

Open-source design  
ecosystems around

# FreeCAD

Your own 3D parametric modeler

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# Quick resume of FreeCAD

- Open-source 3D modelling application (GUI or console/python)
- “Precise”, NURBS-based parametric modeling
- Most suited to design objects to be built in the real world
- Started in 2002, now ~20 active developers
- Heavily modular (everything is a “plugin”)
- Big collage of open-source libraries and engines
- Large part of developers had no programming background
- No very clear separation between users and developers





Combo View

Model Tasks

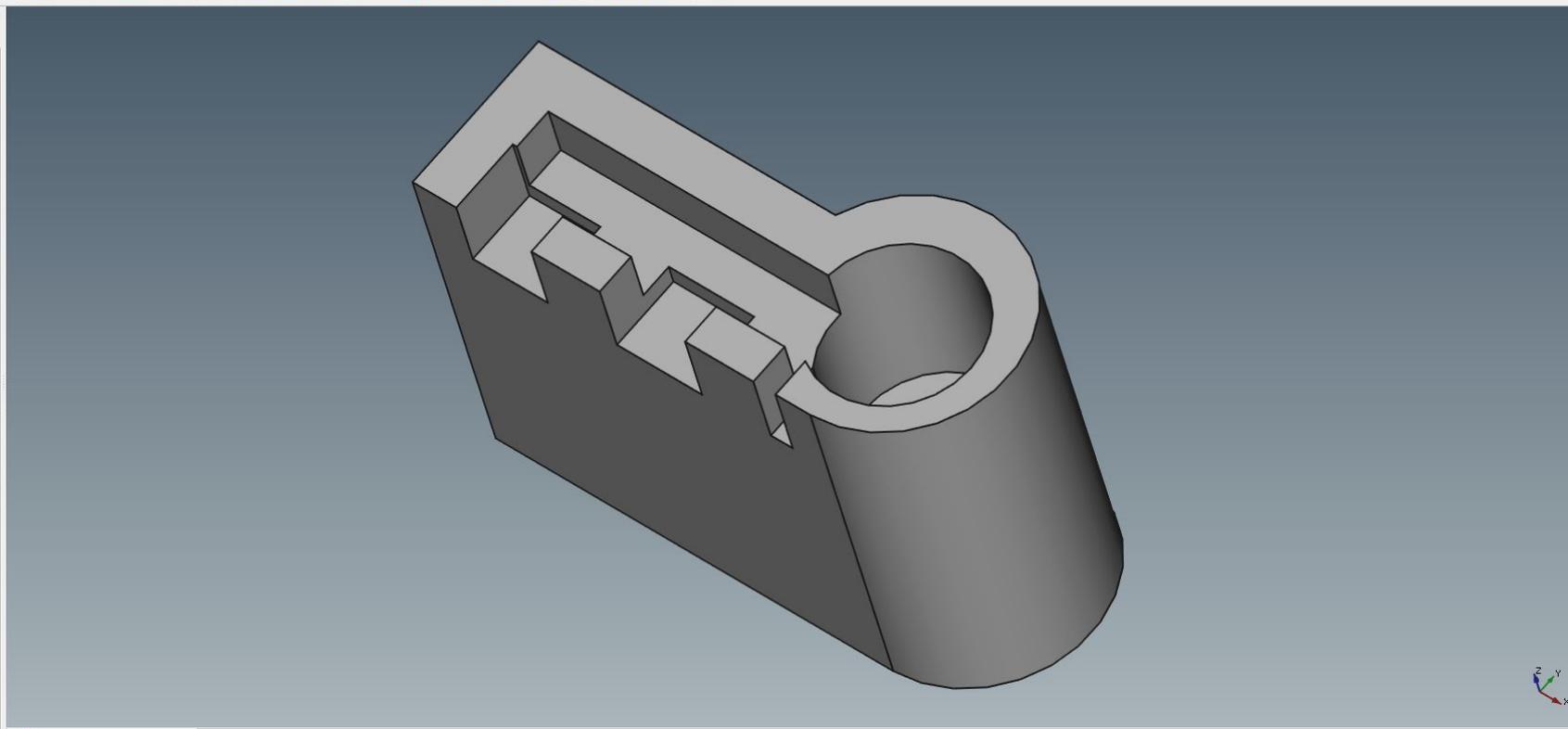
Labels & Attributes Descript

Application

- PartDesignExample
  - Body
    - Origin
    - Pad
    - Sketch
    - Pocket
      - Sketch001
      - Pocket001
      - Sketch002
      - Pocket002
        - Sketch003

Property	Value
<b>Attachment</b>	
Map Mode	FlatFace
Map Reve...	false
Attache...	[(0.00 0.00 1.00); ...
<b>Base</b>	
Placement	[(0.00 0.00 1.00); ...
Label	Sketch003
<b>Sketch</b>	
Constraints	[]

