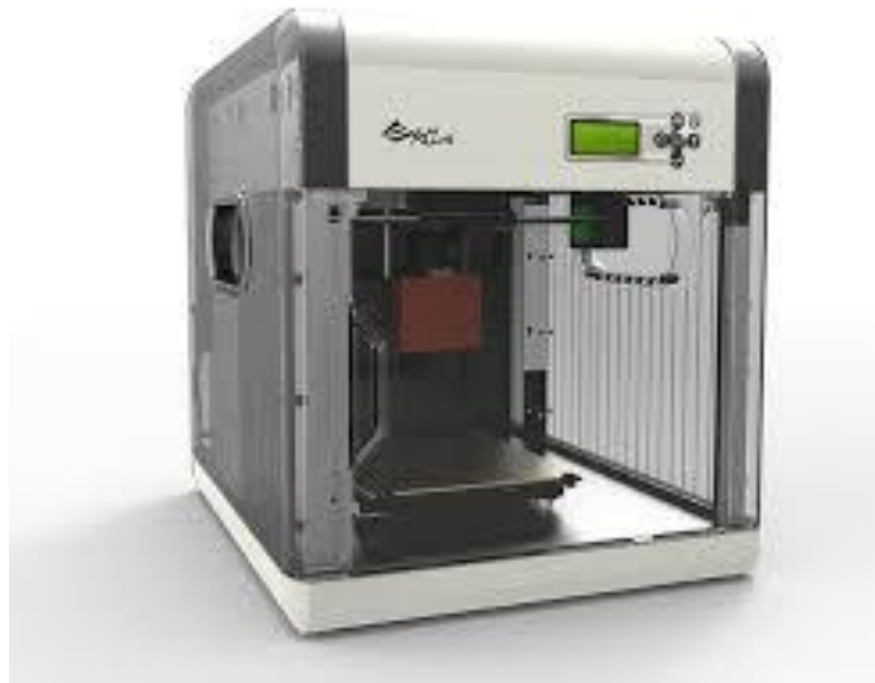


# 3D Printer by XYZprinting

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Lake-Sumter Computer Society



