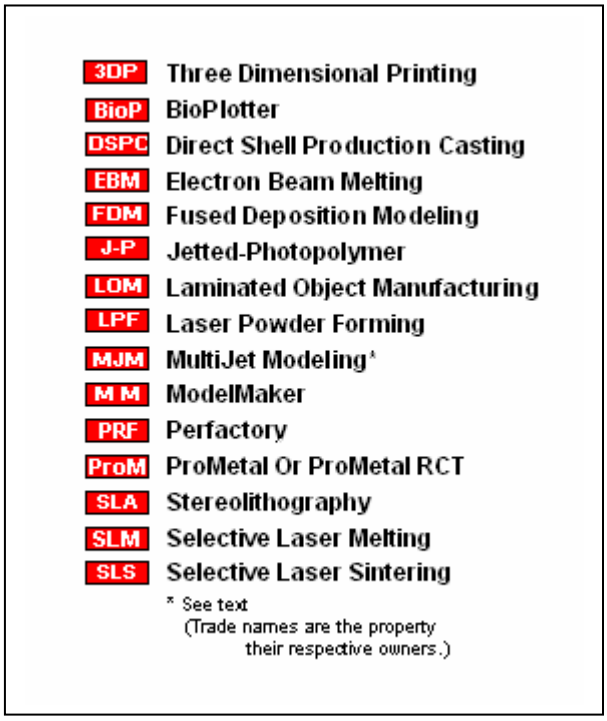
4. Application Rules of Thumb

Over the last twenty years or so, a large number of experiments have been carried out by engineers, scientists, medical technologists, artists and others. From this body of knowledge rules of thumb approaches to solutions have evolved which can be quite helpful for initial guidance in the technology selection problem. That's not to say that these are cut-and-dried methods which apply to all cases or that additional, and perhaps more advantageous, possibilities don't exist. This is simply a starting point.



Almost any additive fabrication technology can be used for any application. Indeed, it may be sufficient to choose a particular method simply because it's readily available or that experience has been gained with it in the past, even though it might not be optimal. The attempt here is to give some direction by indicating which choices are typical or common for particular applications, and why that might be so.

The technology selections in the following sections are given left to right, from most typical and/or best choice to acceptable. A key for the acronyms used in the icons is provided above. If a particular technology is not mentioned, this is not necessarily to say that it's unacceptable, but only that it would be somewhat uncommon to start with it for that application.

Engineering

Engineering and manufacturing still account for most of the use of rapid prototyping technology today. The main applications of rapid prototyping in engineering are:

- Concept Modeling,
- Functional Testing,
- Tooling,
- Manufacturing.

Concept Modeling

The field itself started as a way for engineers to hold a replica of a final part in their hands or perform some limited testing. Years later, this still accounts for a substantial fraction of use, but the choices are wider, the results better, the prices are lower, and the testing can be more complete.

Essentially all RP technologies can be used for Concept Modeling. The choice of a technology depends to some extent on what the application is, but it isn't at all critical.

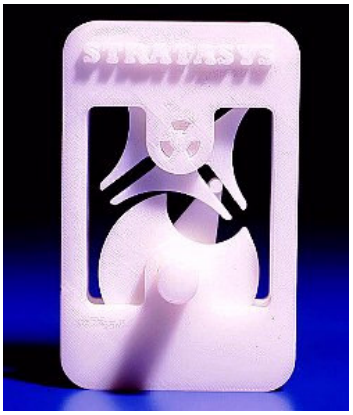


Fig. 4.1. Fused deposition modeling (FDM) concept model of a geneva mechanism.
(Courtesy, Stratasys Inc.)

Fig. 4.2. Fused deposition modeling (FDM) concept model of a pin drive mechanism.
(Courtesy, The Innovative Manufacturing Centre, UK.)

Fig. 4.3. Three dimensional printing (3DP) concept model of a cell phone.
(Courtesy, Z Corporation.)

Concept Models For Parts Which Will Eventually Be Injection Molded

MORE LIKELY SLA FDM J-P 3DP LESS LIKELY

If you would like to see what a part that will ultimately be i
stereolithography is a typical choice. The results will gener
may need to sand or polish the model to obtain the appeara
often be used for functional testing, as well, depending on

The rest of the Chapter is Omitted in this brief sample.

Get the CD version of the book to enjoy all diagrams and photos in color as shown here.