View Data



PartDesignExample : 1

Selection view

Search

PartDesignExample#Body.Pocket

Picked object list

Report view

No BIM update available

Loading PartDesign module... done

Loading GUI of PartDesign module... done

File was not written with this version of the topology

File was not written with this version of the topology

File was not written with this version of the topology

File was not written with this version of the topology

File was not written with this version of the topology

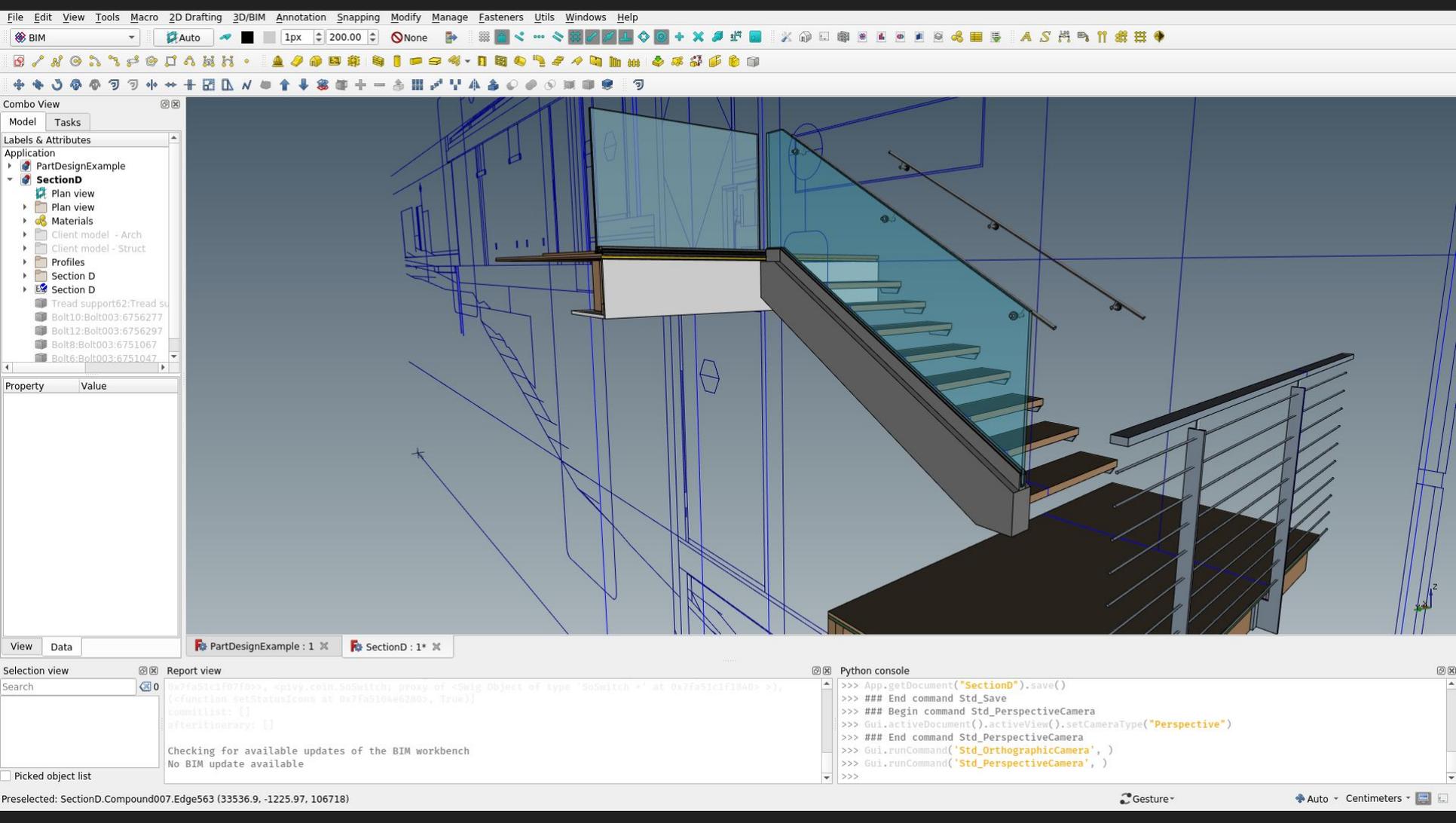
File was not written with this version of the topology

Python console

```
>>> # Gui.Selection.clearSelection()
>>> # Gui.Selection.addSelection('PartDesignExample', 'Body', '', -55.478, -17.8141, 25.3678)
>>> # Gui.Selection.clearSelection()
>>> #
Gui.Selection.addSelection('PartDesignExample', 'Body', 'Pocket002.Face3', -67.2479, 10.3949, 71.2588)
>>> # Gui.Selection.clearSelection()
>>> # Gui.Selection.addSelection('PartDesignExample', 'Body', 'Pocket002.Sketch003.')
>>>
```

# Yorik

- OpeningDesign: An open architecture studio
- Everything done collaboratively online
- Most projects are open-source (client's personal details encrypted)
- Heavy use of open-source development tools (Git, issue trackers, online meetings,...)
- Worldwide, no physical location
  
- WikiLab: an example of cross-disciplines work
- Architecture, engineering, CNC, social experiment
- Open-source project, evolves over time



Combo View

Model Tasks

Labels & Attributes

Application

PartDesignExample

SectionD

Plan view

Materials

Client model - Arch

Client model - Struct

Profiles

Section D

Section D

Tread support62:Tread su

Bolt10:Bolt003:6756277

Bolt12:Bolt003:6756297

Bolt8:Bolt003:6751067

Bolt6:Bolt003:6751047

Property Value

View Data

PartDesignExample : 1

SectionD : 1\*

Selection view

Search

Picked object list

Report view

```
0x7fa51c1f07f0>, <ipiv.coin.SdsSwitch: proxy of <Swig Object of type 'SdsSwitch *' at 0x7fa51c1f1840 >>),
```

```
(<function setStatusIcons at 0x7fa5104e6280>, True)]
```

```
commitlist: []
```

```
afteriterinary: []
```

```
Checking for available updates of the BIM workbench
```

```
No BIM update available
```

Python console

```
>>> App.getDocument("SectionD").save()
```

```
>>> ### End command Std_Save
```

```
>>> ### Begin command Std_PerspectiveCamera
```

```
>>> Gui.activeDocument().activeView().setCameraType("Perspective")
```

```
>>> ### End command Std_PerspectiveCamera
```

```
>>> Gui.runCommand('Std_OrthographicCamera', )
```

```
>>> Gui.runCommand('Std_PerspectiveCamera', )
```

```
>>>
```