An International  
Association of Technology  
& Computer User Groups

Virtual Technology Conference  
August 15, 2015

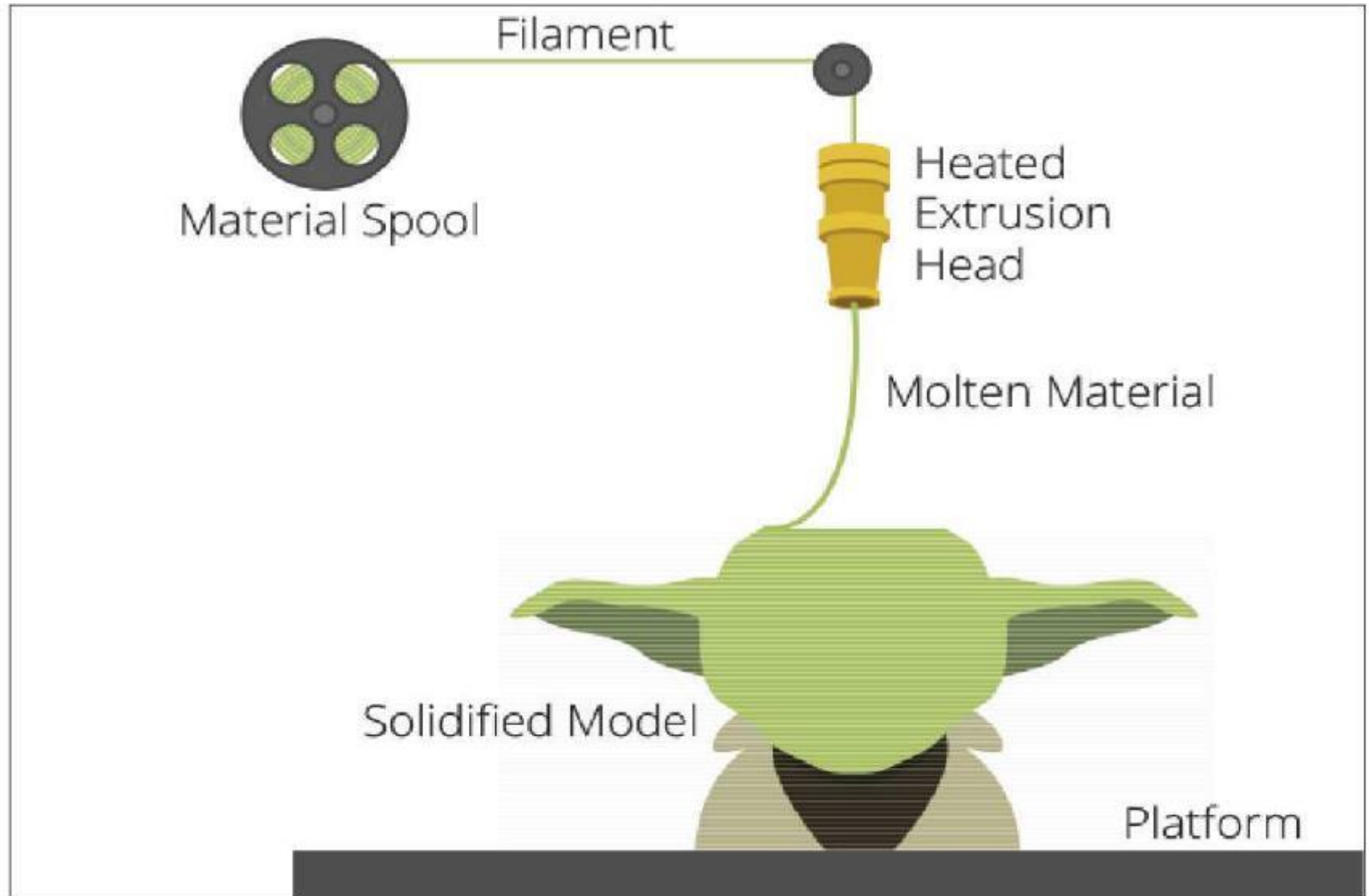
# 3D Printer Demonstration

- 3D printing has been around since the early 1990's and today is an industrial grade 3D printing process.
- However, entry-level 3D printers have only recently emerged since 2009 and utilize a process, generally referred to as Freeform Fabrication (FFF).
- In this demonstration we are going to focus on a very inexpensive 3D printer (under \$500) that extrudes an ABS plastic filament into shapes designed using off the shelf free components for modeling.

# How it Works

- The process works by melting plastic filament that is deposited, via a heated extruder, a layer at a time, onto a build platform according to the 3D data supplied to the printer called GCODE.
- Each layer hardens as it is deposited and bonds to the previous layer.
- The extruder is heated to ~220c/428f and the bed is heated to ~94c/201f.
- The XYZprinter is designed for ABS filament, although with modifications, it can also print PLA plastic.

# The Process Visualized



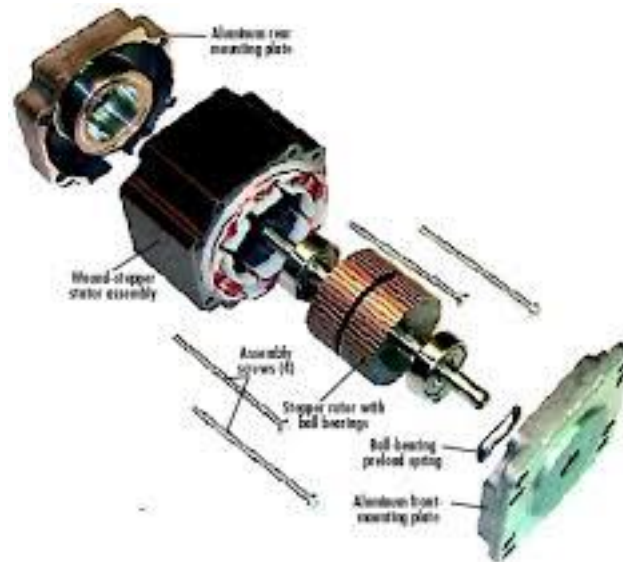
# The Hardware

- Stepper Motors for X,Y,Z axis plus extruder feed
- Heated Bed (90 to 94 degrees Celsius / 200 Fahrenheit)
- Extruder (heated to 220 Celsius / 428 Fahrenheit)
- Control Board to convert GCODE to electrical impulses

