Create a "Postscript" format for Laser Cutters

When sharing 3D models to be fabricated using a laser cutter, users rely on vector formats, such as SVG. SVG essentially contains the 2D path the laser has to take to produce the model. Unfortunately, however, SVG makes it **impossible to reliably recreate** the encoded 3D model. The reason is that the tool path is affected by a range of machine-specific parameters, such as how much material the laser evaporates ("kerf"), so that fabricating the same SVG file on two different machines can produce different results. Similarly, SVG files do not contain information on how to interpret engravings, and so on. This inability to share and reproduce 3D models holds the field back.

Your objective: define a novel file format that allows sharing laser cut designs reliably. Check out *Postscript* for inspiration. 40 years ago, Postscript resolved portability issues for the printing industry by transitioning printing to a "description" of the desired result—an approach that was inherently portable. The description was then translated into the necessary machine-specific representation by code running on the printer itself. Might the same be possible for subtractive fabrication technologies, such as laser cutting?

Action items: Define a new format that allows encoding vector and raster design elements. Handle all common design elements (engineering fit, engraving color and depth, cutting depth, etc). Write code that encodes 3D models into this new format, and write decoders that translate the contents to the representation required by the specific laser cutter at hand. Can you build the latter into laser cutters, allowing them to directly understand your new file format?

Your project: develop and test the new file format that describes resulting laser cut parts. Test and embed your models in a **real-world** application scenario

And then deploy. Help thousands of users worldwide save time and resources—and thereby extend the scope of personal fabrication to a non-technical audience.

Contact
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