

PYTHA News

2009/10

Dear friends of PYTHA,

the newsletter you are holding in your hands is going to inform you on a revolutionary development in the modeler: the graphics user interface is being completely revised. With the introduction of interactive OpenGL graphics PYTHA will feature the modern appearance that you are expecting from your high performance 3D CAD software.

At the time this newsletter is going to press we are still working at full speed to finalize PYTHA version 20, that we are proudly calling "PYTHA Revolution". Yet the newsletter is already abounding of many small improvements as well as groundbreaking innovations. Be assured that we will still add lots of additional new features before we are going to deliver the version in spring 2010. As usual we will keep you updated on our web site www.pytha.com.

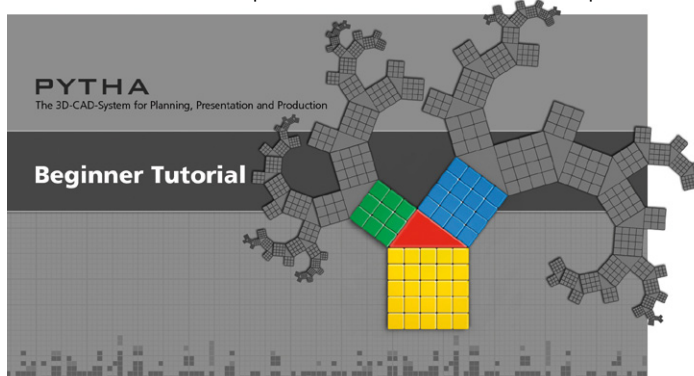
Feel free to contact your PYTHA team if you have any questions. Now we wish you a lot of fun reading this newsletter and we are looking forward to getting your feedback.

Your PYTHA team

Brand new PYTHA-Video-tutorials

Breakthrough for PYTHA beginners who prefer private studies: Getting started with the new video tutorials is really easy. All major functions of the PYTHA modeller are explained in 50 chapters in English language.

This new beginner's video tutorial is only a first step in a series of new tutorials that will explain in detail all aspects of the software package: from planning to presentation to production. Yet not only beginners will benefit from the tutorials, even experienced users will find numerous tips and tricks and can freshen up lost knowledge without spending money on the training. The tutorials will automatically be shipped with PYTHA version 20. If you want to get your copy right now, simply contact your PYTHA dealer.



PYTHA expands



Due to the growing success of PYTHA the amount of work at the headquarters is growing steadily. Therefore we have been looking for a new team member and found Saskia who joined us at March 1, 2009. As multilingual secretary Saskia Hirschberg is perfectly suited for keeping contact with our international partners. The cosmopolitan 25 year old young lady is fond of languages and culture. Together with her boyfriend she lives in a suburb of Aschaffenburg. She loves travelling whenever the challenging job at PYTHA Lab leaves her the time.

Windows 7

PYTHA Lab guarantees full support of the new Microsoft operating system Windows 7 for all PYTHA versions delivered after January 1, 2010. The compatibility of previous versions might be restricted.

Contact your PYTHA dealer for an appropriate upgrade.

Small but Smart

More information:

The cursor flag can now display information on a part (e.g. the parts name etc.).

New features for the right mouse button:

In the construction area a context menu was integrated. By selecting a 2D or 3D part with the right mouse button, a menu containing some of the most important functions will pop up. Thus in many cases you don't have to go to a function via the vertical menu any more.

3D mouse support:

Just like the visualization module RadioLab, now also the PYTHA modeler supports the 3Dconnexion space mouse devices (www.3dconnexion.com).

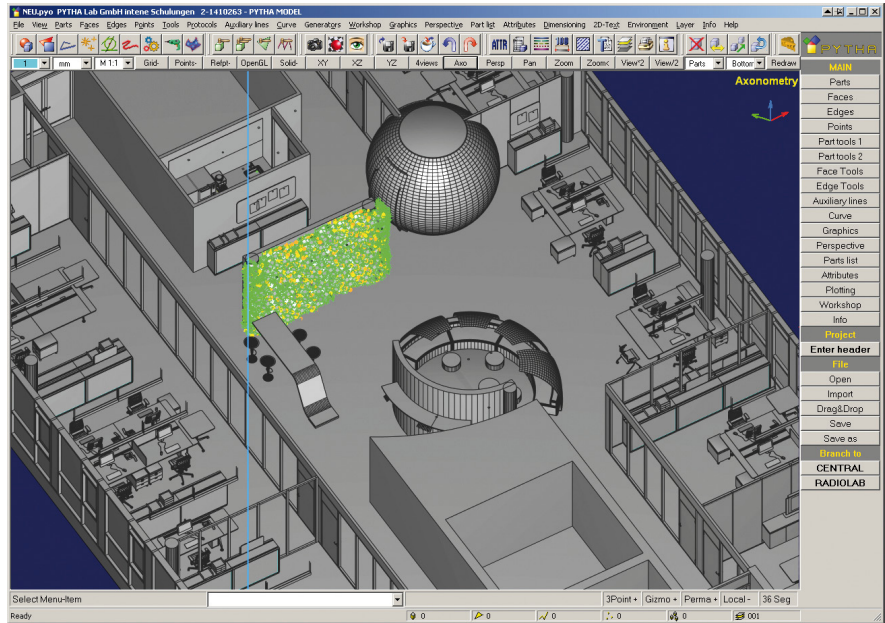
New GIZMO function:

The GIZMO for moving has an additional function: It now allows you to rotate an object. As soon as you choose the move function, a circle will be displayed in addition to the move arrows. You can use this circle to rotate the object interactively. In this way, you can save time by not having to switch tools. This function of course is available in all views and in axonometry.

News in the PYTHA-Modeler

A Revolutionary New Graphics Interface for the Modeler

For version 20, we developed a completely new graphics interface for the modeler. Now the days have passed when you had to open your OpenGL window or use the RayTracer to calculate shadows, highlights or transparencies. In the new PYTHA modeler you directly work with OpenGL graphics, both for your 2D and 3D construction.

