Pretty Printing in Python

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Version 1.1 GNU FDL

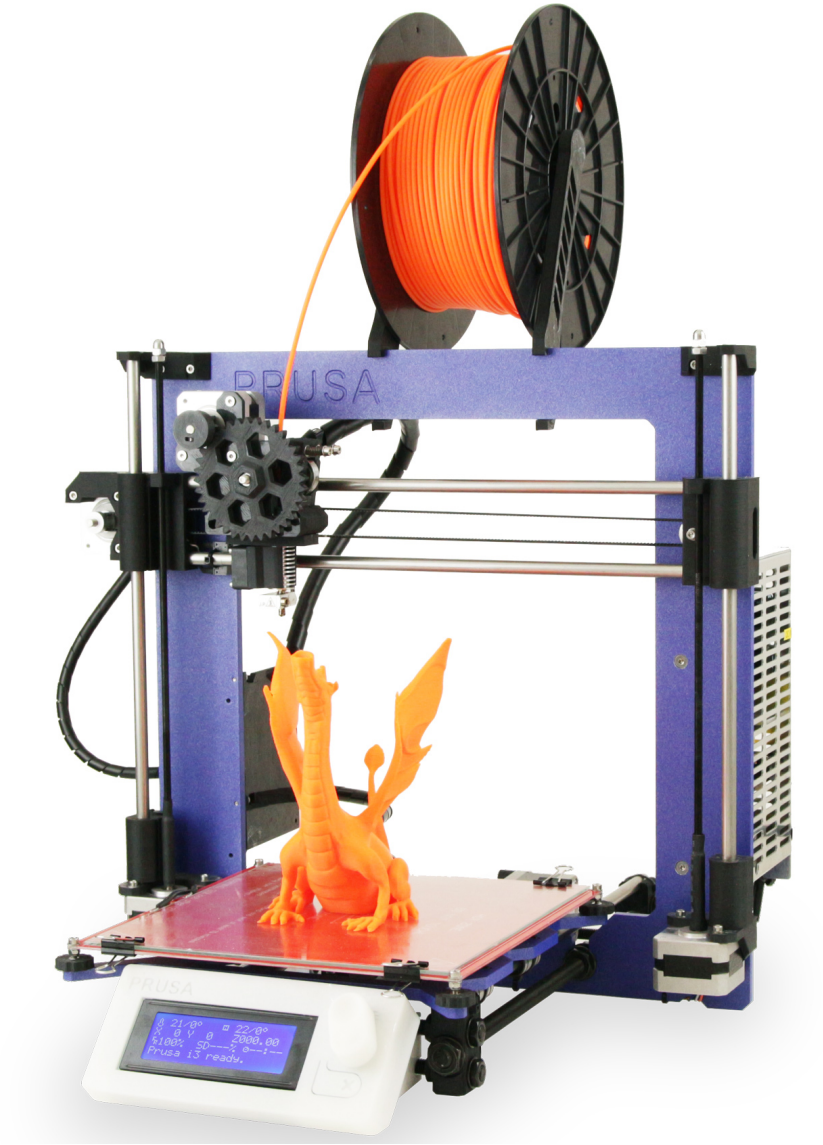
Motivation

STL

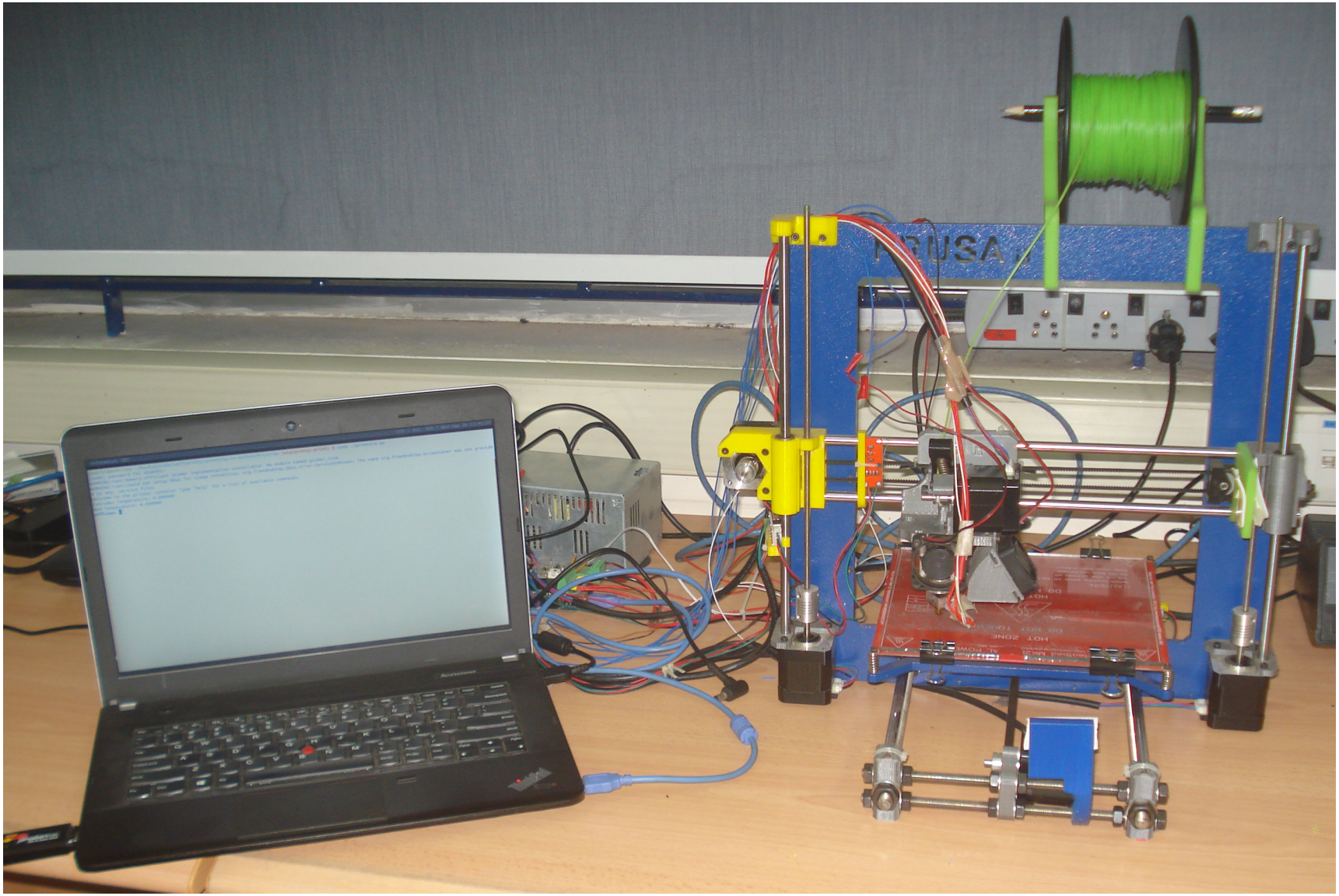
STL (...)

```
solid
  facet normal 6.695774E-01 -7.427424E-01 0.000000E+00
    outer loop
      vertex 4.000113E+01 2.540189E+01 -3.106850E-03
      vertex 4.976952E+01 3.420804E+01 -3.108599E-03
      vertex 4.000113E+01 2.540189E+01 1.121893E+00
    endloop
  endfacet
  ...
endsolid
```

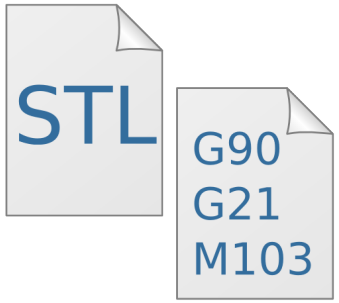
Hardware



Hardware (. . .)



