The Printer Working Group

# IPP 3D v1.1 Objectives and Use Cases

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2018-03-28

Desktop IPP 2D Printing Today

- 2D App (word processor, Web browser, text editor, etc.) to view and/or create conventional 2D content

- 2D App uses OS print system and drivers to query Printer for capabilities via IPP, render 2D content to standard supported format, submit job to the Printer via IPP

- Printer processes print content format and job ticket to produce physical output as per user wishes

Capabilities via IPP

Submit Job (IPP)

2D App

IPP Print Driver
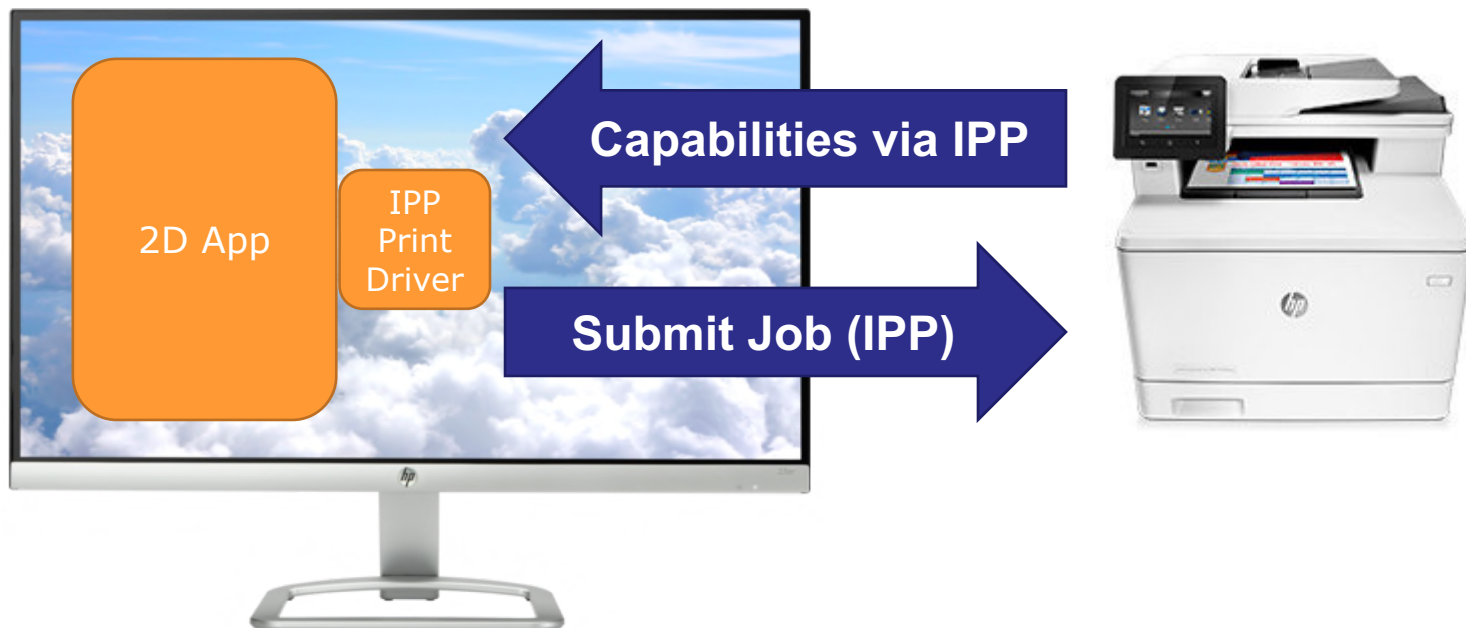
Desktop 3D Printing Today

- 3D App (CAD Program, modeling program, etc.) to view and/or create 3D content saved to a 3D file format (STL, 3MF, etc.)

- Slicer Program loads 3D file and renders to low-level instructions specific to that model of Printer