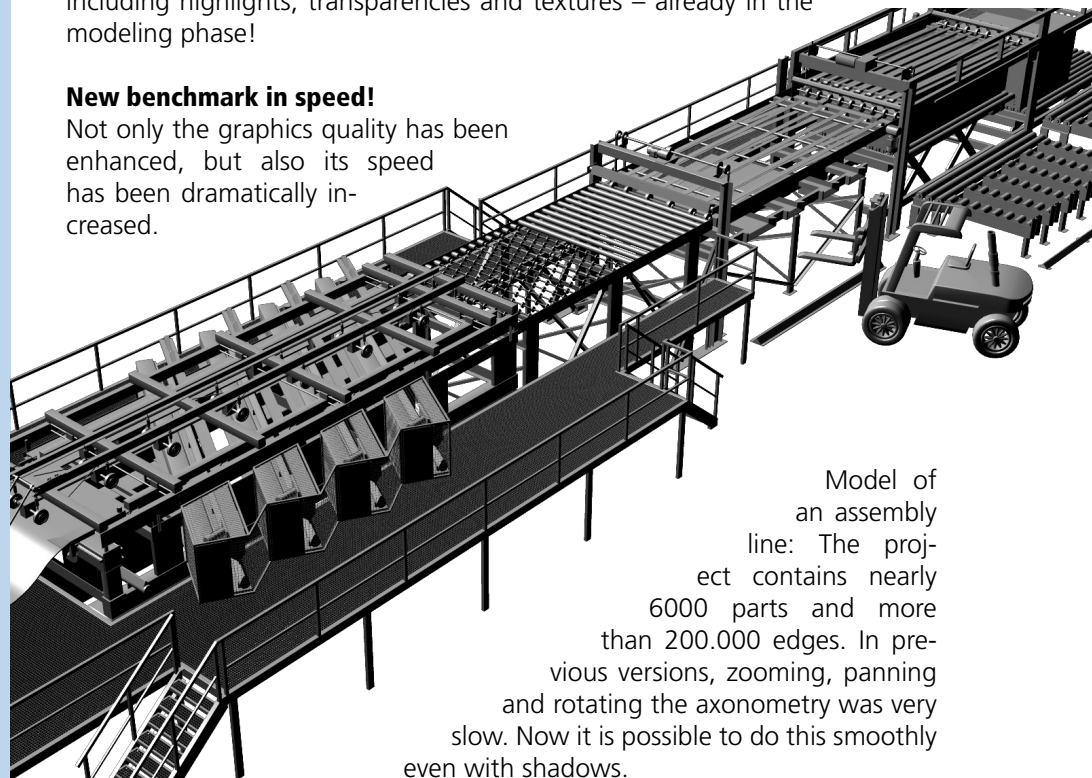


New OpenGL graphics in the construction area of the modeler. Even with antialiasing the solid calculation is easily done in real time.

This graphics can either use Gouraud shading or a Phong shading, thus including highlights, transparencies and textures – already in the modeling phase!

New benchmark in speed!

Not only the graphics quality has been enhanced, but also its speed has been dramatically increased.



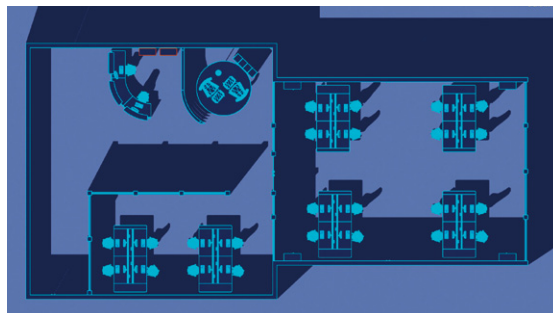
Model of an assembly line: The project contains nearly 6000 parts and more than 200.000 edges. In previous versions, zooming, panning and rotating the axonometry was very slow. Now it is possible to do this smoothly even with shadows.

Now also the PYTHA wireframe model that you were used to is drawn with OpenGL. This allows a real-time anti-aliased hidden line rendering ("Solid+" mode) even for your largest projects!



But that's not all: PYTHA combines the traditional OpenGL with the most modern 3D rendering techniques.

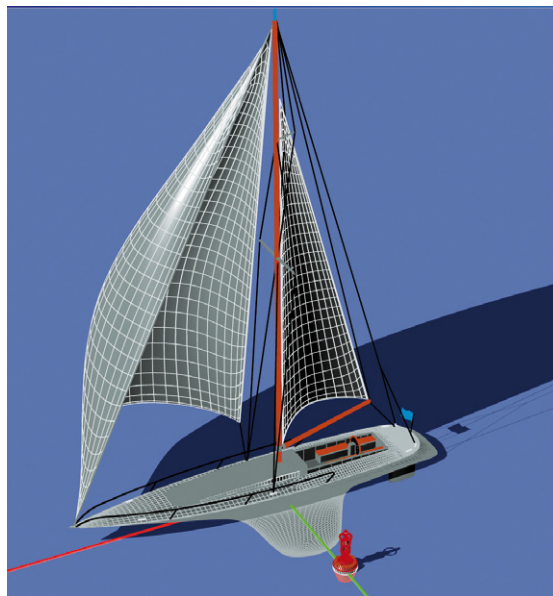
If you want to, you can turn on shadows directly in the construction area. This will give you an exact cast shadow in real-time. So when you edit an object, its shadow will follow immediately.



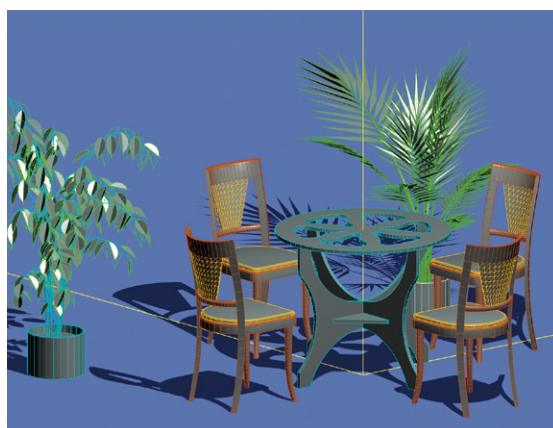
Now you can easily check the distance or validity of objects simply by looking at them. You will e.g. immediately notice if parts that are supposed to stand firmly on the ground are floating or if they are intersecting.

An additional feature of the new graphics is an enhanced cursor flag and the possibility to fully construct in the perspective.

In 4 views you may have the same view more than once, e.g. as total and as detail.



The images on this page do not show renderings, but the new real time graphics of the modeler!



Improved

Revolve:

The part tool "Revolve" now creates one face part instead of separate faces. Now this part can be converted directly to a board using the parts function "Parallel".

Disintegrate:

The function "Disintegrate" in the Part Tools 2 menu now creates face parts instead of single faces.

The function "Face part" in the Faces menu now unites face parts and can delete duplicate points and edges.

Save selected faces:

The "Save as / Select faces" function now saves to dxf the faces in their original orientation without rotating them.

Auxiliary lines 3D output:

The segment for a circle in the 3D output of auxiliary lines now is done easily via a dialog.

Groups:

Groups can now be deselected again by picking them a second time.

...and more

New generators:

In addition to the cabinet and table generator PYTHA now features a door, drawer and shelf generator. The objects created will automatically integrate into the construction. Changes in the size of the objects are made directly visible in the scene. The drawer generator in addition offers a choice of common runner systems.

Picking a block:

If you pick a block by two points that do not define all dimensions, you now can enter the missing dimensions comfortably via a dialog and don't have to use the input field any more. The advantage is that you can directly see and also correct your input.