File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify X2 X3 Room Room Separator Tag Room Area Boundary Tag Area By Face Shaft Wall Vertical Dormer Level Grid Set Show Ref Plane Work Plane

Select Build Circulation Model Room & Area Opening Datum Work Plane

Properties Level 1 ODe SPLASH PAGE Section D (3D)

3D View Edit Type

3D View: (3D)

Graphics

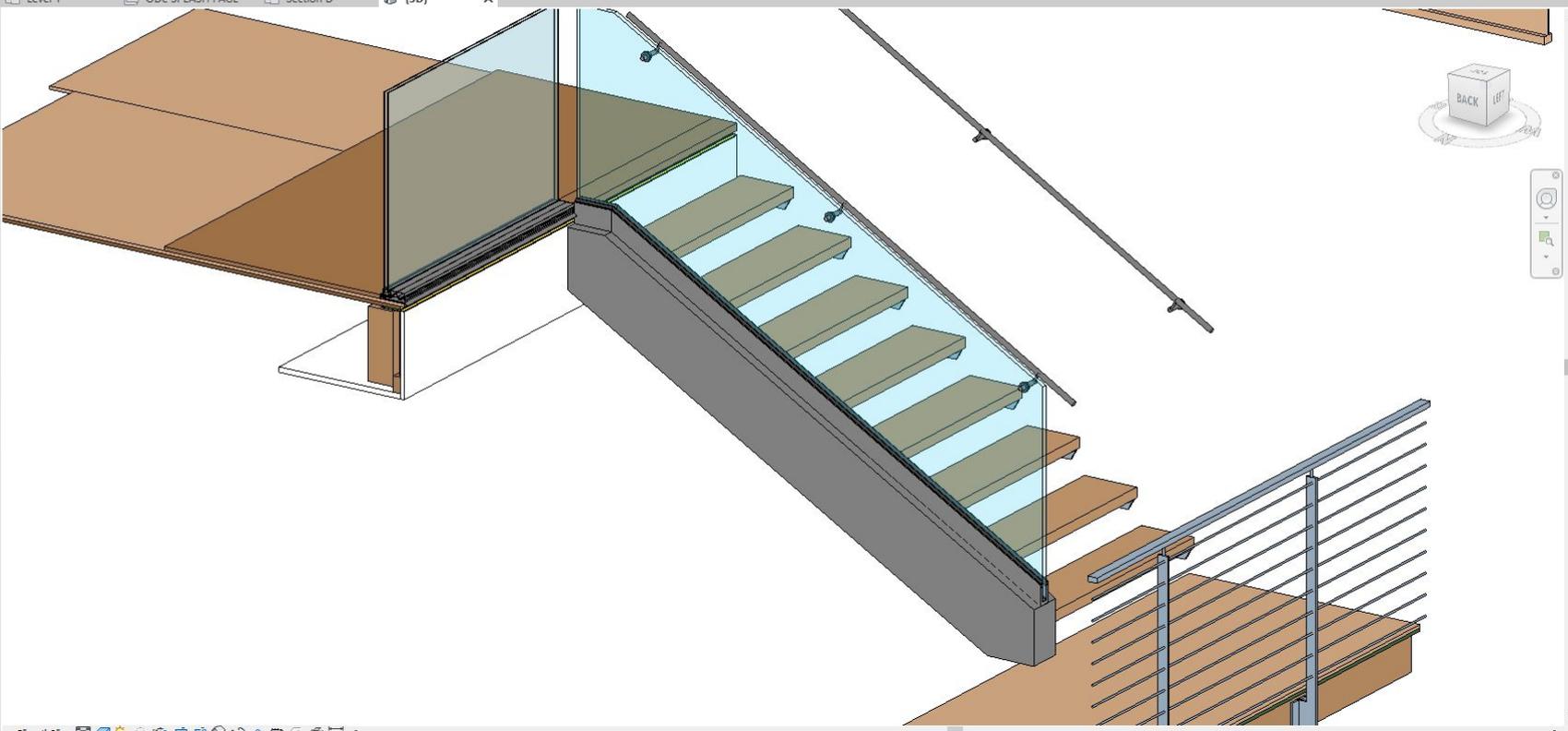
View Scale	3" = 1'-0"
Scale Value	1: 4
Detail Level	Medium
Parts Visibility	Show Original
Visibility/Grap...	Edit...
Graphic Displ...	Edit...
Discipline	Architectural
Show Hidden ...	By Discipline
Default Analy...	None
Half-tone	<input type="checkbox"/>
X-Fine	<input checked="" type="checkbox"/>
Sun Path	<input type="checkbox"/>

Text

Properties help Apply

Project Browser - SectionD

- Views (all)
- Floor Plans (Floor Plan (1/4"))
- Section D
- 3D Views
- 3D View 1
- \_ODE - DETAIL
- \_ODE - DETAIL View Mode
- \_ODE - DETAIL W ARCH/S
- \_ODE - DETAIL W/ ARCH (
- \_ODE - DETAIL W/ STRUCT
- \_ODE - IFC Export
- \_ODE - ref\_ARCH only
- \_ODE - ref\_STRUCT only
- North West Corner View
- X\_Cover Page
- X\_North East
- X\_North West
- X\_South East
- X\_South West
- (3D)





# OpeningDesign

An (uberly) transparent & open source architectural studio.