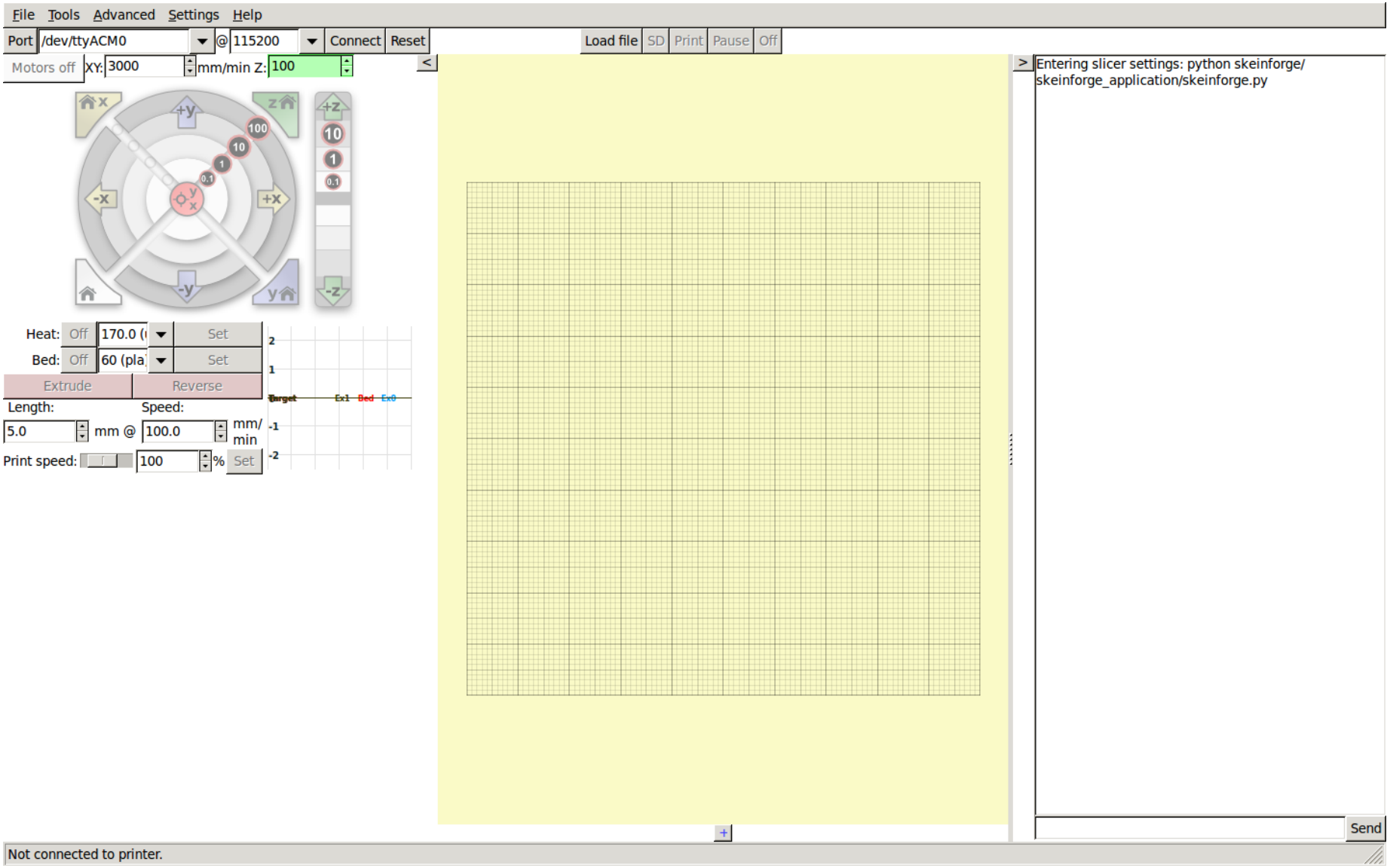
G-code



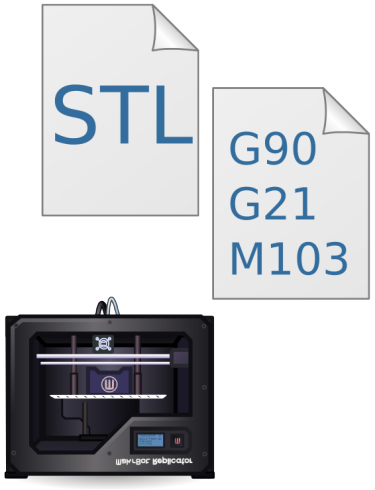
G-code (...)

```
G90                 ; Set to absolute positioning
G21                 ; Set units to millimeters
M103                ; Extruder off
M105                ; Get extruder temperature
M106                ; Fan on
M140 S60.0          ; Set bed temperature
M141 S30.0          ; Set chamber temperature
M142 S0.0           ; Holding pressure
M113 S1.0           ; Set extruder PWM
M108 S210.0         ; Set extruder speed
M104 S200.0         ; Set extruder temperature
G1 X-2.88 Y34.488 Z0.72 F60.0   ; Move
M101                            ; Extruder on
G1 X-2.88 Y34.632 Z0.72 F240.0 ; Move
```