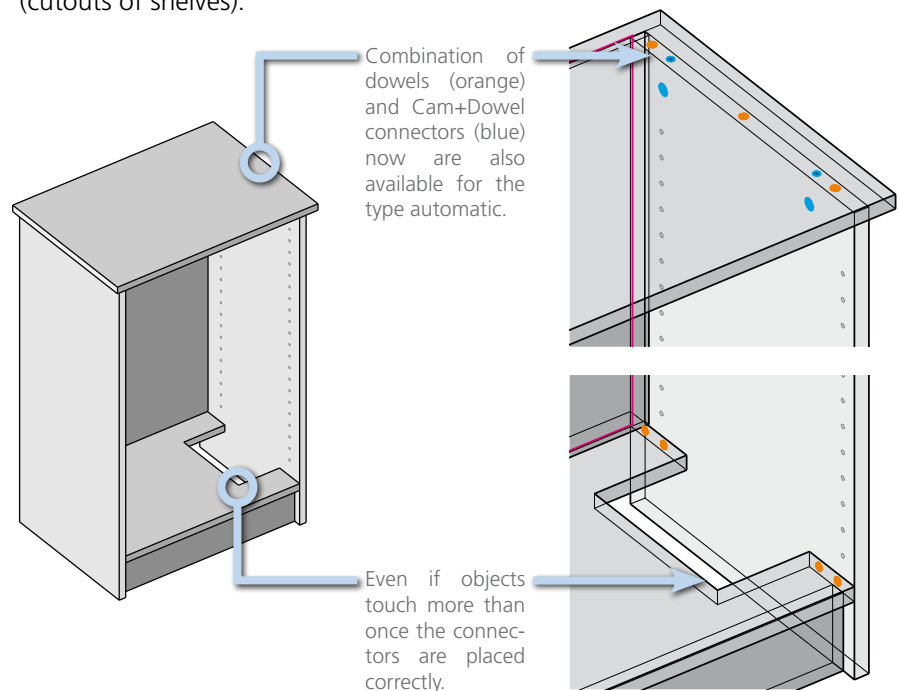
Filletted block:

Only in the pulldown menu "Parts / Standard" you can find the new function "Block filleted" (Ctrl+Q). This function allows you to directly create a block with filleted edges and corners in one step.

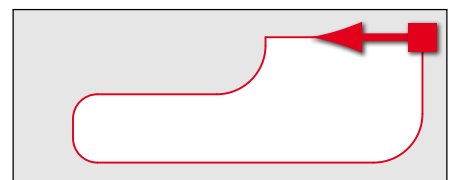
PYTHA Workshop Version 2

The PYTHA Workshop that was introduced in Version 19 lets you easily make any piece of furniture ready for production with a CNC machine. Due to the great success of this PYTHA module we have added many new features for you. In the following, we will only tell you the most important enhancements:

- Upon many customers' requests we have added several new connection types to the existing bore holes (Cam+Dowel).
- The former DS pattern now has become a DCS pattern, which allows you to combine screws, dowels and Cam+Dowels in any order.
- All bore holes now also work for sides colliding with a "U"-shaped part (cutouts of shelves).

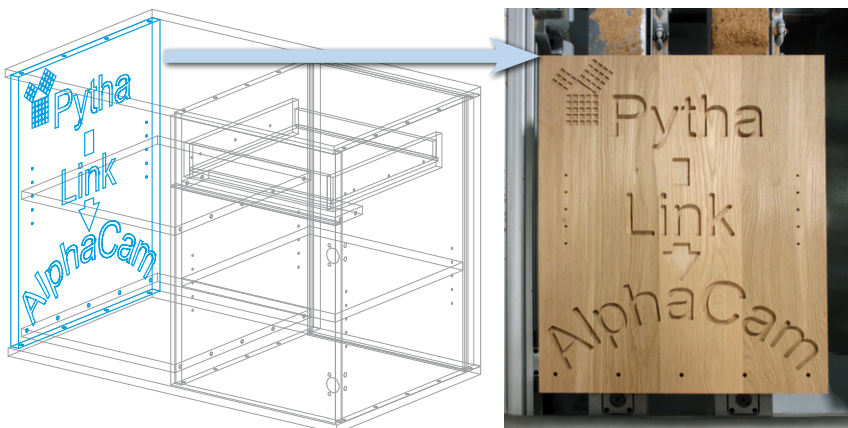
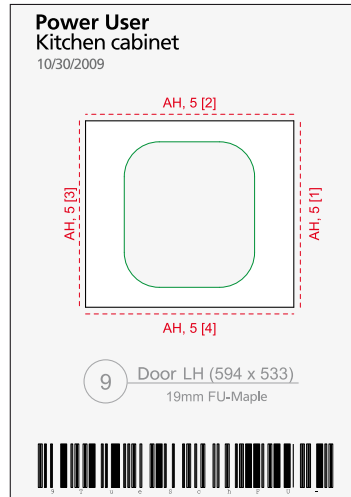


- Rows of holes can now be assigned to a single part without any touching part. You can for example assign a row of holes to a cabinet side without having drawn any shelf.
- Rows of holes being created in connection with a hinge now are positioned correctly even for different door and side lengths.
- Now the door type (right or left hinged) is identified automatically via the parts name (Door RH or Door LH).
- The new Workshop function "My holes" allows you to assign a CNC processing to any 2D geometry.
- Edges, chains of edges and entire parts can now be marked as a routing path. Hereby you can define the start point, the direction and the orientation of the router (clockwise, counterclockwise, on the left /right / in the center of the path). Furthermore you can position chains of edges on a face and then use them as a router path or pocket routing.
- If the thickness of an edge banding is greater than the radius of a filleting, normally an overlapping occurs. Until now you had to solve this problem constructively, but the new PYTHA version will do this job for you automatically.



Both the routing direction and the position of the router can be chosen freely and are displayed in the construction.

- We have added a label plotting to the new PYTHA Workshop. Each label contains an image of the according part including the bore holes, router and dimensioning as well as information on the customer and the delivery date. If required, you can also add a bar code. In addition, you can print a label for the whole assembly group containing information on the project.
- The new function “3D Lay flat” works the same way as the normal “lay flat” function, but will keep the thickness of the boards.
- As well for “Lay flat” as for “Nesting Optimization” you can exclude parts with the names “Knob, Handle, Noflat”.
- For the “Nesting Optimization” you can also exclude horizontal drillings.
- To do the “Nesting Optimization”, you don’t have to lay the parts flat any more. PYTHA now automatically recognizes the relevant faces in the 3D construction.
- The “Nesting Optimization” now also works for 3D parts, meaning that parts aren’t automatically converted into faces any more.
- Furthermore, the “Nesting Optimization” can look at the material and the thickness of parts. It will sort the parts with a certain thickness and material automatically on the supply board with the name of the according material and thickness.
- We also have enhanced the DXF export in the PYTHA Workshop. Basically it saves all faces relevant for production directly out of the 3D part as a separate 2D DXF. Now you can also define rules for the export, which parts shall be exported, whether they shall be rotated (orientation along the grain direction) or what name scheme the parts shall have (e.g. customer_part name etc.).
- Further connections to common CAM-systems are available. Now you can choose from the following programs: WoodWop, Alphacam, Biesse, NC Hops, EnRoute, CAD Code, Router-CIM and Cobus.