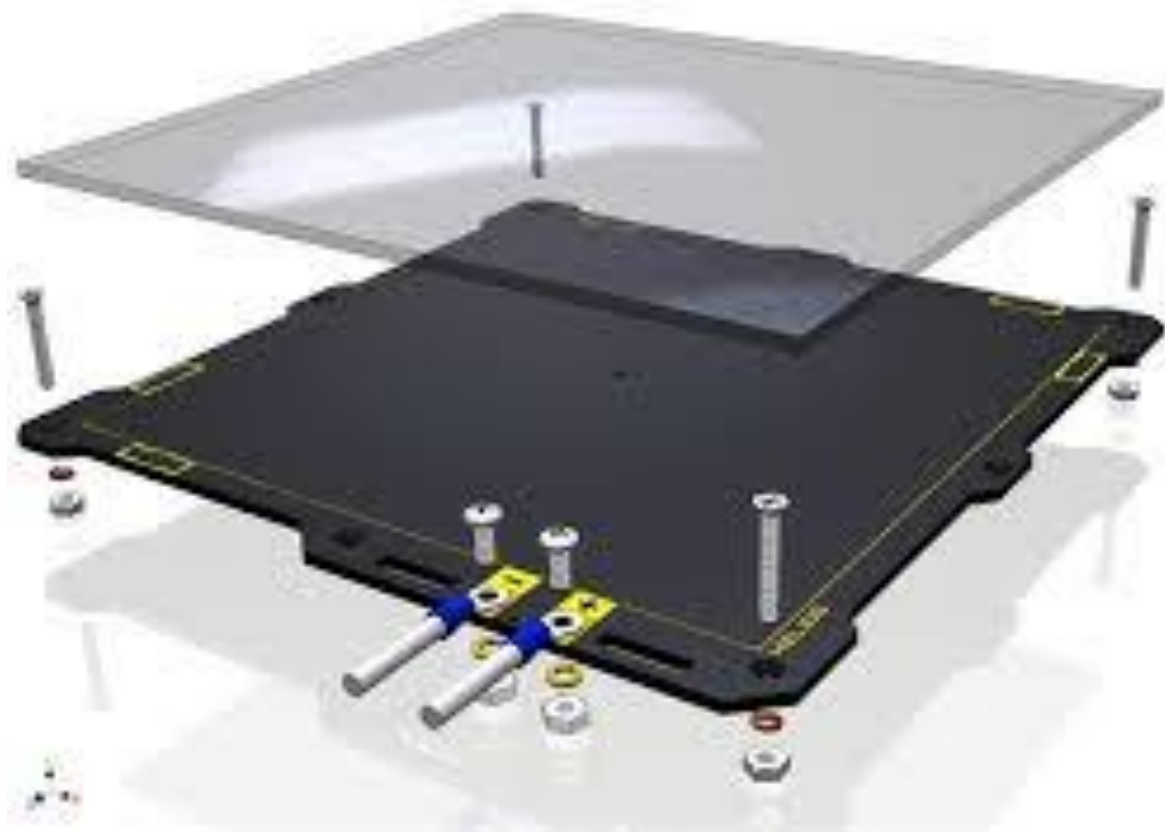
## Raw Material

- ABS Filament (\$20 for 2 lbs)