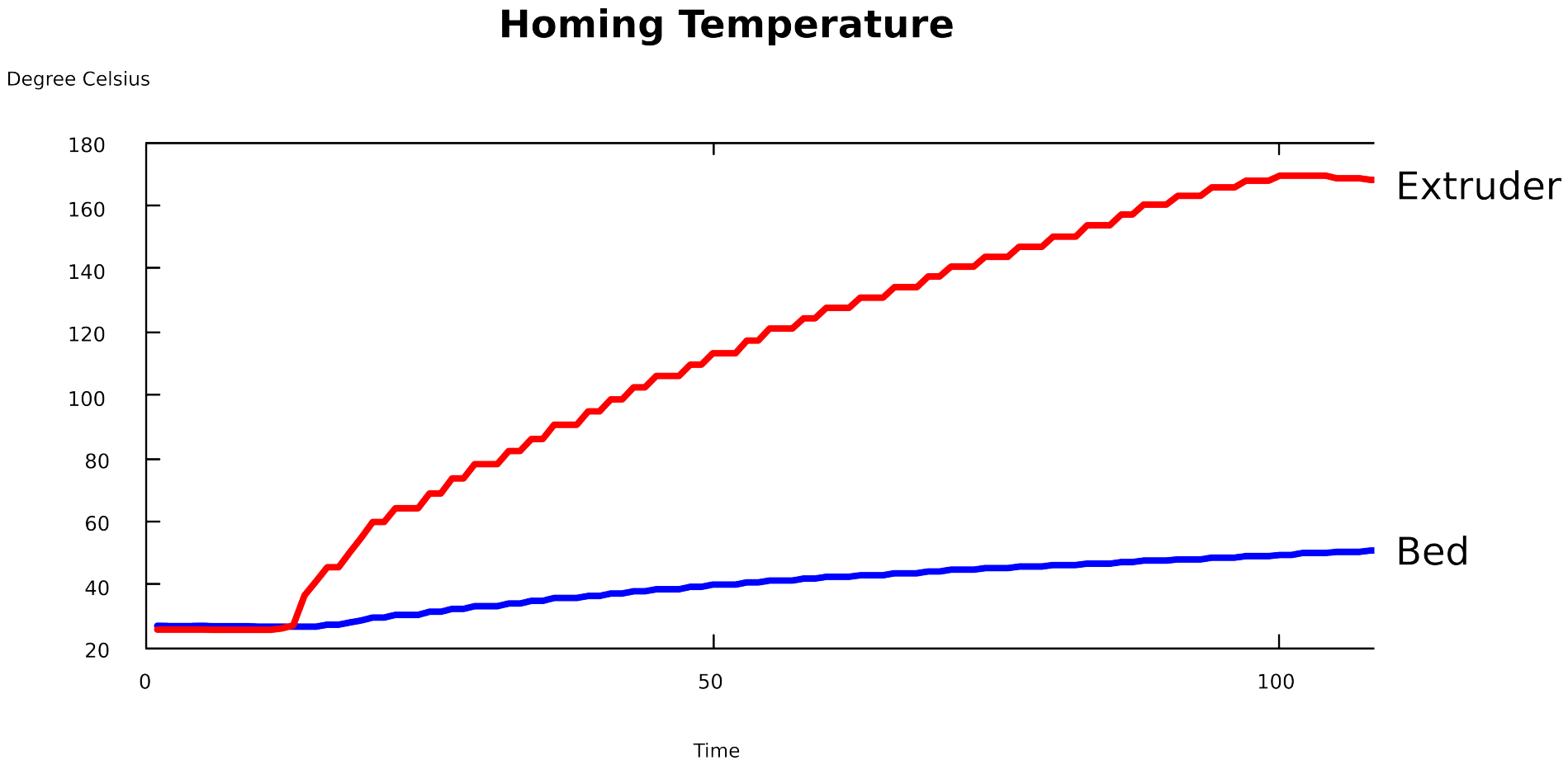
Printrun


File Tools Advanced Settings Help
Port /dev/ttyACM0 @ 115200 Connect Reset
Load file SD Print Pause Off
Motors off XY: 3000 mm/min Z: 100
Heat: Off 170.0 (Set
Bed: Off 60 (pla Set
Extrude Reverse
Length: Speed:
5.0 mm @ 100.0 mm/min
Print speed: 100 % Set
Entering slicer settings: python skeinforge/skeinforge_application/skeinforge.py
Send
Not connected to printer.

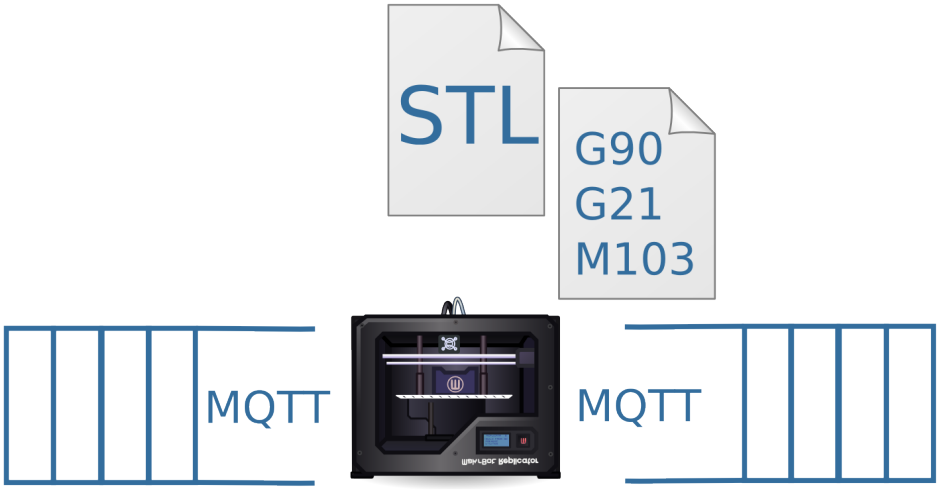
3D Printer



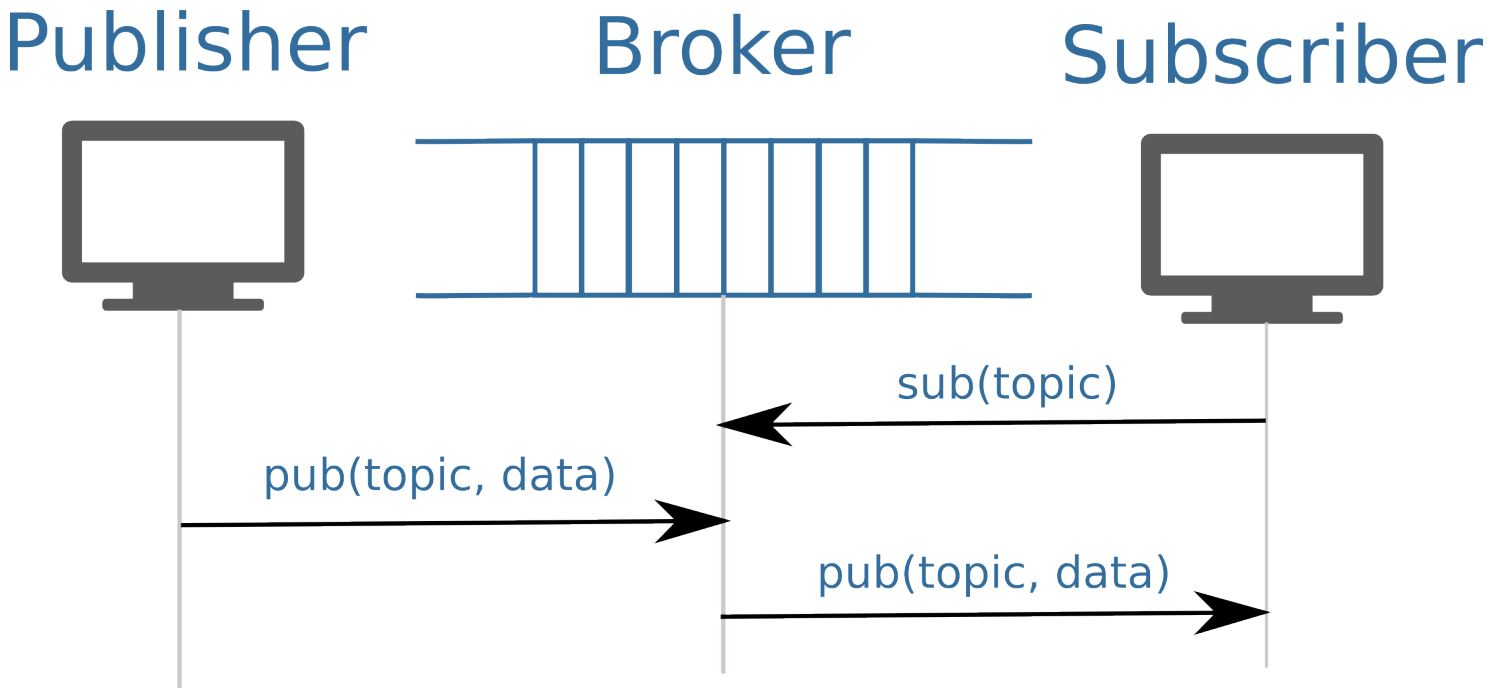
Homing


Homing Temperature
Degree Celsius
180
160
140
120
100
80
60
40
20
0
50
100
Time
Extruder
Bed

