The Printer Working Group

IPP Workgroup 3D Conference Call

February 22, 2016

4-5pm ET

When We Last Met...

- Had lots of discussion about 3MF and PDF, plus a review of the latest draft of the IPP 3D Printing Extensions
- No consensus on selection of a file format
  - But I've made a tentative selection (see next slide)
- Consensus on several changes to the Job Ticket and sub-units
  - These are reflect in the updated draft...

Choosing a File Format

- Target of this specification is "consumer" printers
  - Most printers in this class make use of open source software, whose developers strongly prefer free, open access to specifications
  - This preference should probably be reflected in the design considerations
- 3MF has a completely free and open specification
  - Also free/open source implementations
- PDF is open but not free
  - Free/open source implementations for PDF format and U3D, nothing yet for PRC
  - Not clear whether there are technical differences between Adobe/ISO ballot drafts of PRC and the published ISO 14739-1 standard

Choosing a File Format (con't)

- 3MF and PDF have similar 3D capabilities
  - Both satisfy the technical requirements for current printers
- PDF adds tolerances and support for multiple, independent objects in a single file
  - Tolerance data in PRC seems to be more descriptive (this was the tolerance used when tessellating or generating the geometry) than intent-driven (these are the required manufacturing tolerances)
  - Independent objects can be submitted in separate 3MF files
- 3MF seems to have slightly greater adoption than PDF
- PDF seems to be the "more complete" solution, combining 2D documentation with 3D content
  - But this can be confusing for End Users - is the "3D" content they see in the application printable, or even compatible with their application?
  - And how do we differentiate 2D PDF from 3D PDF ("model/pdf" MIME media type?)

Proposed Direction

- Make 3MF the baseline 3D format for IPP ("the PWG Raster of 3D")
- Make PDF the high end format for IPP (similar to its place in 2D printing)
  - Make sure to address PDF-specific features so that PDF support is full-featured
  - Also address identification/versioning, as needed
- Work with 3MF and 3D PDF consortiums to make sure PRC to 3MF conversion can be lossless to enable PDF workflow with Printers that only support 3MF.

IPP 3D Printing Extensions

- Current interim draft at:
  - http://ftp.pwg.org/pub/pwg/ipp/wd-ipp3d10-20160217-rev.pdf
- Major changes:
  - 3MF required, PDF recommended
  - Bonjour required for discovery
  - Job Ticket changes to focus on intent
  - Sub-unit changes to focus on service/maintenance functions