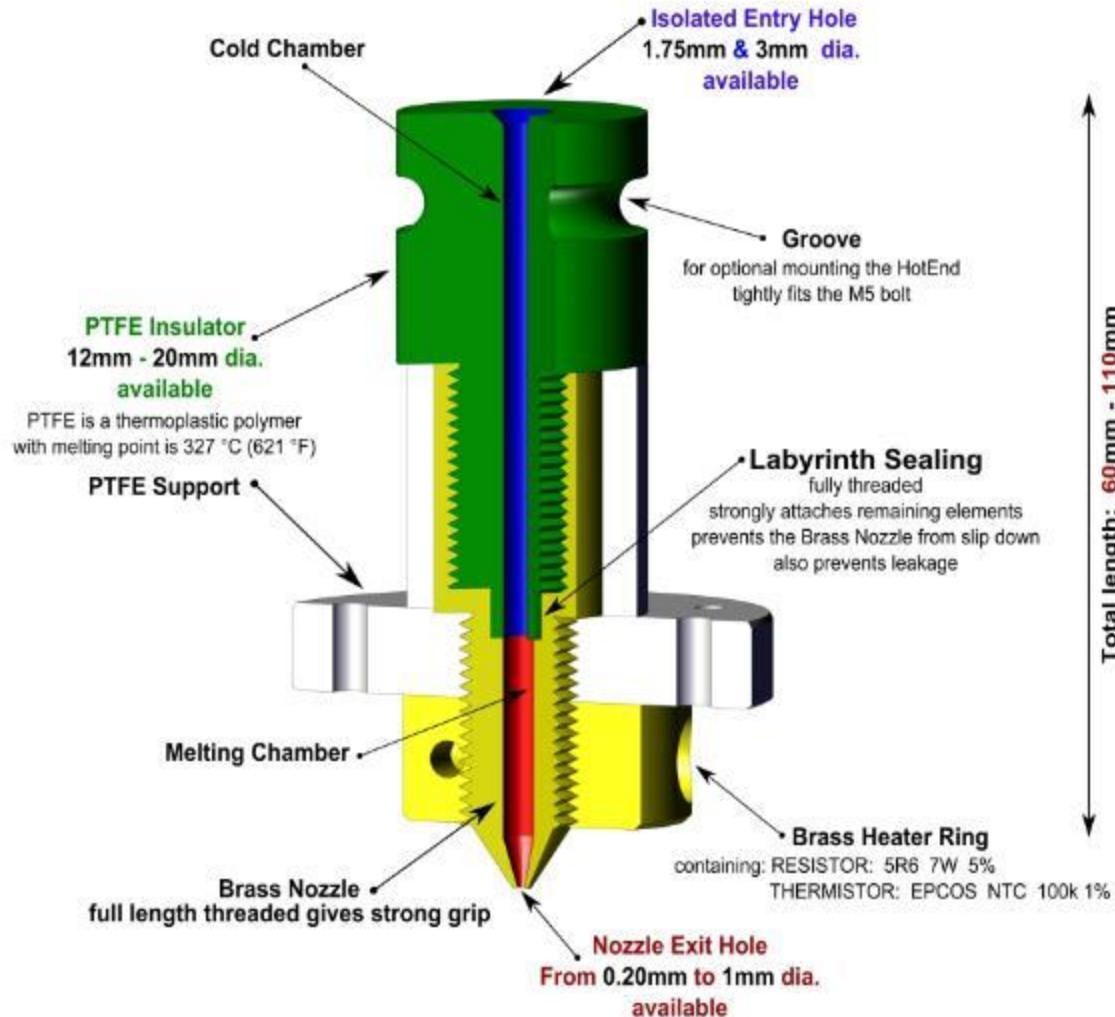
# Stepper Motors



# Heated Bed



# Extruder





# ABS Filament



# The Software

- 3D design software (Autodesk, Sketchup)
- Slicers (KissSlicer, Slic3r)
- XYZprinter

# Scanner Hardware / Software

- IR camera plus HD photo (from old Xbox controller)