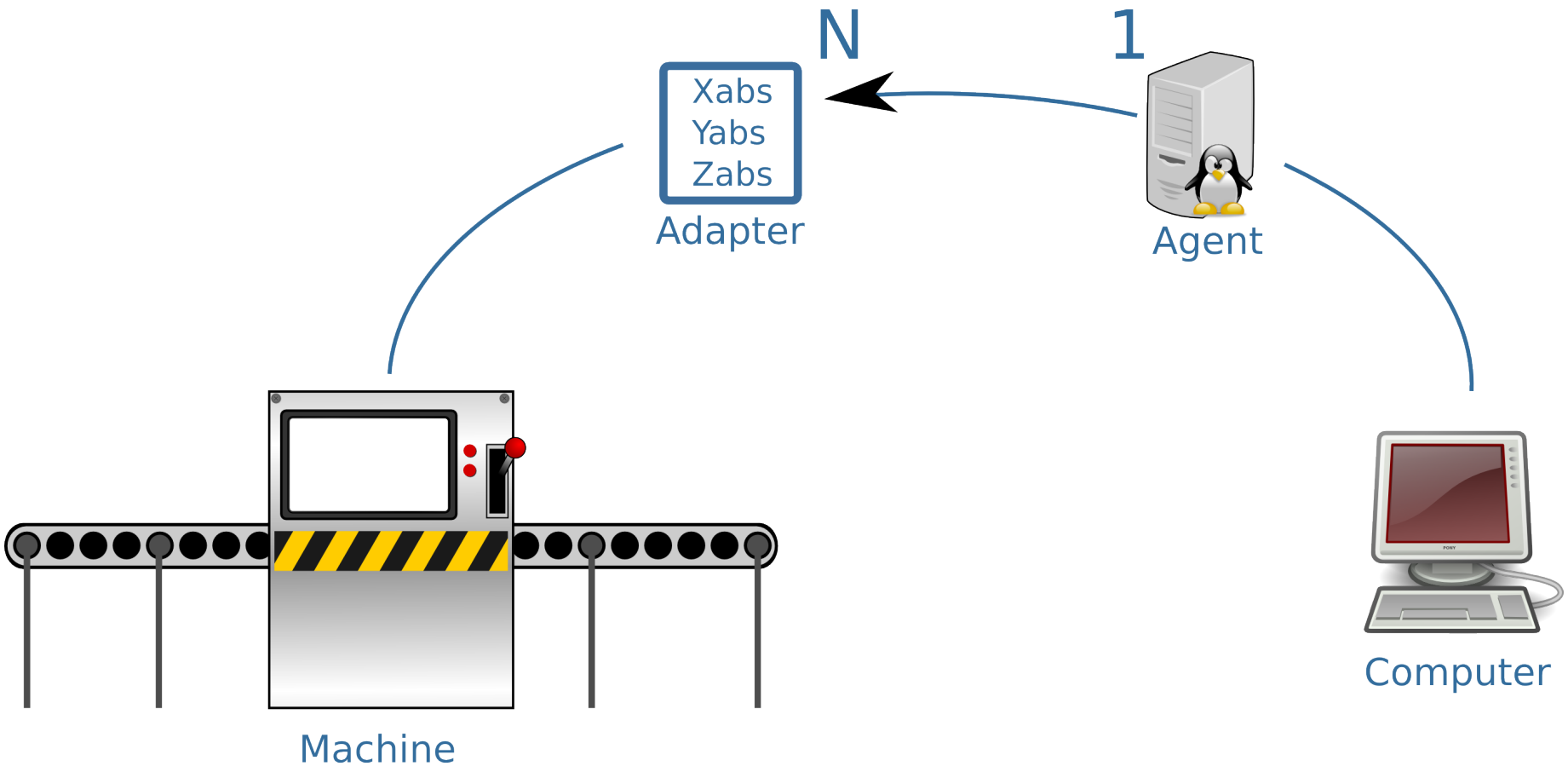
MQTT



MQTT (...)


Publisher
Broker
Subscriber
sub(topic)
pub(topic, data)
pub(topic, data)

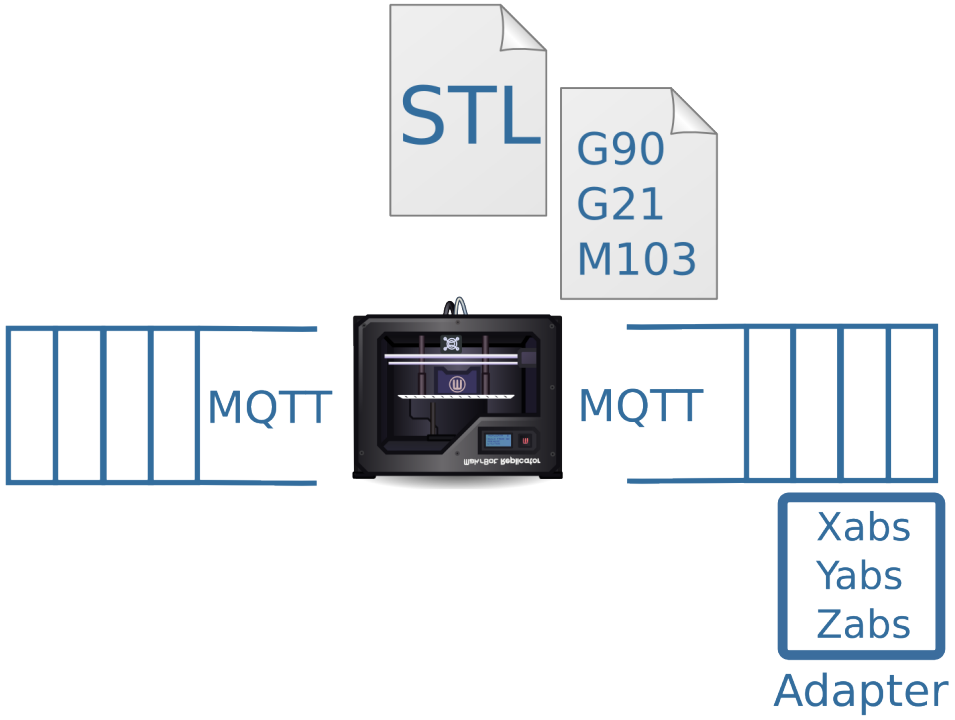
MTConnect (. . .)