- Printer processes instructions to produce physical output
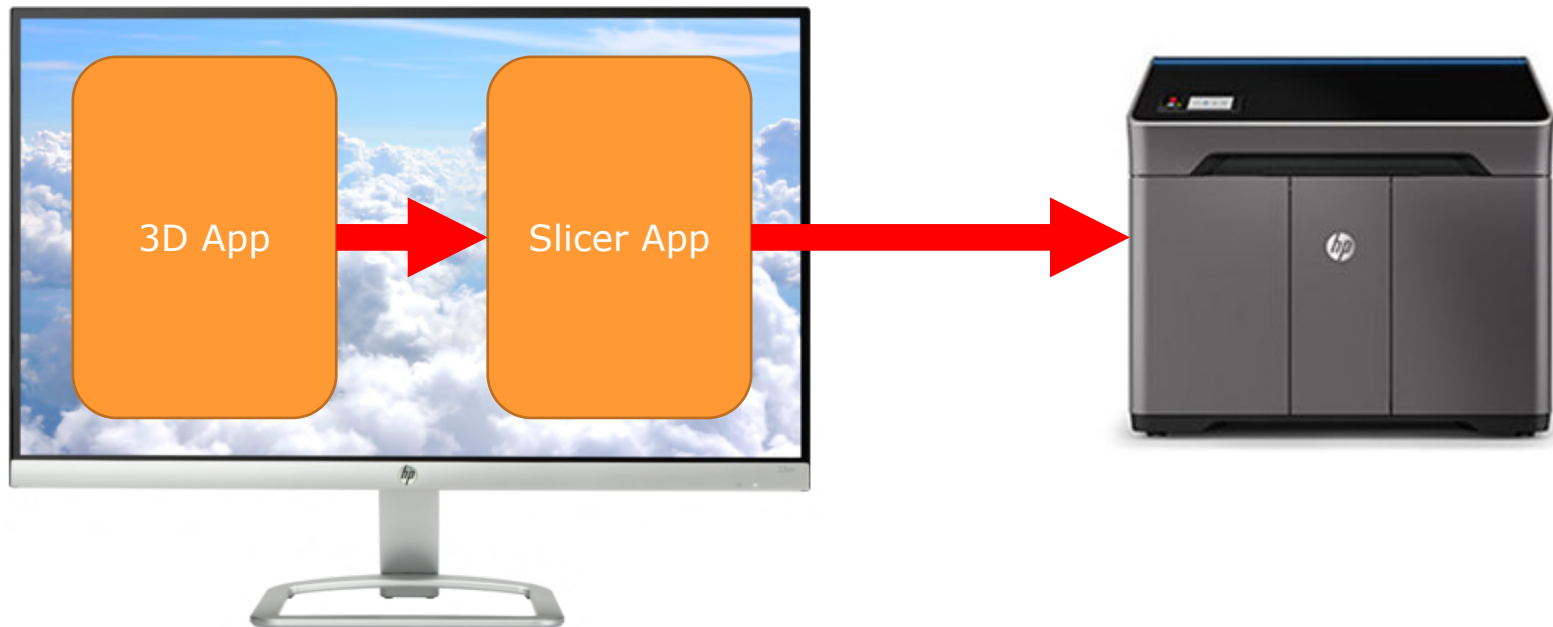
Desktop 3D Printing : Improvement Opportunities

What is needed to empower 3D apps with 3D printing capabilities?

- Leverage high fidelity protocols that already support printing semantics and workflows → Internet Printing Protocol and IPP 3D Printing Extensions

- Standardize and parameterize a base level 3D printing format with low computational requirements to minimize device-specific nuance
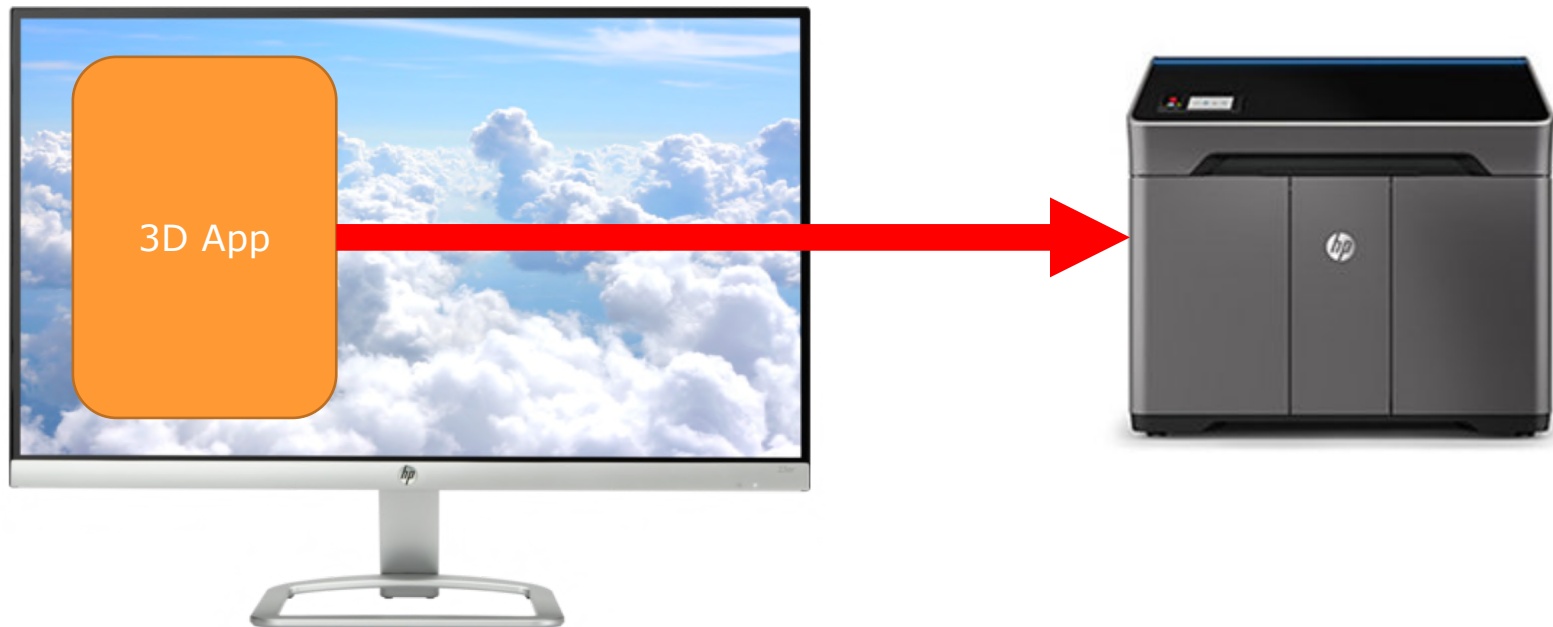
Where 3D Printing Can Be With IPP 3D