- Skanect software

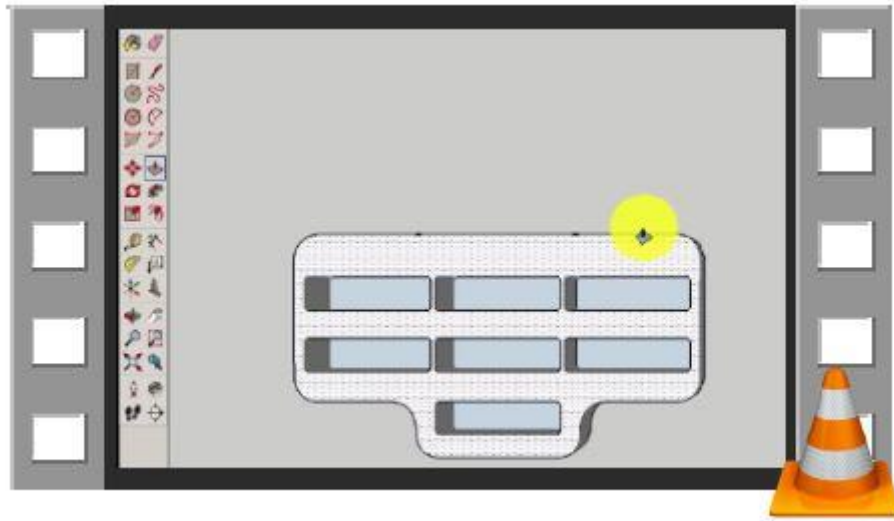


# Let's Put it All Together

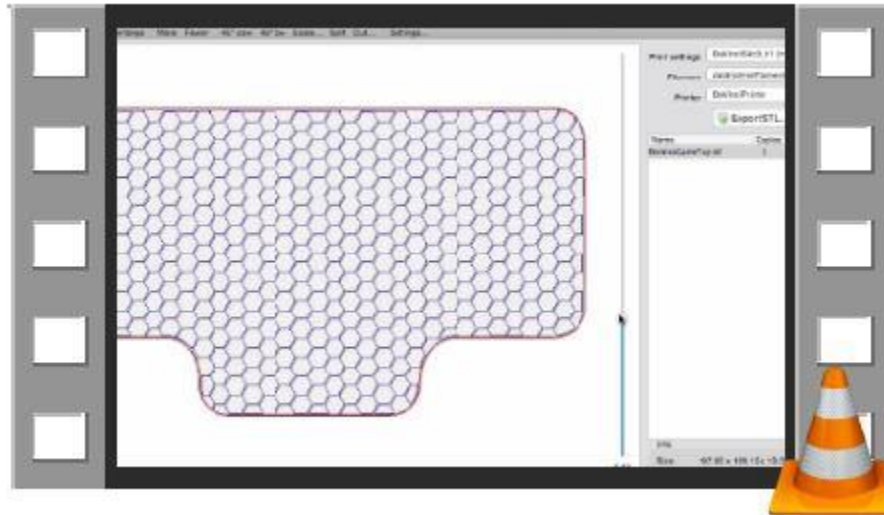
- We are going to design a 3D Domino Holder for a game I invented. We will use Google Sketchup to design it from scratch.
- Export the Sketchup file to an STL file
- Slice the STL file into Gcode
- Load the Gcode into XYZprinter
- 3D Print the object



# Sketchup 3D Design



# Slicer



# Initiating Printing



# Printing the Domino Tray





# POST Production

- After your piece is printed, you may smooth it out somewhat by placing the object in an Acetone vapor bath.
- A cold vapor bath takes about an hour.
- A heated vapor can take minutes.
- Be careful, as you can completely melt your object if left in the bath too long.

# Things I have made



# A few more things...



# Thank You For Watching

- This concludes the 3D Printer presentation. If you have any questions for me, now is the time to ask.
- Again, my name is Larry Fortna, if you would like to learn more about 3D printing, please email me at [LarryFortna @ gmail.com](mailto:LarryFortna@gmail.com).