MQTT Topics

- Devices/device/prusa-i3/DataItems/avail
- Devices/device/prusa-i3/Components/Sensor/sensor/DataItems/bed_temp
- Devices/device/prusa-i3/Components/Sensor/sensor/DataItems/extruder_temp
- Devices/device/prusa-i3/Components/Axes/A/Components/Linear/X/DataItems/x_1
- Devices/device/prusa-i3/Components/Axes/A/Components/Linear/Y/DataItems/y_1
- Devices/device/prusa-i3/Components/Axes/A/Components/Linear/Z/DataItems/z_1

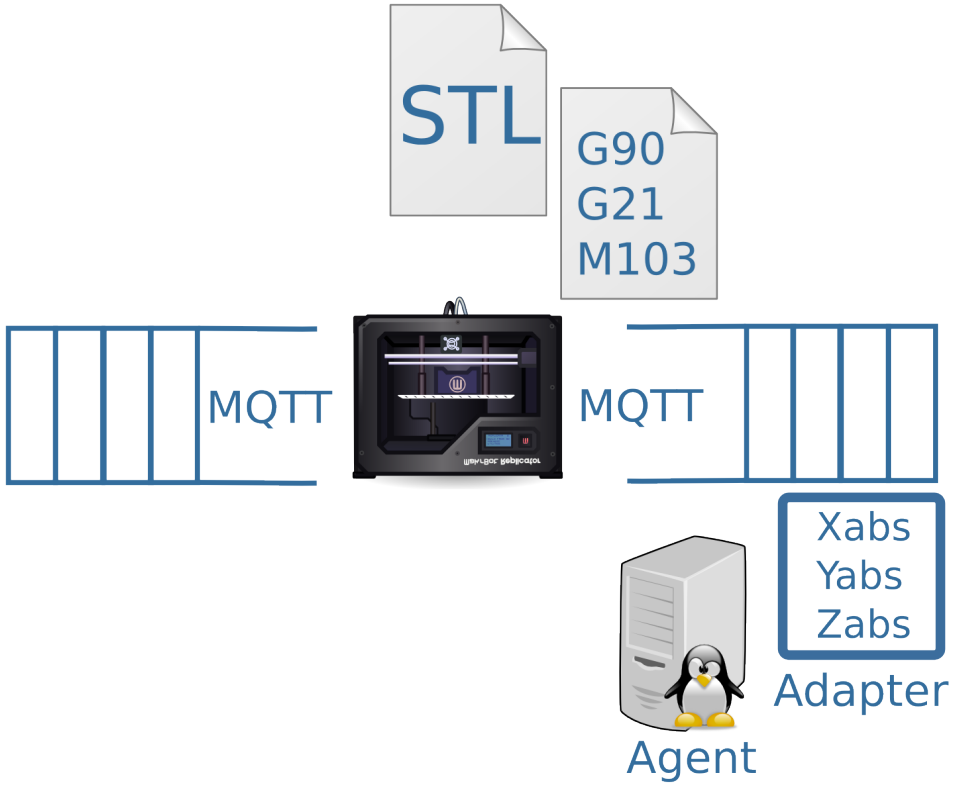
MQTT-MTConnect Adapter



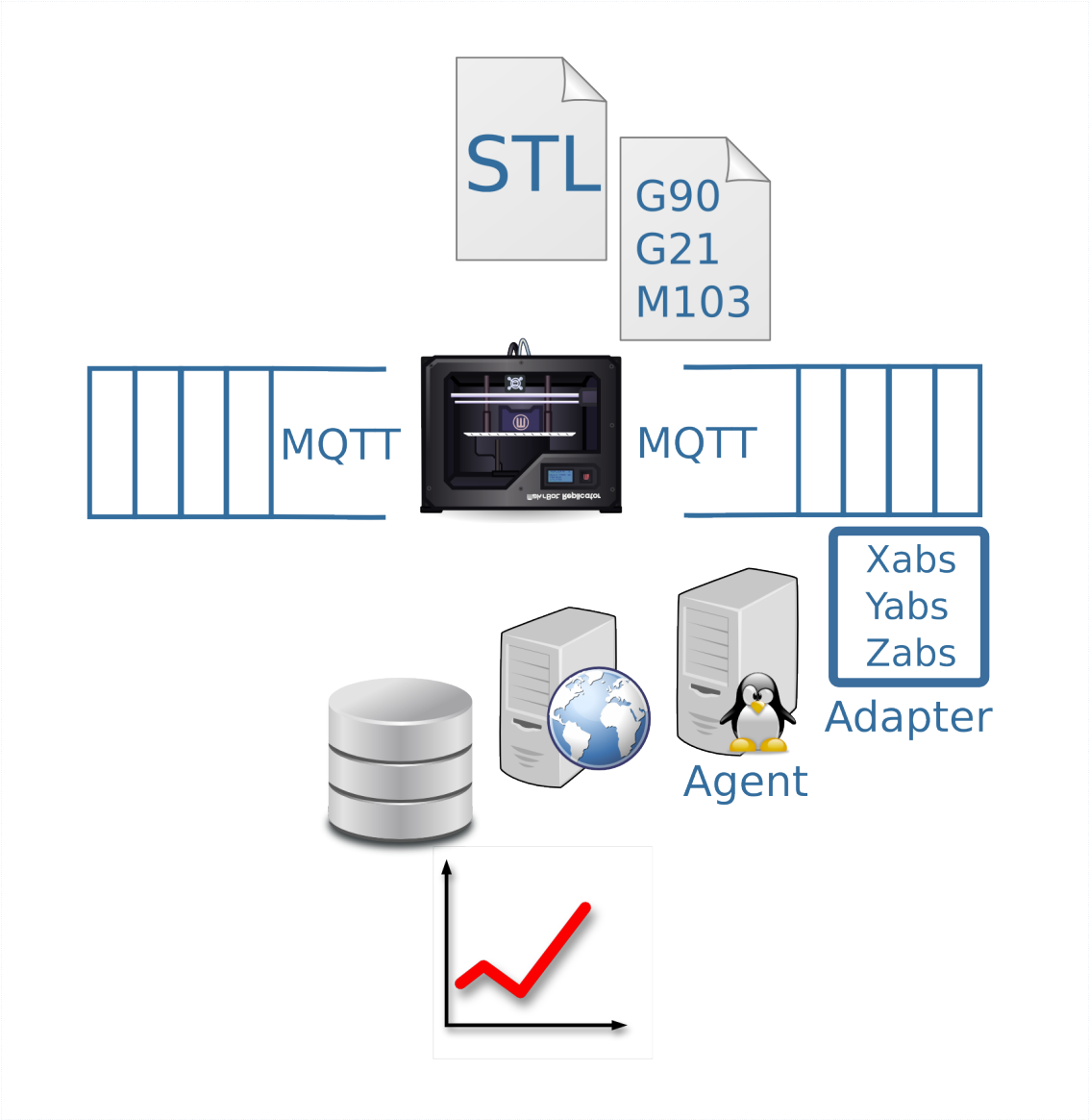
Adapter SHDR format

```
2015-10-02T13:54:55.135437|avail|avail
2015-10-02T13:54:55.226202|bed_temp|152.45
2015-10-02T13:55:55.023842|extruder_temp|55.2
2015-10-02T13:57:55.342712|Xabs|39.567
2015-10-02T13:57:55.234248|Yabs|42.234
2015-10-02T13:57:55.112873|Zabs|78.11
```