Data exchange between CAD and CAM – no problem with the PYTHA workshop!

- We have developed functions that let you export relevant data directly to a postprocessor of a CNC machine. In this way, you don’t have to import the data into the CAM program manually any more. You simply press one button in the PYTHA Workshop and the postprocessor will open and directly load all the data including the production information (bore holes, routings, etc.).

Small but Smart

Project header

There is a new option to create an individual header for each project. In order to customize your project you can enter your customer’s name, his contact data, the delivery date, etc. Once you have defined these data they can automatically be taken over to the parts list, the title block of the plot sheet, the new label plotting in the PYTHA workshop and the DXF export of the workshop. If you want to change any data, you only have to change them once in the project header.

New features in the parts list:

- Now you have the choice of 9 user defined group attributes which give you a wide variety of possibilities for grouped parts in the parts list.
- Due to many requests we have added a new parts list attribute: a weight that can be summed up (SL code 35).
- The parts list can now display the cut size and the finished size of boards separately if a board has edge banding.

EXCEL

The parts list menu now has a direct Microsoft EXCEL connection which creates a well designed parts list including even a company logo in EXCEL.

Plotting Menu

In Version 20, the plot sheet in the plotting menu now already displays the plotting preview with the proper printing pen colors and line widths for all edges, texts, dimensioning, etc. Of course you can still edit this plot sheet directly. But from now on, you don't have to check changes via "Preview" any more.

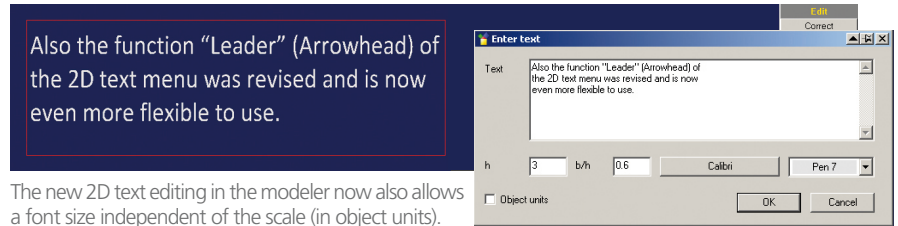
Furthermore you can now pan and zoom interactively on the plot sheet, using the mouse and the mouse wheel.

We have also added a context menu to the plotting menu so you can access your most important functions simply via the right mouse button.

Multiple line texts on the plot sheet? Not a problem any more! Like for the 2D text, the text function now opens a dialog where you can enter and format the text. Afterwards, this text also has a frame with which you can easily handle the text.

Attributes

- The layer dialog now can automatically save the layer settings. In this way, you can save those layer names that you often use and also the layer status (visible, selectable, changeable). In addition, you can protect such a status which means you can't change it accidentally. To transfer these layer settings to another computer, simply copy the text file "pytha_layers.txt" ("My documents / PYTHA20") to the same folder on the other computer.
- The 2D text in the attributes menu was also completely revised. Now you can simply enter a text in an editor box which also supports multiple lines for horizontal text. These text blocks now automatically adapt the line break and distance to a new font size or change of the scaling.



The new 2D text editing in the modeler now also allows a font size independent of the scale (in object units).

- You can now choose a part name from a list by using the function "Name from list" in the attributes menu. Of course, you can also edit this list and add your own names. To do this, simply edit the file "pytha_names_eng.txt" in "My documents / PYTHA20".
- Both the command "Change dimensions" (dimensions menu) and the parametrics now allow picking areas of influence. If you use this option, changes in the size will only affect the selected area.

New naming convention

For many years, RadioLab has automatically assigned functions to parts via special part names you had assigned in the PYTHA modeler. If you e.g. call a face "Light_1000", this face will automatically be a face light source with an intensity of 1000 lumen. "Spot30_1000" will create a spot with an aperture of 30 degrees and an intensity of 1000 lumen, etc.

Yet, these names also always appeared in the parts list where they made no sense. With Version 20, we introduce a new naming convention for parts: This new convention follows the scheme:

<Part name> {<Attribute1> : <Value1>; ...}

Here, "Part name" is the name that will appear in the parts list. This can be an arbitrary name. The values in brackets will generate an action in PYTHA, but won't appear in the parts list. The new convention offers many advantages:

- It works not only for PYO files, but also for 3DS files.
- The attributes can also be defined via the group name and then will apply for all parts of the group.
- You can already assign actions (for RadioLab animations) in the modeler, like rotating or moving objects (e.g. doors, drawers, etc.).
- Light sources and parts can be directly assigned to a room of the RadioLab room structure.
- Parts can be defined as windows, this makes it easier to use daylight models in RadioLab.
- Parts can be excluded from the shadow calculation (casts no shadow / receives no shadow).
- The new convention is more flexible so that new actions can be added easily.

But don't be worried about old library elements. The former naming convention is still fully recognized so that the old parts also will still work in V20.

News in the PYTHA-Visualization



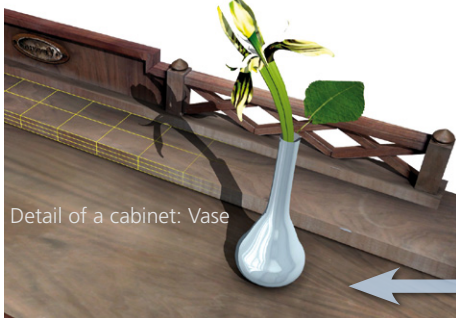
New technique for cast shadows

Imagine you open doors and windows, you move a chair group in a room or you animate the movements of a spotlight and the objects' shadow follows the movements in real time without any loss in the performance. PYTHA V20 makes it possible!

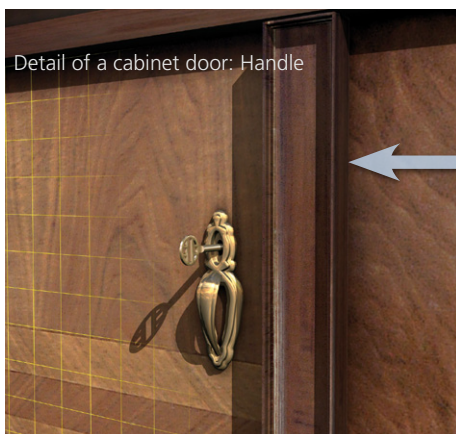
In each light source dialog you find the option "Realtime shadows". When you activate this switch, PYTHA uses the new calculation model for shadows. This model creates exact, sharp shadows, not depending on the mesh, at an amazing speed.

This gives completely new possibilities for fast visualization, real time animation and situations in which you need hard cast shadows. Especially daylight simulations benefit from the new shadows. On the one hand, these shadows correspond to the real shadows on a sunny day without having to change the mesh size, on the other hand changes on the date and time will be directly visible without recalculation.

In contrast to the modeler and its newly integrated cast shadows RadioLab can also create smooth shadows. On the one hand, these shadows need a more powerful hardware, on the other hand they look much more realistic.

