Here is a guide to help you decide which 3D Printing and Rapid Prototyping process is the most appropriate for your application.

**Stereolithography (SLA)** is a rapid prototyping process that uses a vat of liquid UV-curable photopolymer resin and a UV laser to build parts one layer at a time. SLA rapid prototyping is a great process for concept models, master patterns and tradeshow models.

**Selective Laser Sintering (SLS)** is a rapid prototyping process that uses a high power laser to fuse small particles of powder to build parts one layer at a time. SLS rapid prototyping is a great process for functional testing and for low volume manufacturing.

**Multi Jet Modeling (MJM)** is a 3d printing process used to create extreme high definition parts used for show models, form/fit/function applications, cast urethane master patterns, direct investment casting using RealWax and dental castings.

**Fused Deposition Modeling (FDM)** is a rapid prototyping process that uses a plastic filament of material supplied to an extrusion nozzle. The nozzle is heated to melt the material and can be moved in both horizontal and vertical directions. FDM rapid prototyping is a great process for functional testing and for low volume manufacturing. It is especially helpful since the materials used are actual ABS and Polycarbonate. Ultem is also a material option.

**PolyJet** is a rapid prototyping process that jets photopolymer materials in ultra-thin layers (16µ) onto a build tray layer by layer until the part is completed. Each photopolymer layer is cured by UV light immediately after it is jetted. PolyJet rapid prototyping is a great process for concept models, master patterns and tradeshow models.

**Cast Urethane Molding** is the process of using silicone molds to create urethane molded parts. Silicone is cast around a master pattern (typically made from stereolithography rapid prototyping). After curing, the mold is then used to form a two-part polyurethane material in the shape of the master. Cast Urethane Molding is a great process for pre-production runs and low volume manufacturing.

**CNC Machining** is a subtractive manufacturing method which cuts away unwanted material from primary stock to form the shape of the needed part. CNC Machining is a great process for manufacturing low and high quantities of quality metal and plastic parts.
**Injection Molding** is the process of injecting plastic into an aluminum or steel mold to form the needed part. Injection molding is a great process for low and high volume manufacturing. It is widely used in the medical, automotive, industrial, construction and consumer product industries. Some advantages of injection molding are high production rates, repeatable high tolerances, the ability to use a wide range of materials, low labor cost, minimal scrap losses, and little need to finish parts after molding. Some disadvantages of this process are expensive equipment investment, potentially high running costs, and the need to design moldable parts.