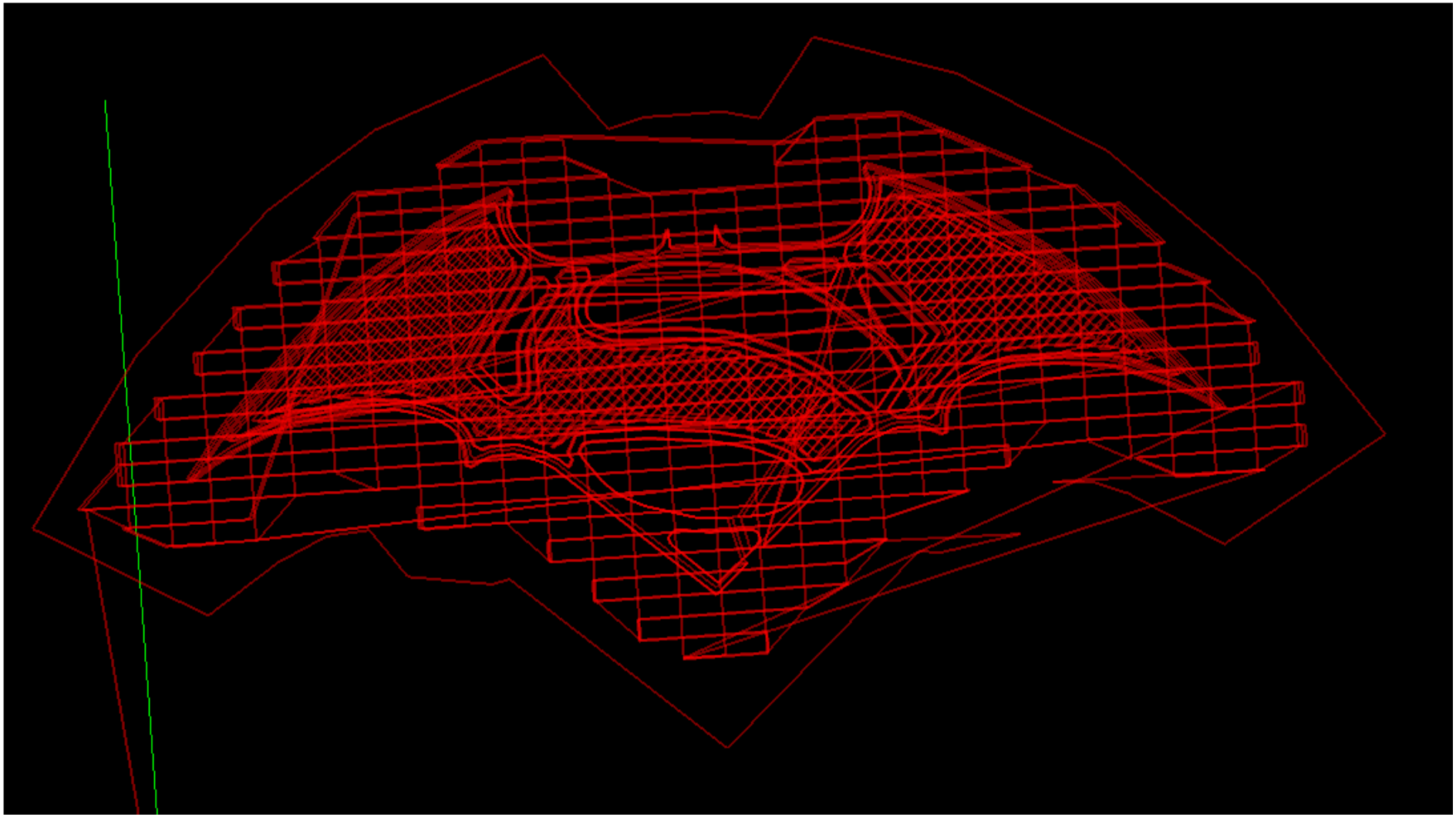
MTConnect Agent



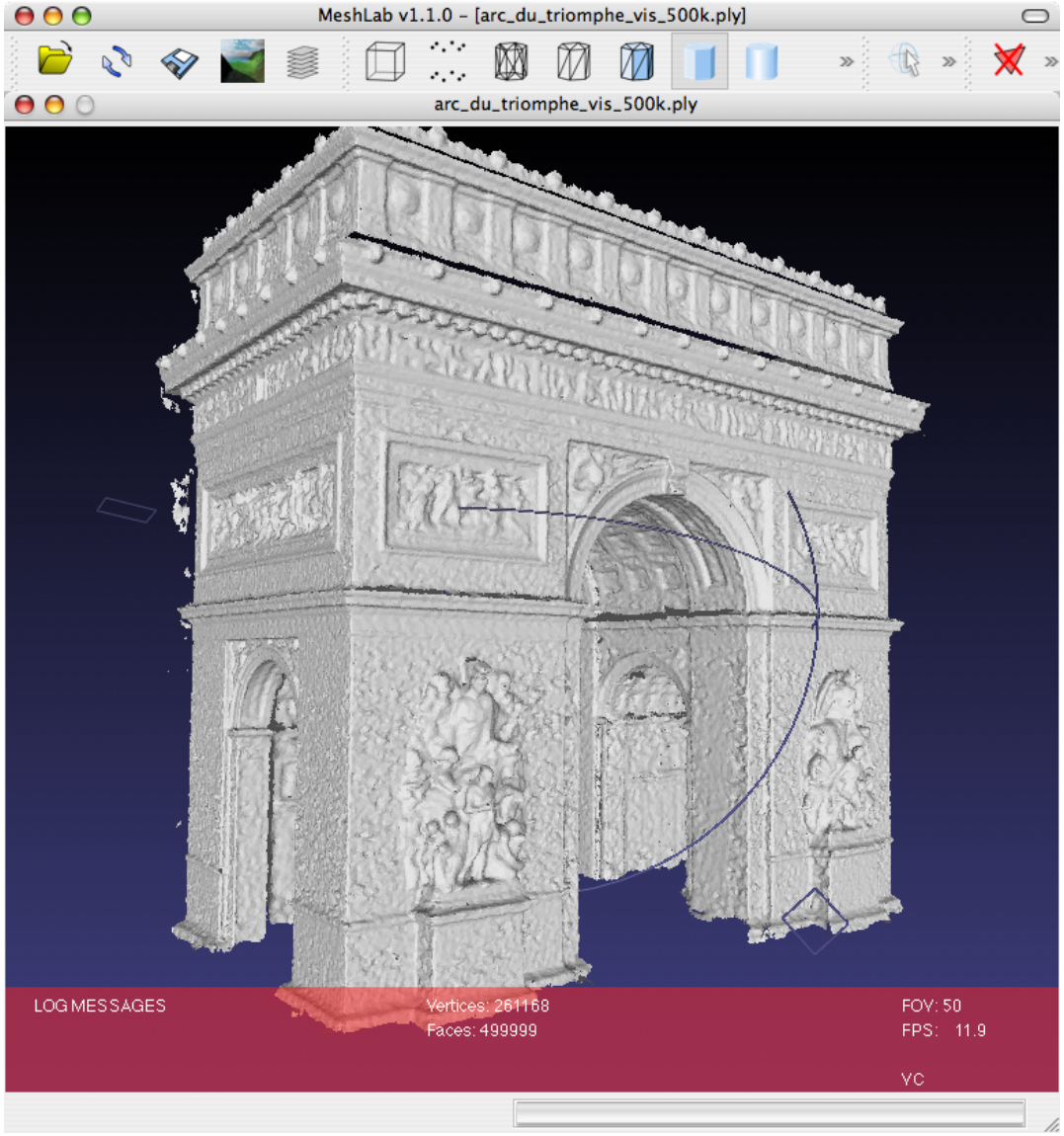
Analytics