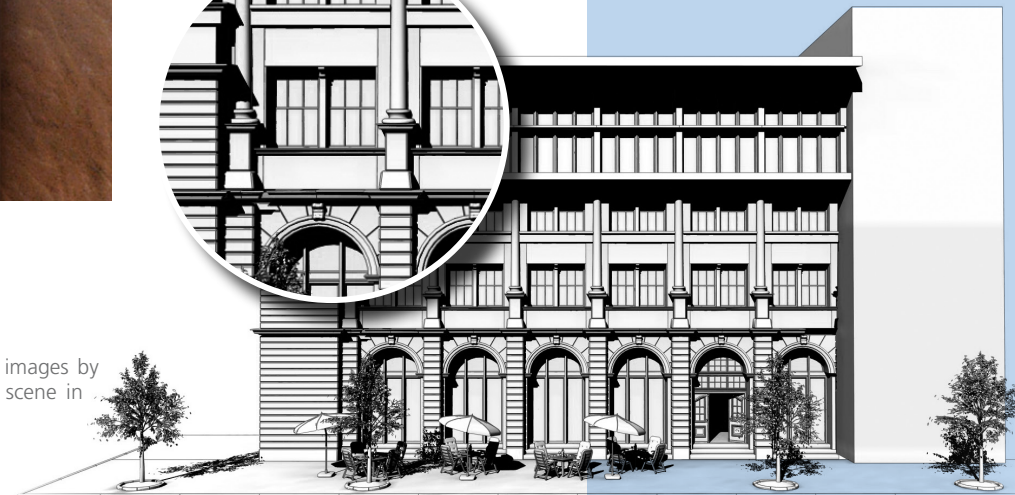


Detail of a cabinet: Vase



Detail of a cabinet door: Handle

Exact cast shadows even for rough meshes are calculated in real time.



You can create classical architectural images by one click and still walk through the scene in real time.

Small but Smart

Indirect Light:

Now you can dim indirect light. Even if this leads to physically incorrect light calculations, it is sometimes useful to adapt the illumination of the scene.

Glass Shader:

With the introduction of the shaders in Version 18 we have also created a glass shader which simulates the refraction of light on non-flat surfaces (e.g. a wine glass, vase, etc.).

To get a good result you had to assign a mirror texture or real mirror as well as a material being both partly reflecting and partly transparent. To make it easier to use this shader, PYTHA now will add these attributes automatically. You now can pick an object of any material and check the "glass shader" in the "Rendering" dialog. You will then directly see the result. If necessary you can change the attributes at any time.

RadioLab at Day and Night...

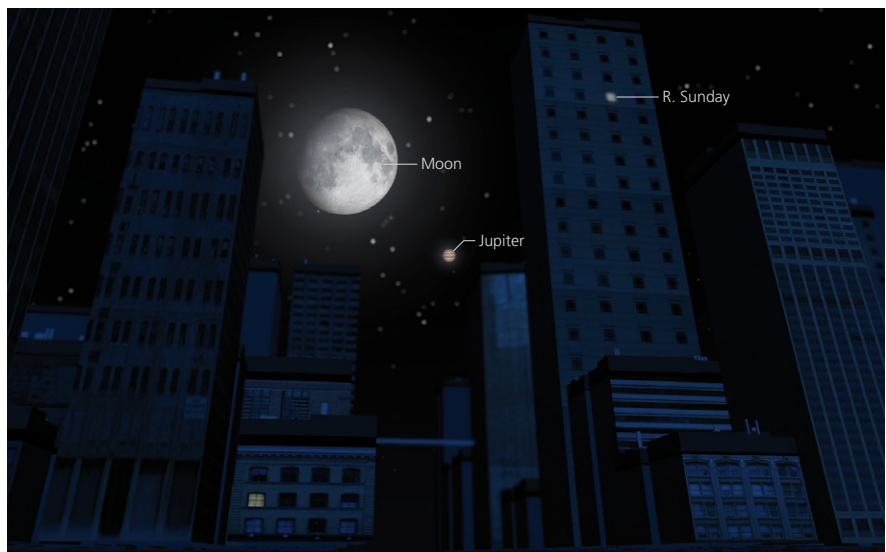
Now the stars are sparkling in RadioLab – even physically correct.

Until now, the night sky in RadioLab was simply dark black. Version 20 fills the sky with stars, making your scenes look more vivid.

As soon as the sun has set, the stars begin to sparkle and the moon will rise. PYTHA does not fill the sky with arbitrarily spread white dots, but calculates the real stellar constellations depending on the date, time and coordinates you have set. If you choose the right time, you can even see the planets.

Yet, the new sky not only offers this visual feature, you can even use it for your lighting calculation. Not only the sun illuminates the scene but at night also the moon will shine in a nighttime blue.

This perfect background for Open-air events and lighting simulations is worth more than just a brief look.

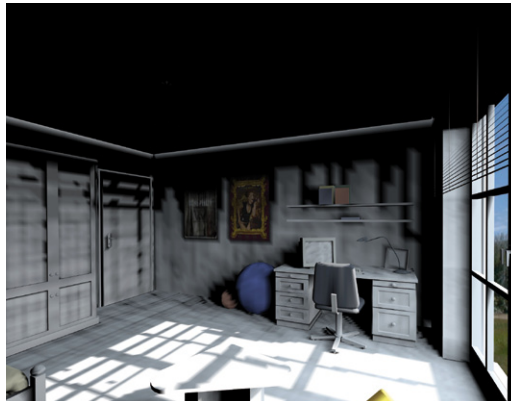


Use PYTHA as your personal planetarium!

For each season, date and time RadioLab shows you the exact position of more than 50.000 stars, all planets and our moon.

Daylight with sky

Besides the new night sky we also enhanced the features of the Radiolab sunlight. Before calculating you can now define faces and parts as windows for the "Daylight with sky" thus focusing the sunlight on these areas. This gives more precise shadow calculations while the calculation time is much shorter. With this new daylight model indoor scenes will result in more realistic images than with the old model.



"Daylight with sky" without the window option



"Daylight with sky" using the window option

The two images show the identical scene, each time directly after the daylight calculation. Both scenes were not edited afterwards. While the light distribution in the upper image is blurry, the lower one has a much more realistic shadow calculation. Furthermore, now also the indirect daylight is simulated, it brightens up the ceiling.

Another enhancement of the daylight is the connection of the cloud density and the sunlight. Until now the slider "Density" in the "Background" dialog had no influence on the calculation of the sunlight. It only changed the number of clouds in the sky. So the lighting calculation always assumed a bright day with a blue sky, giving a high contrast and hard shadows.

If you change this "Density" slider in Version 20, it will directly influence the lighting of the scene. Thus you can simulate the lighting situation of a cloudy day with smooth shadows.

By the way, you don't have to set the cloud density before you do the daylight calculation. You can change the slider any time and the scene will be immediately updated in real time.