Madison→Montreal→São Paulo | http://openingdesign.com/ | hello@openingdesign.com

- Repositories** 94
- Packages
- People 31
- Teams 2
- Projects
- Settings

## Pinned repositories

Customize pinned repositories

**CTR**

The Current - a Multifamily Project in Eau Claire, WI

Python ★ 2 🍴 1

**Aalseth\_Residence**

Residence on Lake Kegonsa - Stoughton, WI

**Sports\_Complex**

A Sports Complex in Southern Wisconsin

Max ★ 6 🍴 10

**OD\_Library**

An evolving content library

Max ★ 19 🍴 5

**FreeMVD\_WorkFlow**

A place to hash out simple IFC roundtripping between FreeCAD and Revit. Hopefully, in the future, the FreeMVD will become more platform agnostic-- applying to other BIM platforms as well.

★ 17 🍴 4

**Vacatlon\_Rental**

The Downtowner - A Vacation Rental in Lake Geneva, WI

HTML ★ 2 🍴 3

Find a repository...

Type: All

Language: All

New

### CTR

The Current - a Multifamily Project in Eau Claire, WI

Python 🍴 1 ★ 2 ⓘ 55 🍴 0 Updated 9 hours ago



### Top languages

- HTML
- Max
- C#
- JavaScript
- Python

### FreeMVD\_WorkFlow

### Most used topics

Manage



## OpeningDesign / CTR

Unwatch 5 Star 2 Fork 1

Code Issues 55 Pull requests 0 Actions Projects 2 Wiki Security Insights Settings

### The Current - a Multifamily Project in Eau Claire, WI

Edit

Manage topics

534 commits 2 branches 0 packages 0 releases 6 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

bdmock Unit Plans: Exterior Dims		Latest commit 6dee649 9 hours ago
.git-crypt	Add 1 git-crypt collaborator	6 months ago
Admin	bulk 3	8 months ago
CA/Site Reports and Photos	snapshot	6 months ago
Existing Conditions & Code Research	rendering of hallway	2 months ago
Models & CAD	Unit Plans: Exterior Dims	9 hours ago
Products (archive - do not use folder)	snapshot	last month
Transfer	dev.first-draft.xyz/d/20200118_2_%20CTRStructDetails_maira/	2 days ago
XC_struct	reorganize	2 months ago
_closed	snapshot	4 days ago
.gitignore	gitignore change	21 days ago
Cannery District Eau Claire - Brainstor...	bulk 3	8 months ago
Instructions for git-crypt.exe.url	bulk 3	8 months ago
Notes - Cannery District - Eau Claire.md	snapshot	6 months ago
README.md	added renderings	21 days ago
git-crypt.exe	bulk 2	8 months ago



Yorik van Havre

CTR - Struct

Navigation icons: Home, Search, Folders, Profile, etc.

Explore Filter

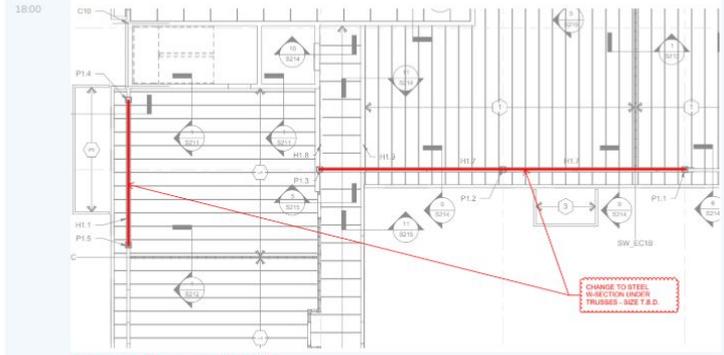
PEOPLE

- chopingregis
- theoryshaw
- hdm\_dt\_fb
- moult
- Gitlab Notifications
- mairocas

ROOMS

- CTR - Arch
- CTR - Struct
- OD\_Workflow\_Discussions (P...
- ODe\_Santa\_Ana\_Residence
- aec\_coding
- Oakfire 2.0
- OD\_Workflow\_Discussions (Pr...
- Newport\_Beach\_Residence
- Aalseth\_Residence
- chopingregis and theoryshaw
- 15 N Hancock
- Facilities Building - 1810 S. Pa...
- Depula Residence
- Encryption Test

the garage door to the ramp, yes those beams are done. I was referring to these two locations...



Download image.png (69.6 KB)



Download image.png (73.26 KB)

there's garage doors to the community room at that wall



Lperezato



Send a message (unencrypted)...