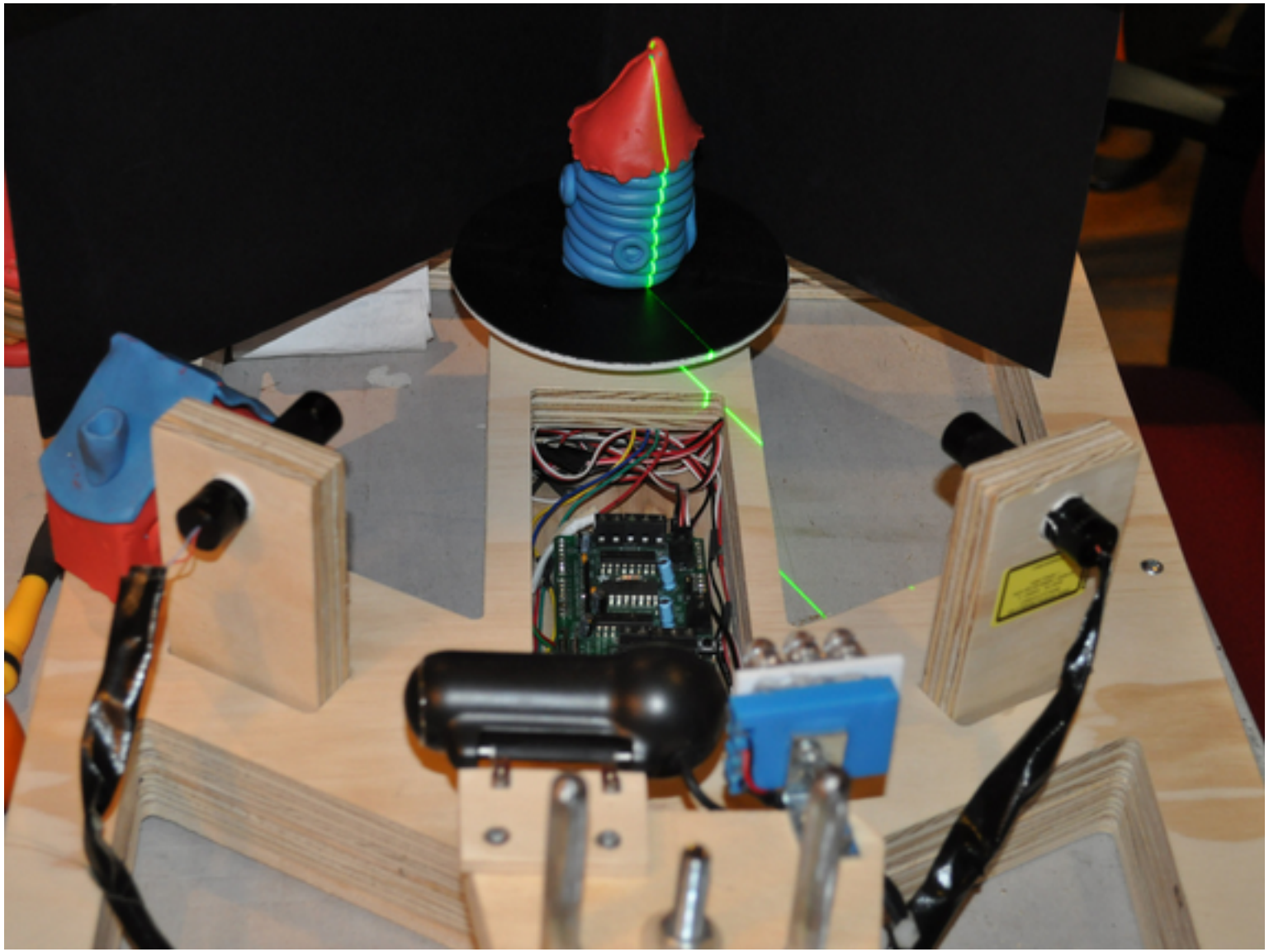
Analytics (. . .)



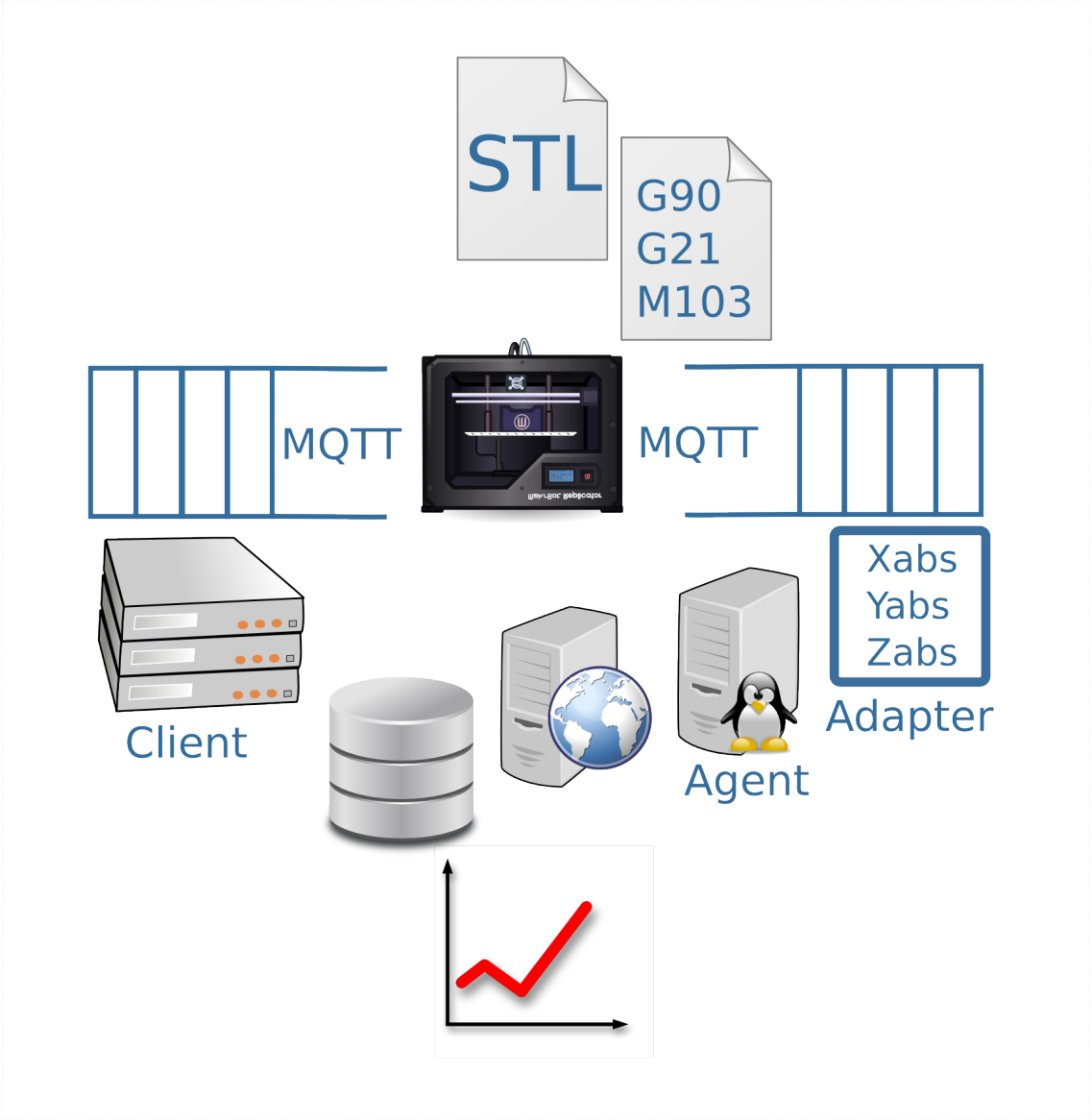
MeshLab (WIP)