- 3D App (CAD Program, modeling program, etc.) to view and/or create 3D content

- 3D App uses OS print system and drivers to query Printer for capabilities via IPP, render 3D content to standard supported format, submit job to the Printer via IPP

- Printer processes instructions to produce physical output

3D App

IPP Print Driver

Capabilities via IPP

Submit Job (IPP)
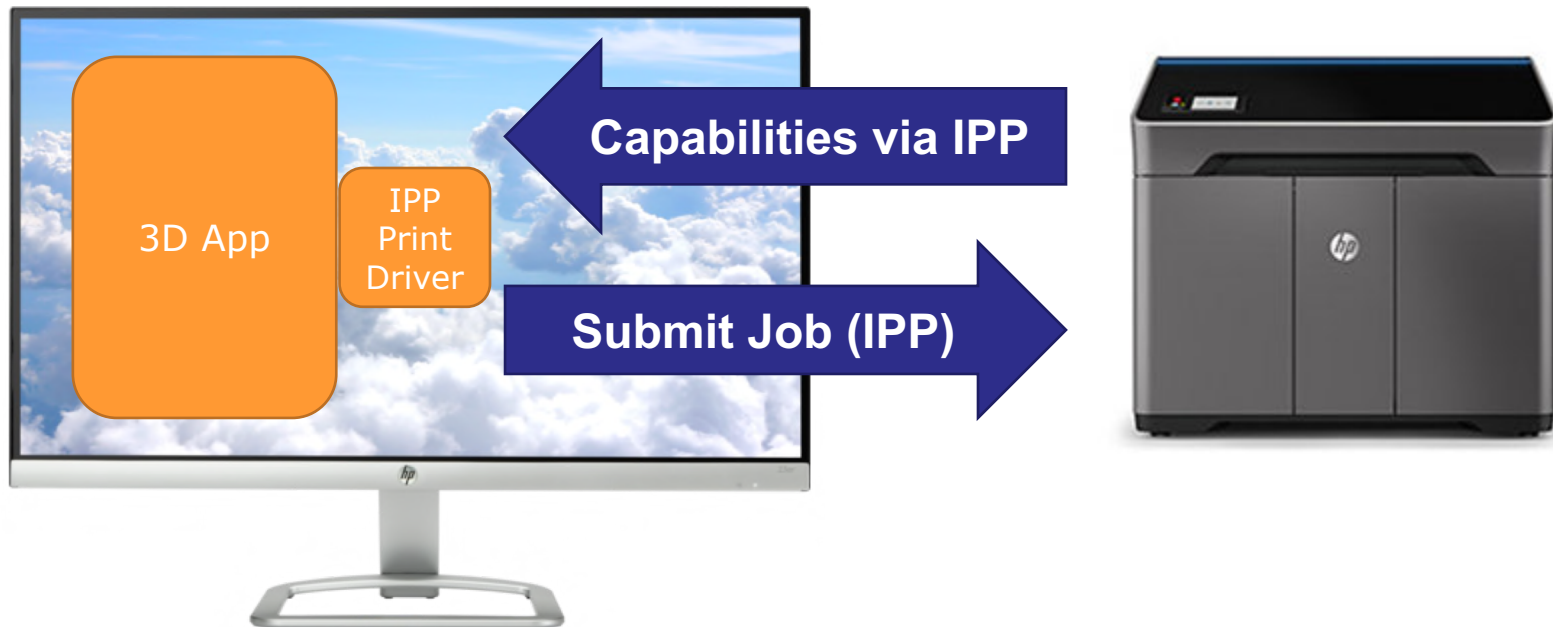
"Essential" Control Enabled By G Code

These controls are deemed "important" or "essential" by a segment of 3D printer users:

- Print speed
- Travel speed
- Retraction
- Cooling
- Print Sequence
- Preamble to position the head correctly
- And so on…

BUT…this just reinforces the confusion and makes 3D printing hard

"Essential" Controls Not Needed for 2D Printing

These controls were deemed "important" or "essential" by a segment of 2D printer users:

- Ink head temperature
- Paper temperature
- Fuser temperature
- Fine grained head speed control
- Preamble to position the head correctly
- And so on...

2D printing learned to trust the printer on this! 3D printing can make the same leap to simplify the user experience for 3D printing

➢ Will help drive adoption and make 3D printing more reliable and the results reproducible

New "3MF Layer Format"

Possible Requirements

- Streamable – doesn't require full file to arrive before the printer can begin processing

- Layer-oriented

- Safe – doesn't contain instructions that can direct the printer to destroy itself or its surroundings

- Already supported by existing printers

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Backup Slides

Backup and clipart