Textures

- If you want a texture to look undistorted on a face, simply leave out one direction value ("u" or "v"). Radiolab will then automatically calculate the missing value for the texture scaling.
- The Foreground menu now also loads alpha channel textures automatically, following the same principle as the normal texture dialog (name attachment "_alpha"). The texture collection on the PYTHA installation CD now contains around 60 buttons (textures) for the foreground menu, most of which use this technique.
- High definition RPC figures ("three-dimensional photos") by Archvision (www.archvision.com) now are scaled down to a resolution of no more than 2048 pixels. Otherwise they can't be displayed by many graphic cards.

New Shortkeys

- Press "S" on the keyboard and select a face with the left mouse button at the same time. This will automatically create a real mirror on this face. If the material has not been up to then, PYTHA automatically adds 25% reflectivity.
- Press "M" and select a face to open the material editor with the material settings of the selected face. In V20 this also works for the material list "Standard". RadioLab will therefore automatically copy this material to the "Scene" list.
- Press "ALT" on the keyboard and select a face with the left mouse button. You can now switch between the selection modes "Faces" and "Parts".

More options for the relief

The function "Relief" in the Tools menu with which you can create a relief from a face with a texture was introduced in Version 19. Due to its popularity, we have added some functionality:

- The texture you assign to the face can now be repeated and rotated.
- You can now also create a relief from the faces of a profile or a cylinder.
- Now you can convert any flat polygon into a relief.
- Existing reliefs can be recalculated with new values as long as their texture hasn't changed (Function: "Create relief with textured face").
- Entering a negative height will invert the influence of the texture. White spots will then create a valley, dark spots a hill (Function: "Create relief with textured face").



Give this profile (concave/convex bent wall) the look of a stone wall.



Having used the function relief the profile body is deformed according to the texture.



The deformed wall with the according color texture.

GOBO function

Another useful connection in the new RadioLab is between projectors and spot light sources. It is now easily possible to simulate so-called Gobos. Gobos are masks for projectors to project images and patterns and are used in the event and stage design. In RadioLab you could until now simulate Gobos with projectors. Yet, a projector in RadioLab only creates an image with a constant brightness from the center to the outside. A brightness gradient, as spot light sources can produce, was until now difficult to realize, using Alpha maps in combination with the projector textures.

Now in Version 20 you can combine projectors and spot lights allowing the following effects:

- The gradient at the bounds of the spotlight which can be set with the penumbra filter now also works for a projector. RadioLab therefore automatically generates the proper alpha map that exactly fits the gradient of the spotlight.
- The colors of the projector are automatically used for the spot cone (“visible light rays”).
- Any changes of the spotlight are automatically taken over for the projector. This includes switching on / off, changes in the direction, position, aperture or the penumbra. The opacity of the projector is defined by the dimmer of the spot light. Furthermore, actions for the spot light will also work for the projector (e.g. switching on / off, light show, etc.).



The GOBO in action.
This GOBO can of course
be animated – in real
time!

Small but Smart

Meshing dialog:

- In the submenu “Smoothing options” you now find a slider with which you can smooth the shading on a face continuously.
- The intelligent mesh subdivision along e.g. “Deviation of brightness” now memorizes the selection and thus can be used several times successively.

Tools dialog:

- For the zoom command you now have several pre-defined points of rest, for example also reference points.
- When choosing the axis of rotation the selected axis is displayed for a short time as a control.
- You can now also create filleted blocks directly in RadioLab.

Explanation: HDR



On these images you see two typical shots of a digital camera. The image to the left is underexposed, details of the tree are hidden in dark black. The image to the right is overexposed, extremely bright areas look plain white.

Digital postprocessing cannot solve these problems, as there is hardly any image information available for the under- and overexposed areas. We are well used to this type of images in every day life (e.g. digital photography), they are called low dynamic range images (LDRI).

If you combine several images of the same scene with varying exposure time you get a so called HDR image (high dynamic range = high contrast).

The HDR image information contains detailed data on very dark as well as very bright areas, which allows for continuous variation of brightness. This representation is similar to the way you see with the human eye.

The high dynamic range rendering accordingly takes into consideration the wide variation of brightness and thus achieves a totally new image quality.

Revolution in real-time graphics: High Dynamic Range Rendering

Unlike most other rendering systems RadioLab saves the brightness information as HDRI data from the beginning, this explains the relatively huge amount of storage space required for rlb-scenes. For the user this opens up the chance to take influence on a scene using the sliders "Gamma" and "Intensity". Thus all exposure situations of a camera can be simulated – without further calculations. As many users have not yet become aware of the power of this feature we want to point it out here.

Up to now the settings had been static. If you had a scene with under- and overexposed areas you could only define the contrast (sliders "Gamma" and "Intensity") in such a way that only one of the areas looked realistic. If the settings for dark areas had been chosen properly, you manually had to adjust areas of extreme brightness. This was a problem especially when you tried to render a scene that contained as well indoor as outdoor views of a building.

RadioLab of PYTHA V20 solves this problem in an elegant way. As with a real camera, the brightness of the scene within the focus is permanently scanned. As soon as it changes, RadioLab adjusts the scene fully automatic. At first this might sound pretty unspectacular, yet it is really ground breaking if you take a closer look. When walking through a scene you gain much more dynamic. At any time the image is rich of contrasts and is stunningly full of details, which up to now were often lost due to inappropriate lighting settings.

Imagine that, with every movement of the camera, you would make the perfect camera settings for the current detail – this is exactly what RadioLab now does for you!

This could be achieved through consequent use of the HDRI data of your RadioLab scene.



The image above shows a normal RadioLab image, the image below shows the same scene with HDR effect.



QuickTime Export

For some versions RadioLab has already been providing panoramic images. Now you can export these images as a QuickTime VR. The image is directly written in the QuickTime format .MOV which can be opened with the free QuickTime player by Apple.

The advantage of this technique is that the exported file doesn't need any further editing. As soon as you open this file in a suitable player, you will find yourself for example in the center of a room and can turn your view to any side.

In addition you can also create "Object VR" scenes. In these scenes, an object is in the center and you can look at it from each side.

By the way, these objects can be easily put on a website as they are very small files and are supported by most browsers.

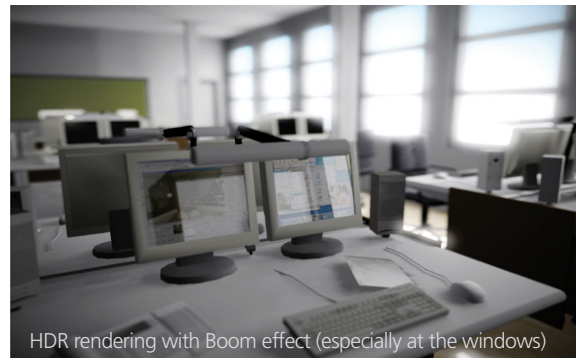
New visualization effects have been implemented that contribute to even more realistic renderings of a scene – it goes without saying that we are talking of real time interaction!

Let's first mention the so called Bloom-effect and the depth blur.