MeshLab v1.1.0 - [arc_du_triomphe_vis_500k.ply]
arc_du_triomphe_vis_500k.ply
LOG MESSAGES
Vertices: 261168
Faces: 499999
FOV: 50
FPS: 11.9
VC

pylatscan (WIP)



Client


STL
G90
G21
M103
MQTT
MQTT
Xabs
Yabs
Zabs
Client
Adapter
Agent

Credits

- irc.freenode.net
  - "kliment"
  - "ideasman42"
  - "lukas_t"
- IIT-M
  - Rohan Chavan
  - Roshan Santhosh
- Manufacturing System Insights
  - William Sobel, Berkeley
  - Palanivel M, Chennai

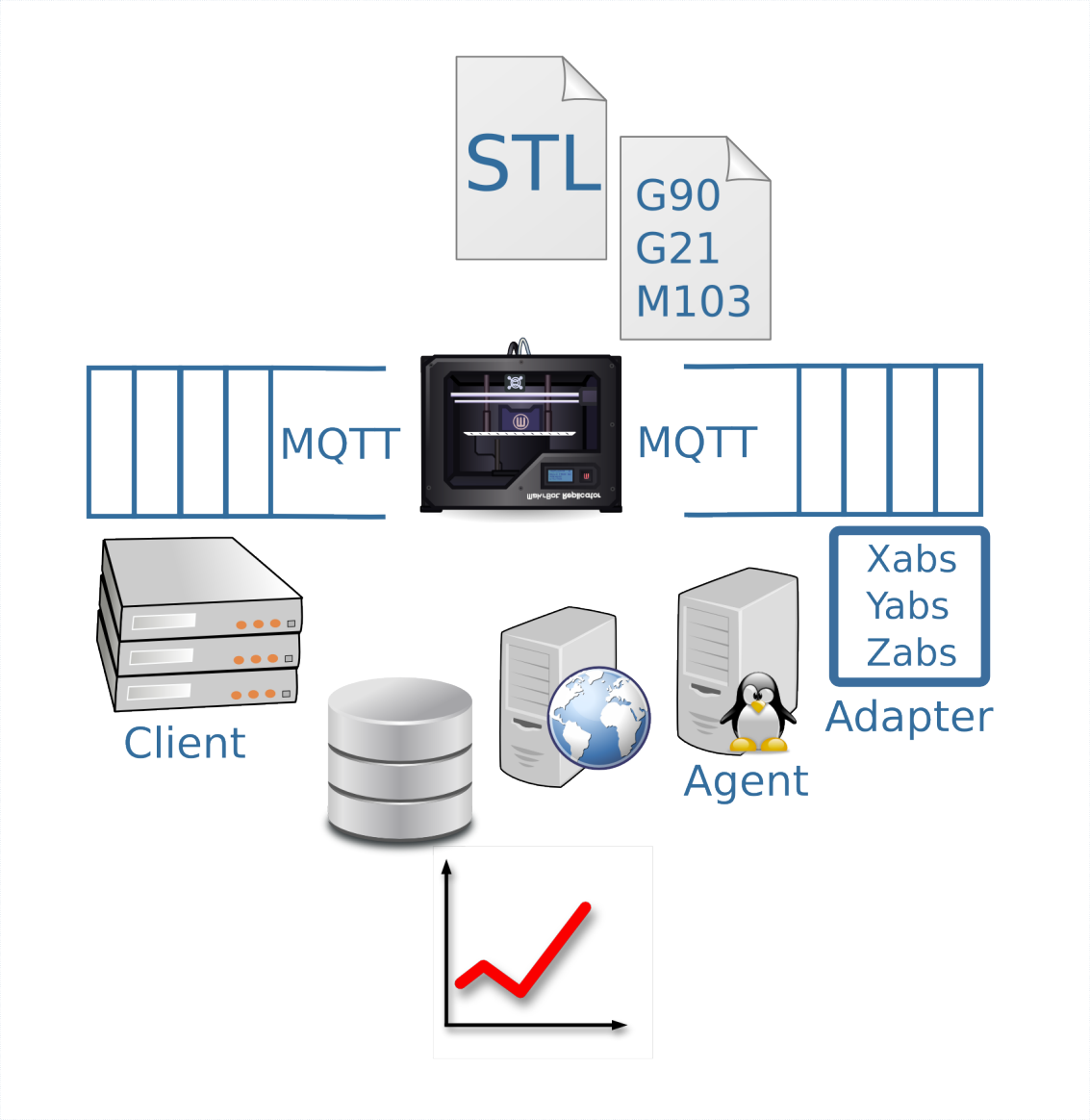
References

- MQTT. http://mqtt.org/
- HiveMQ. http://www.hivemq.com/
- Mosquitto. http://mosquitto.org/
- MTConnect. http://www.mtconnect.org/
- Thingiverse. http://www.thingiverse.com/
- Printrun. https://github.com/kliment/Printrun
- Skeinforge. http://fabmetheus.crsndoo.com/wiki/index.php/Skeinforge
- RepRap. http://reprap.org
- Arduino. https://www.arduino.cc/
- yagv. https://github.com/jonathanwin/yagv
- Blender. https://www.blender.org/

Image Links

- Batman Vs Superman logo wallpaper. http://downloadwallpaperhd.com/batman-v-superman-logo-hd-wallpaper/
- Prusa i3 metal frame. http://reprap.org/wiki/File:Prusai3-metalframe.jpg
- MeshLab screenshot. http://meshlab.sourceforge.net
- pylatscan image. https://www.flickr.com/photos/57913158@N05/5329345249/
- Python SVG logo. https://www.python.org/static/community_logos/python-logo-inkscape.svg

Summary


STL
G90
G21
M103
MQTT
MQTT
Xabs
Yabs
Zabs
Client
Agent
Adapter

Pretty Print

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