Combo View

Model Tasks

Labels & Attributes

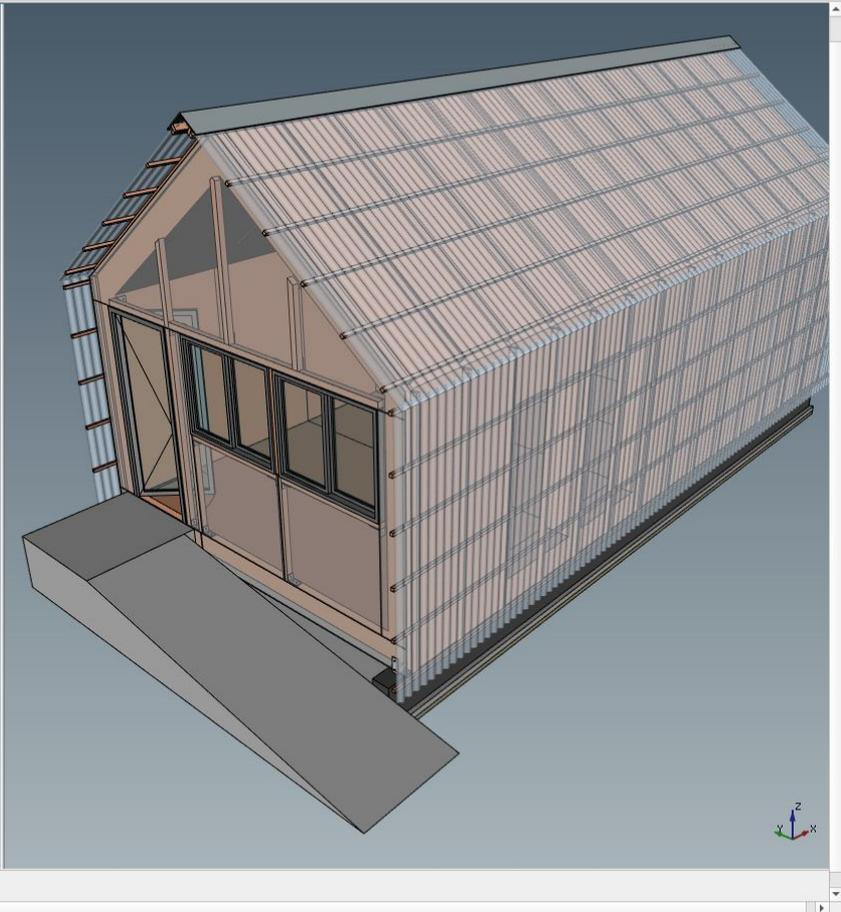
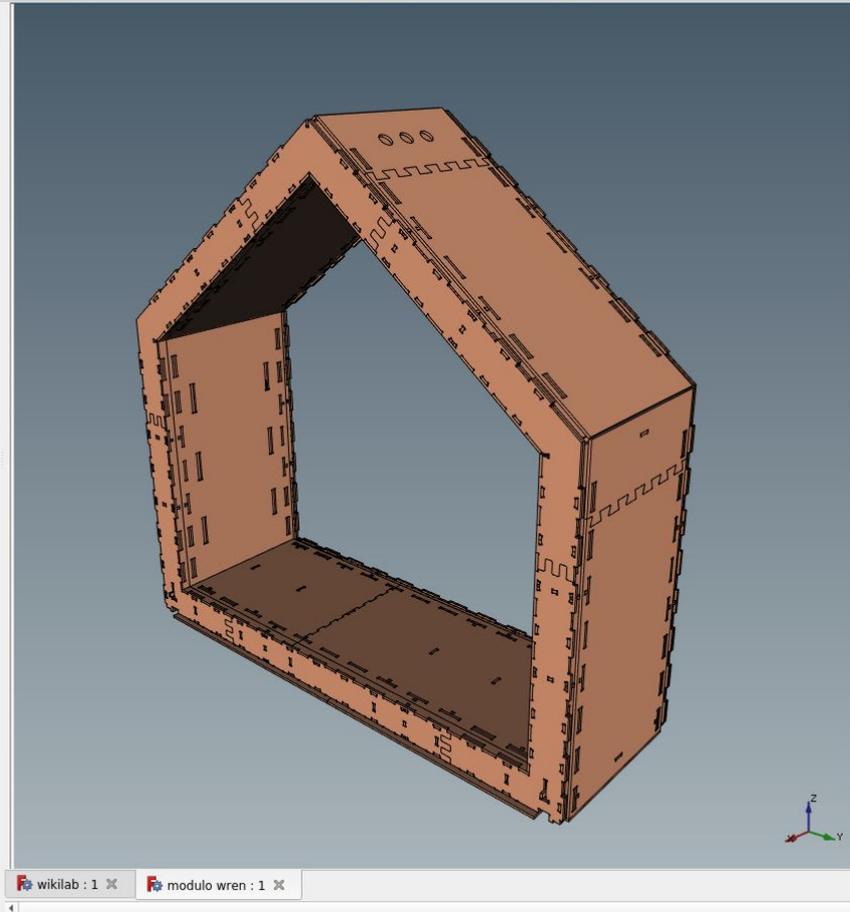
Application

- wikilab
- modulo wren**
  - Wren component
    - Endcap - 52 peças
    - Base component - 90 pe
    - Window - 5 peças (+ 86)
    - Parafusos - 92 parafusos
    - Finiação - 6 peças
    - Views endcap - 52 peças
    - Views module - 90 peças +
    - Views window - 91 peças +
  - PanelSheet
  - Section