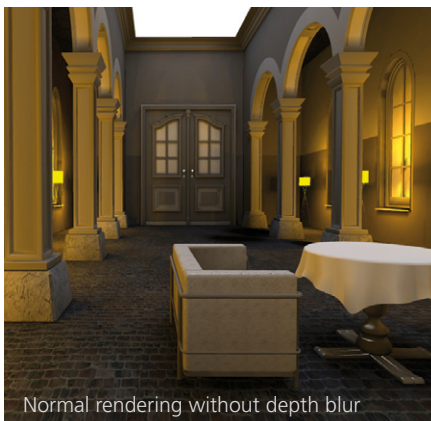
The Bloom effect is indeed a blooming or a flare at the outer edges of light sources and at very bright areas of a scene. This smoothes the artificial look due to sharp edges in visualizations and yet simulates high contrast.



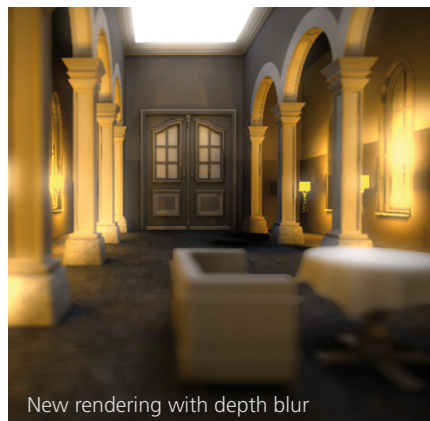
Normal rendering



HDR rendering with Boom effect (especially at the windows)



Normal rendering without depth blur



New rendering with depth blur

Depth blur no more requires time consuming postprocessing, it is created automatically in real time. While the spectator is moving through the scene an auto focus permanently scans the scene and sets the focus at those objects you are aiming at whereas the others are blurred, depending in their distance.

Even the graphical presentation of reflections is considerably improved due to HDR technology. Thus the reflection of a light source shines out the surface of a part. The simulation of these specular reflections through specialized shaders that only could create circular specular reflections is no more required.



Conventional mirror texture (LDR)



New mirror texture (HDR)

Explanation: IBL

IBL means image based lighting. This means that a scene is totally surrounded by an HDR panorama image. To illuminate the scene the color and brightness values of the image are calculated and transferred to the 3D model. This simply means that PYTHA detects the light sources in the image as well as the indirect light that comes from the objects in the image and uses both to illuminate your 3D scene.

You don't need to create virtual light sources or add daylight anymore. With a single image you can easily integrate your 3D model into the surrounding (background image) making the scene look extremely realistic. This method is especially useful for product presentations, interior architecture, furniture design and booth design. Whenever you need a realistic integration of virtual objects into a real surrounding, you won't find many proper alternatives to this technique.

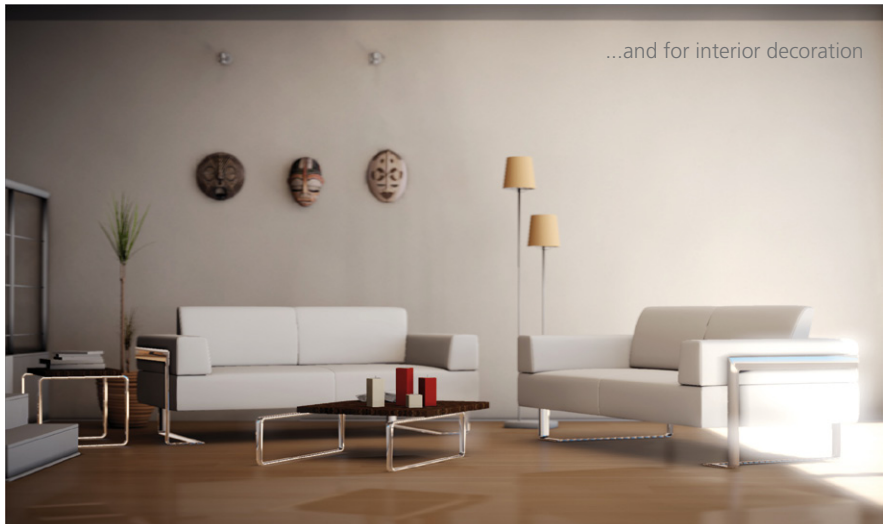
There is only one restriction: You can't use a simple digital photo. As explained at the beginning, a normal digital photo is an LDR image that doesn't contain the necessary information. For the best results you should use a high dynamic range image (HDRI). These can be created by combining a series of pictures with different exposition times or you can take them from an HDRI collection (you can find a huge variety of images on the internet, some even free of charge).

Image-based lighting (IBL)

The High Dynamic Range Rendering not only offers new real time rendering effects, but also provides a new light source type using the IBL technique (explanation of IBL on the left).



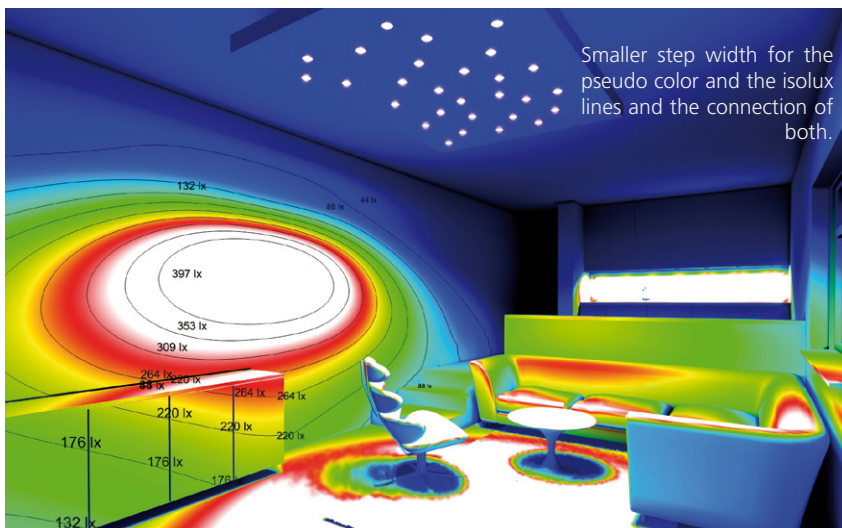
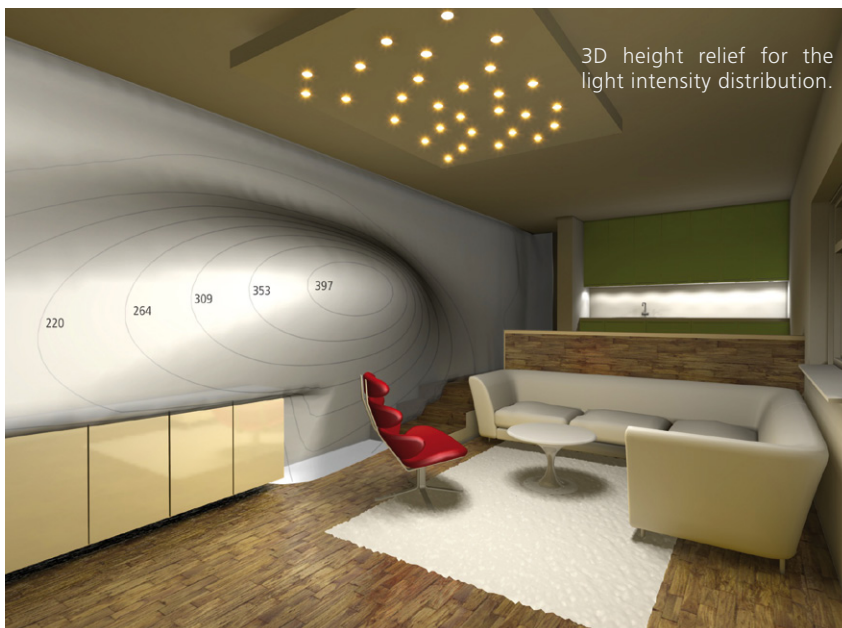
The new lighting model is excellent for product presentations.



