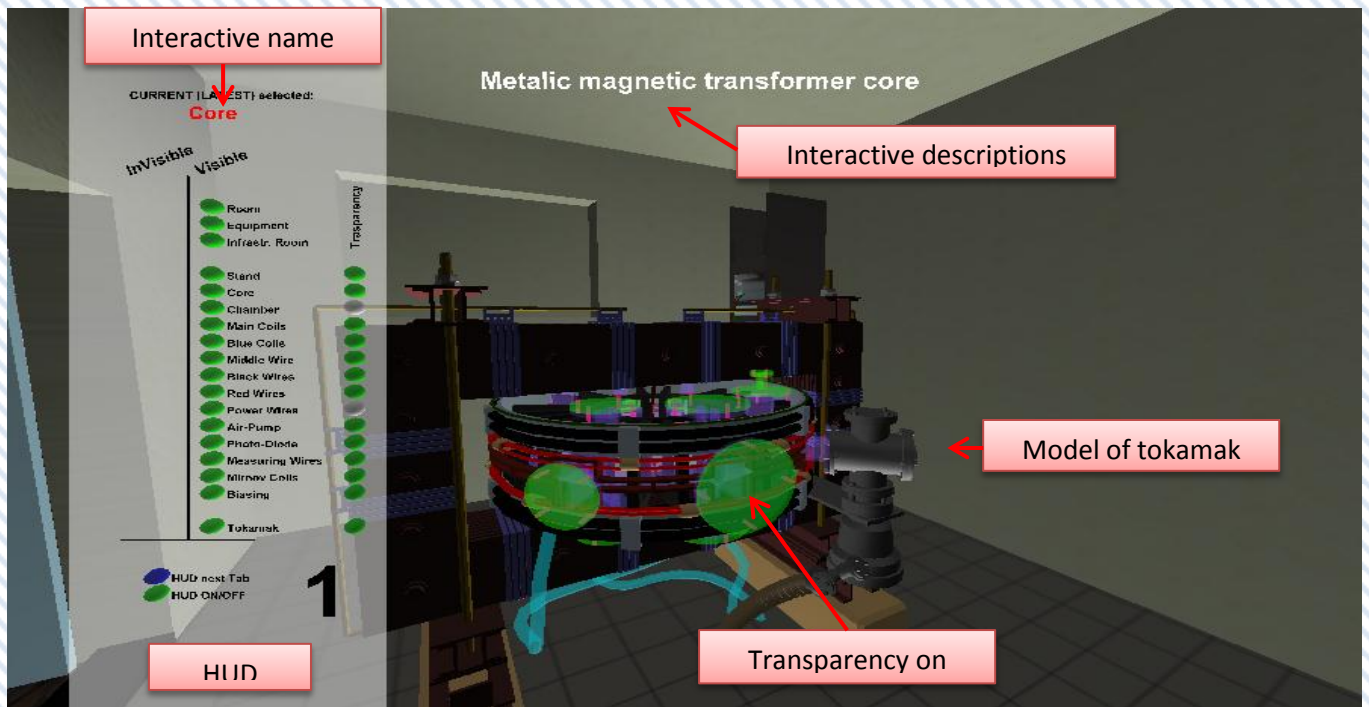
Animations in the scene can be turned on and off in here. The model contains only one animation.

Main HUD part

Two buttons stay the same in all 3 tabs and they are not moveable. Tab number changes according the current active tab.

Additional control

It contains additional settings for the scene. Navigation arrows turn on and off the red arrows showing the way to tokamak. Description over the tokamak will turn on and off the white text over the tokamak. Lights help to lighten the scene. "Open help" opens this file.



After redirecting a description file is opened in the new window (in internet browser). The file includes pictures with location of the part.

The file contains a link to detailed information about the given part at tokamak Golem websites (<http://golem.fjfi.cvut.cz/?p=uvod>).