Property Value

Property	Value
----------	-------

View Data

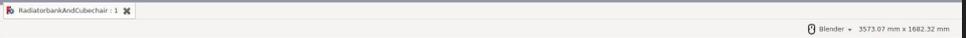
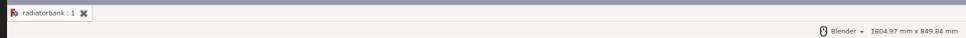
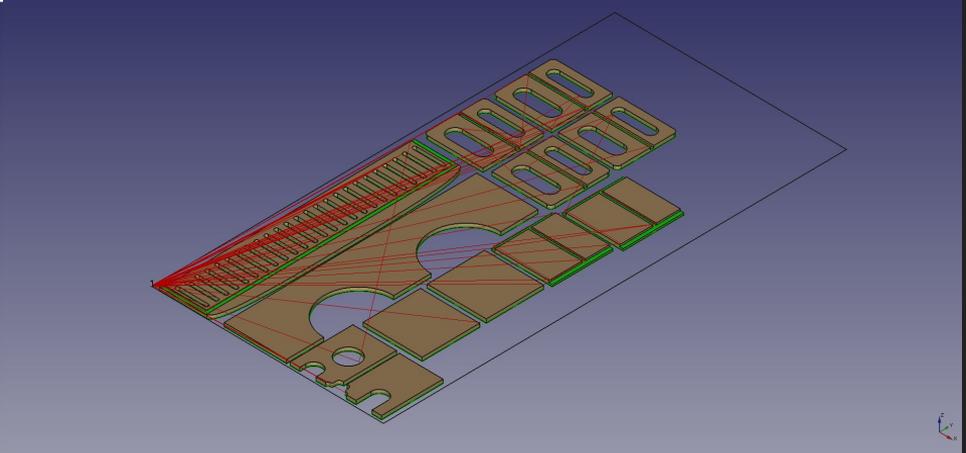
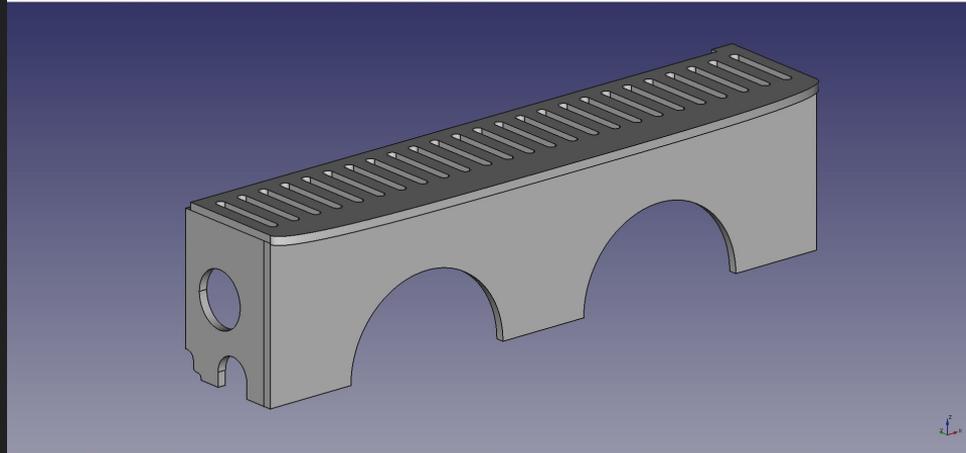