Lighting Planning

We have also consequently developed the features of the lighting planning in RadioLab:

- You can now save the following report types as a HTML file: Lux-Table of any flat face (including Min / Max information), Lux table of the working plane; Isolux drawing of the working plane; Material list; Texture list; Light positions; List of light.
- For the pseudo color you can now define the number of color gradings in order to choose its resolution.
- You can now also set the number of isolux lines.
- As soon as you display the working plane of a room, RadioLab will create a new material in the material list "Scene" called "WorkingPlane" By editing this material you can turn the working plane continuously transparent to achieve a clear representation.
- In the dialog "Lighting planning" you find the switch "continuous". If you activate this function, RadioLab will always show the current position (coordinates) of the cursor and the light intensity at this point.
- The isolux lines of a face or working plane can now also be displayed as a 3D height relief.
- It is now possible to measure illumination in foot candle (fc) and thus create the light report in candle.



Eulumdat / IES

Eulumdat and IES files which contain photometric information on the light intensity distribution of a light source can already be assigned to a part in the modeler using the part name "Eulumdat_part name.ltd". Until now, the .LTD or .IES files had to be in the same folder as the .PYO file which made it complicate to copy these files. Version 20 now also searches in other folders for these files if they aren't found in the project folder. RadioLab then searches in the folder from which you had loaded the last Eulumdat or IES file (within RadioLab) and furthermore in a folder you can generally choose for the alternative search. You can then save all Eulumdat or IES files in this folder in order to create a photometric library.

By the way, PYTHA will also search in the subfolders of both alternative folders, so that you can structure your photometric library.

A further enhancement: Until now, the luminous flux of an Eulumdat or IES file was a fixed value which was defined by the data of the file. Now you can overwrite this value with an own value.

PC-Configuration

Minimum requirements (no Shader-Support)

Processor: 2 GHz
 Main cache: 1024 MB RAM (Win. XP)
 2048 MB RAM (Vista)
 Hard disc: 100 GB
 Graphics card: OpenGL + DirectX capable
 Sound card: DirectSound capable
 Monitor: with a minimum resolution of 1280 x 1024 pixel
 Mouse: 3-button mouse
 OS: Windows XP

Regular configuration

Processor: Dualcore min. 2,6 GHz or Quadcore
 Main cache: min. 2048 MB RAM
 Hard disc: 500 GB
 Graphics card: NVIDIA GeForce GTX 260
 alternatively:
 ATI Radeon HD4850
 Sound card: e.g. Soundblaster Audigy, X-Fi
 Monitor: min. 1280 x 1024 Pixel
 Mouse: 3-button mouse with wheel
 OS: Windows Vista

Optimal configuration

Processor e.g.: Intel® Core2Quad Q9650 (with 4x 3000 MHz) or Intel® Core™ i7-870 (with 4x 2933 MHz) or better
 Main cache: 4096 MB speed RAM
 Hard disc: 500 GB Raid 0 System
 Graphics card: NVIDIA GeForce GTX 285
 NVIDIA GeForce GTX 295
 ATI Radeon HD 5870
 Sound card: e.g. Soundblaster Audigy, X-Fi
 Monitor: 1920 x 1200 Pixel
 Mouse: 3-button mouse with wheel
 OS: Windows Vista

Please note: PYTHA Version 20 will also fully support Windows 7.

Imprint

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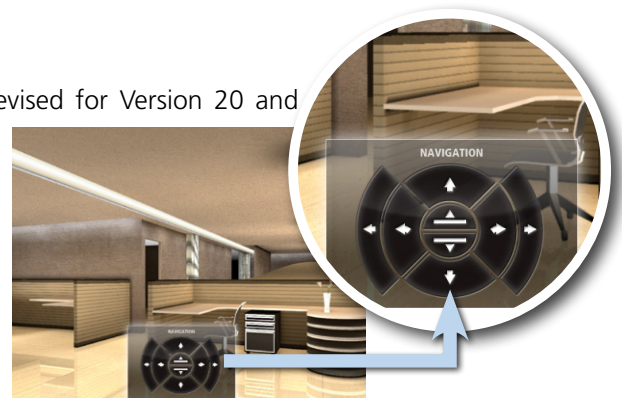
www.pytha.de

RadioShow

RadioShow has been totally revised for Version 20 and

now has a new user interface and more functions that make the navigation more intuitive.

Furthermore also RadioShow now has collision detection and the function "Keep eye height constant". With the constant eye height you can e.g. simulate an up stairs walk in a real impressive way. To activate these functions for RadioShow, simply activate them in the "Camera" dialog in RadioLab before you create the Pack&Go.



Multilayer Texturing

PYTHA RadioLab already supports multilayer texturing since Version 18. You already could assign more than one texture to a face. In this way, the material can be described more precisely which then leads to more realistic renderings. For example the bump mapping uses a second texture (Bump map) to define elevations in the materials surface. This allows you to display rough surfaces even if the object face is flat. Another texture layer is used for the gloss map which defines areas of a texture that shall be more reflecting and areas that shall be matt.

In Version 20 you are now able to assign more than one color texture to a face at the same time. You can then, just like in a paint program, lay these textures one on another and let them interact. So one texture can either be added to another, subtracted or simply cover the other.

In this way you can create complex surfaces directly in RadioLab by combining different textures without having to know how to use a paint program.

You can use multiple textures in many cases: To create a lawn from different grass and stone textures to avoid texture repetition. Dirt and footsteps can be simulated with simple black and white textures and inlays in wood or stone don't need a separate face anymore.

All texture layers on a face can be edited independently from one another, the texture repeat (tiling) can be deactivated. These features are very useful for exhibition design. Thus logos and text can be freely arranged on a wall panel and can be displaced interactively at any time - no more need to model additional faces.



The new multi-layer-texturing makes it really easy to simulate animated LED wall panels.



All labels and pictures in this booth are separate texture layers - no need to model additional faces or posters.