How Stratasys PolyJet™ Technology Enabled Microsoft's "Fail Fast" Product Development Process

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They say seeing is believing and in the world of prototyping the ability to create prototypes of our devices in color on the Stratasys J850 has been a game changer for our product development teams.

Edward Lehner
Microsoft Senior Prototyping Manager

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Customer Profile

Located in Redmond, Washington—Microsoft's Advanced Prototyping Center (APC) is a 26,000 square foot prototyping facility sandwiched between the Industrial Design and Engineering groups. This team of highly passionate makers acts as the translator between concept and reality. Utilizing a multitude of manufacturing and prototyping tools, the APC focuses on efficiently creating solutions and prototypes to answer business questions. Following the mantra of "Fail Fast" the APC is responsible for quickly generating confidence in development decisions for Microsoft's designers, engineers, and partners. 3D printing plays an integral part in Microsoft's "Fail Fast" development process and Stratasys PolyJet™ models are a part of our daily routine.

Challenge

The question is and always will be "how do we innovate faster?" Fueled by consumer demand and industry competition, hardware development cycles are continuously shortening. Product solutions, prototypes, and decisions need to be made at an accelerated pace to be competitive. In addition, product development increasingly demands higher accuracy to ensure design decisions are being made with greater confidence. In the prototyping world every step up in fidelity requires additional time and operations to move a model closer to being realized. Secondary operations such as paint and graphics need to be created and require accurate placement, fixturing or additional equipment, personnel, and time. Time that is often not available in the fast-paced decision making of hardware development

A view of the Microsoft 3D Printing Lab for Rapid Prototyping

Solution

Beyond the obvious benefits of 3D printing (speed and accuracy) the newer Stratasys J750™/ J850™ Prime machines have allowed us to create prototypes that more accurately reflect the designer's intent. With the release of the VeroUltra™ and VeroVivid™ resins we can create true Pantone Validated colors with part thicknesses that were previously unachievable. Microsoft is one of few companies that color matches the product components. This is the reason the Surface Laptop metal chassis and Alcantara keyboard deck blend together seamlessly. The increase in color capability from the J750/850s allows us to create thinner and smaller parts with more realistic appearances. Features like part lines or differentiating materials became easier to explain through PolyJet technology. In addition, the resolution increased from 800dpi to 1600dpi, meaning prints can be created with full images or text perfectly aligned right off the printer. This fundamentally raised the bar for overnight 3D printed models. Suddenly there was an option for next-day 3D prints that could clearly and accurately represent a designer or engineer's intent without any additional secondary operations.

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Impact

A prototype is a highly efficient tool to tell a story – a way to communicate an idea and inspire progress. Anytime we can increase a models' fidelity quickly we increase our capability to make better informed decisions and at a greater pace. The additions of true Pantone Validated colors and of increased resolution have significantly impacted product development at Microsoft, accelerating our product making ability.

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The increased dimensional accuracy, coupled with full-color printing has made the Stratasys J850 our primary 3d printing tool for prototyping complex mechanical prototypes. Parts off the J850 require little to no post processing (sanding, painting etc.) making it possible to create multiple iterations at a much quicker pace compared to past methods.

Karsten Aagaard
Microsoft Principal Model-Maker

Preparing the print file with Stratasys GrabCAD™ Print Software
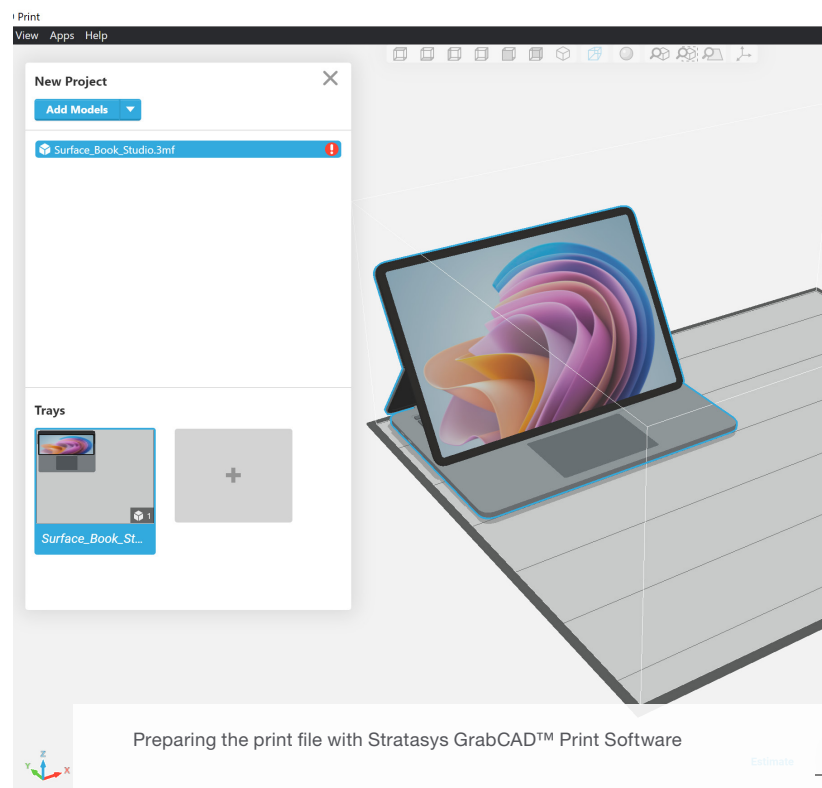
The final prototype 3D printed by Microsoft with PolyJet technology

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