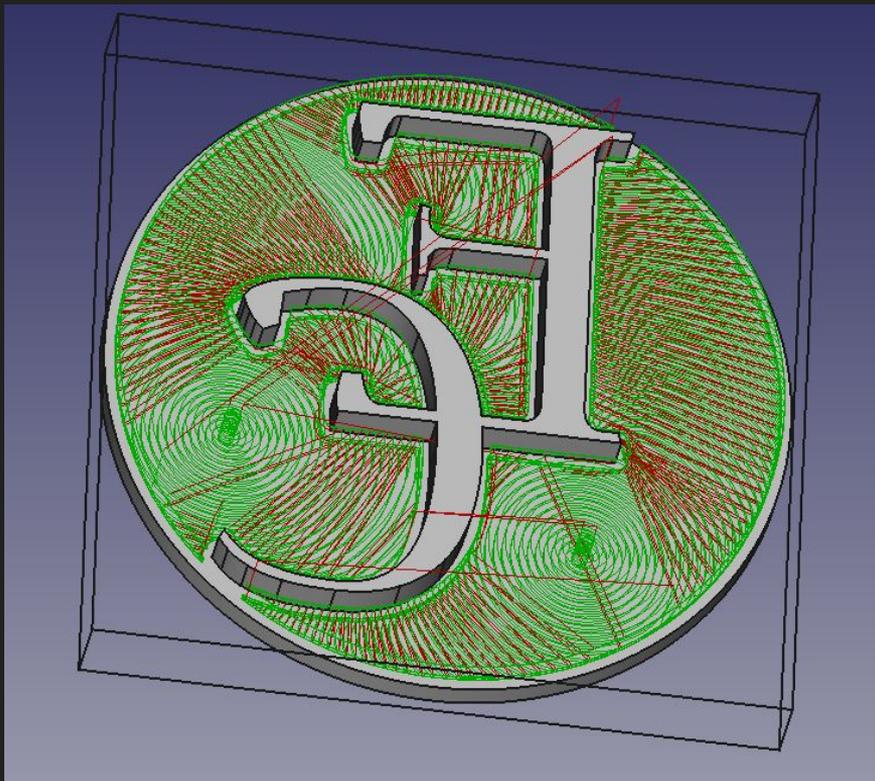


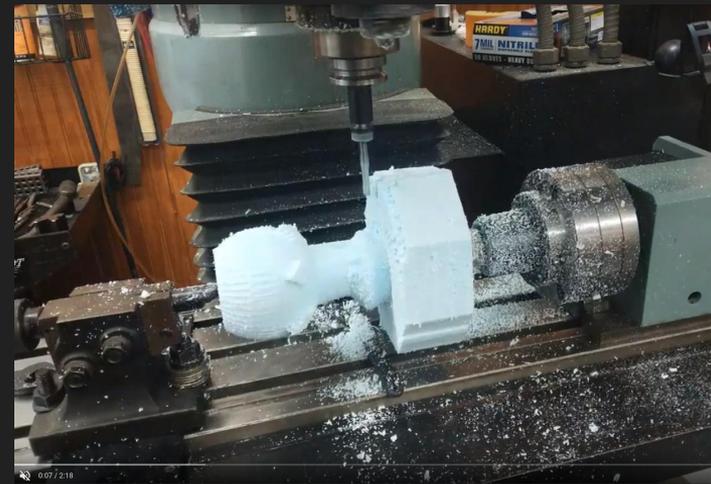
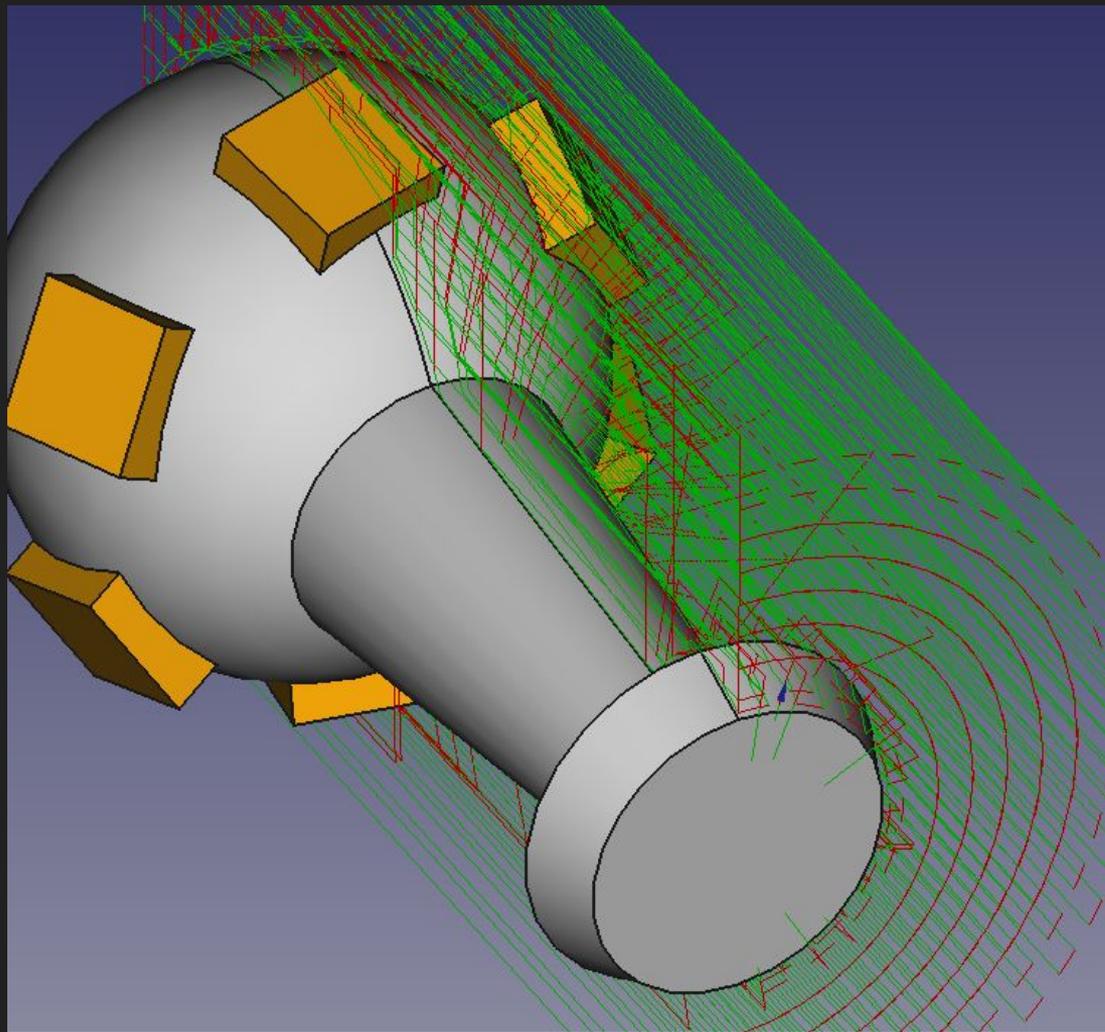
# Brad

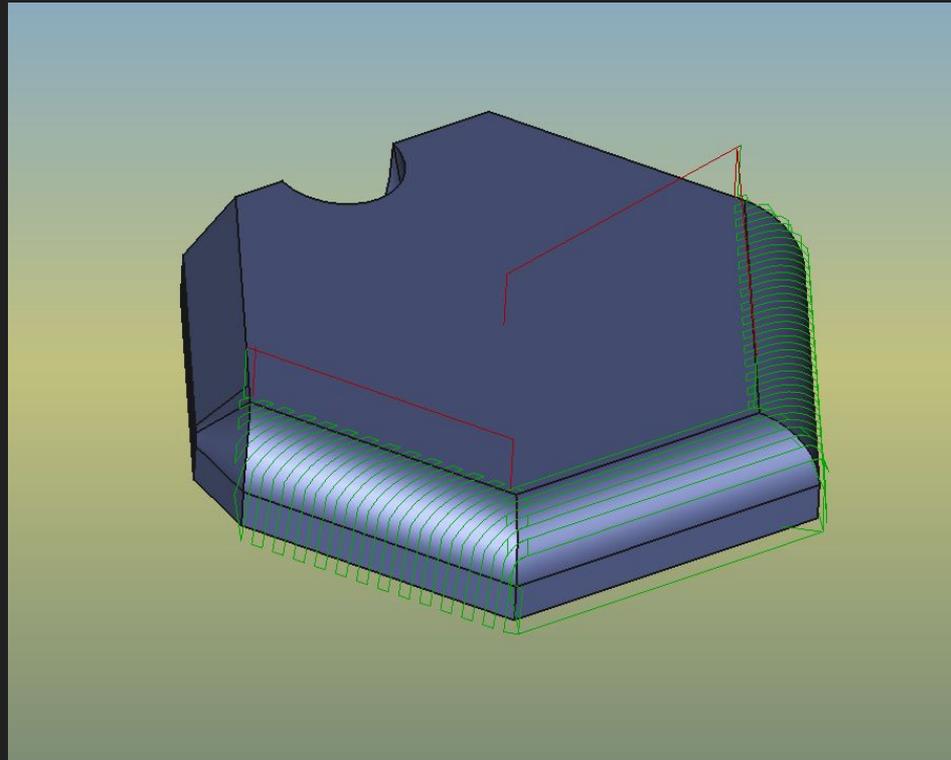
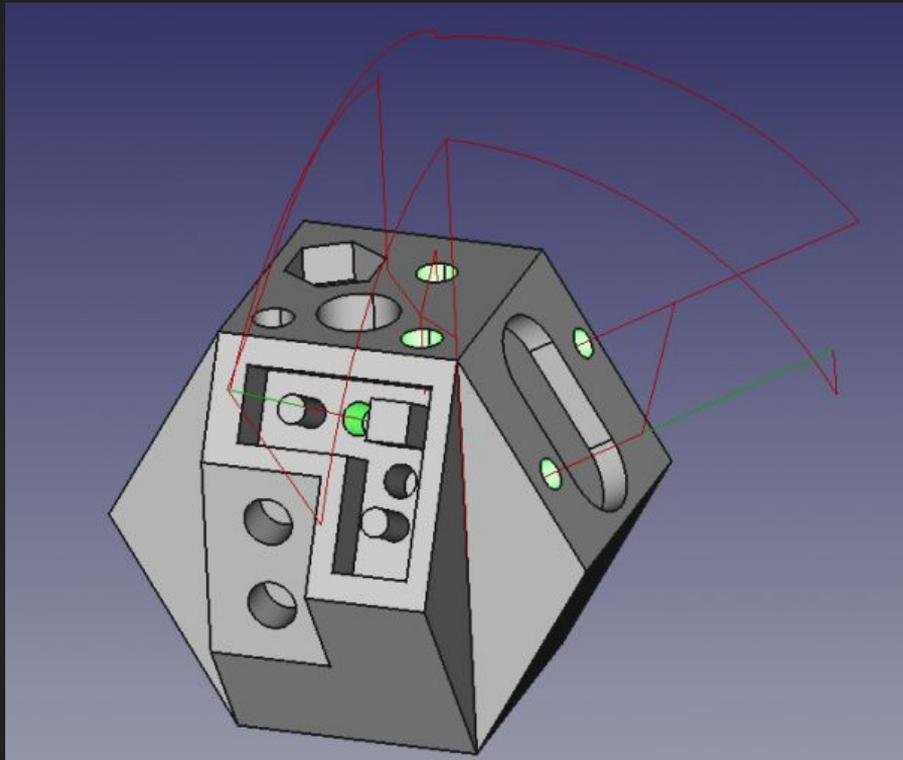
## Path Workbench (CAM)

- Started in 2014
- Small C++ core for storage and visualization. Most functionality in Python
- Leverage 3rd party libraries for toolpath generation
- Many 'on-ramps' for contribution
- ~5-7 regular code contributors. Many more contributing to wiki, support, documentation









File Edit View Tools Macro Machinekit Windows Help



Auto 2px 0.2000

Combo View

Model Tasks

Labels &amp; Attributes

Description

Labels & Attributes	Description
▶ Pocket006	
▼ Adapter	
▶ Origin005	
▶ Revolution003	
▼ Pocket	
▼ Pocket006	

Property Value

Property	Value
Base	
Label	Pocket006
Part Design	
Refine	false
Pocket	

View Data

Supermax

Position / Offset

X	0.000	0	0
Y	0.000	0	0
Z	0.000	0	0



Jog

↑	↖	↑	↗	Continuous 1.000 mm 0.100 mm 0.010 mm
z	←	XY	→	
↓	↙	↓	↘	
				Jog To

Scan

nacS

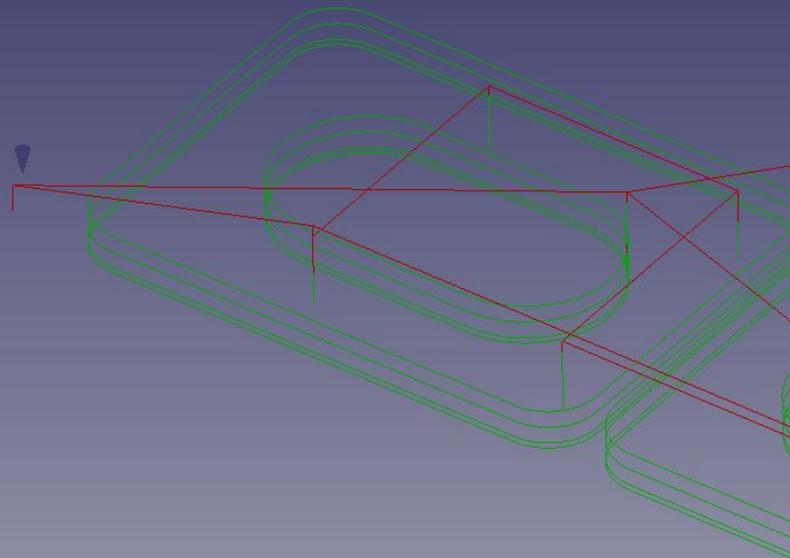
Jog Execute Status

Start page wirefeeder-2:1\*

Report view

Python console

X: -2.164  
Y: 5.683  
Z: 2.488



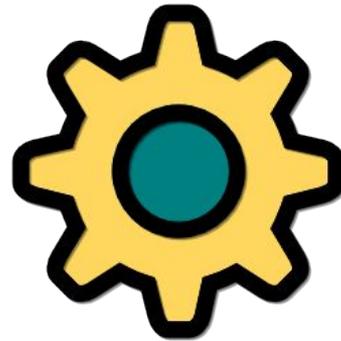
# Post-Processors



grbl



DynaPath



ShopBot®



# Thanks for watching!

## FreeCAD

Your own 3D parametric modeler

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See what's new

- FreeCAD: <https://www.freecadweb.org>
- Brad Colette: @sliptonic
- Kurt Kremitzki: @kkremitzki, @thekurtwk
- Yorik van Havre: @yorik, @yorikvanhavre

