

MELLOWCABS INNOVATING MODERN, SUSTAINABLE MINICABS FOR URBAN TRANSPORT WITH SOLIDWORKS FOR ENTREPRENEURS

Case Study



Mellowcabs relies on SOLIDWORKS for Entrepreneurs design, engineering, and visualization solutions to innovate its zero-carbon-emissions, low-cost-of-operation minicab vehicles, providing efficient urban transport, helping to reduce traffic congestion, and supporting a new business model whereby a sizable portion of revenue is generated through on-vehicle advertising.

Challenge:

Quickly innovate an aesthetically pleasing, electric-powered, three-wheel minicab for the microtransport of people and goods in urban environments.

Solution:

Implement SOLIDWORKS design and product development tools as part of the SOLIDWORKS for Entrepreneurs program.

Results:

- Cut product design time in half
- Reduced prototyping time and requirements
- Improved product shape and appearance with advanced surfacing tools
- Increased industrial design and mechanical engineering collaboration

Modern, sustainable, urban-transport—providing, low-cost, efficient, on-demand mobility services for people and goods is the goal of South Africa-based Mellowcabs, manufacturer of a fully electric, three-wheeled vehicle. With the majority of urban transport needs involving rides of less than three miles, the startup company is working to secure a low-cost, sustainable market position in the rapidly evolving urban transport market.

With the advent of ride-sharing services and the inability of many traditional taxi companies to support the needs of modern, technologically savvy urban riders, Mellowcabs is looking to fill a niche by providing efficient urban transport. Because Mellowcabs emit zero carbon emissions, the minicabs are eco-friendly and more efficient than traditional cabs, helping to reduce traffic congestion and interfacing smoothly with existing public transportation systems. The vehicle's low cost of operation supports a new business model whereby a sizable portion of revenue is generated through on-vehicle advertising rather than solely through transport fees.

Although vehicle development began a few years ago, it didn't take off until Mellowcabs decided to replace the 3D design tools it was using, according to Technical Lead Ernie Aylward. "Some of our consultants preferred to use SOLIDWORKS® 3D design software, which is what attracted us," Aylward recalls. "The real kicker that prompted us to migrate to SOLIDWORKS was its superior surface modeling functionality, which was critically important for developing the Mellowcabs vehicle. With SOLIDWORKS, we were also able to access a more complete set of tools through our participation in the SOLIDWORKS for Entrepreneurs program, which allowed us to purchase the software at steep discounts."

Mellowcabs decided to transition to the SOLIDWORKS product development system because it is easy to use, includes robust surface modeling tools, provides access to other integrated applications, and facilitates collaboration. "We especially liked

the fact that with SOLIDWORKS, we can complete surface and solid modeling—as well as evaluate manufacturability—from within the same development environment," Aylward notes.

DIFFERENTIATION THROUGH DESIGN ERGONOMICS, AESTHETICS

Because Mellowcabs is trying to carve out a new position in the evolving urban transport market, and is also providing substantial on-vehicle advertising opportunities, differentiating its vehicles from other types of taxis and three-wheeled conveyances was critically important. "While the look of the vehicle remains paramount—we want it to look cool and stand out so people notice it and the on-vehicle ads—ergonomics also played a significant role," Aylward explains.

"The ability to visualize the design in SOLIDWORKS helped us remain focused on the importance of ergonomics and aesthetics as we refined the design," Aylward adds.

SUPPORTING INDUSTRIAL DESIGN AND ENGINEERING COLLABORATION

With surfacing, solid modeling, and Design for Manufacturability tools inside the same development environment, SOLIDWORKS facilitated collaboration between industrial design and mechanical engineering at Mellowcabs, resulting in faster development and improved manufacturability. "The ability to move back and forth between surfaces and solids was certainly a big advantage," stresses Industrial Designer Naeem Cassim. "I was striving for an aesthetic appeal while maintaining high visibility of the outside of the vehicle ... With SOLIDWORKS, we achieved complete synergy between design and engineering as we iterated on and improved the design."

"Working collaboratively in SOLIDWORKS was very efficient and quick," adds Mechanical Engineer Jasper Nel. "SOLIDWORKS made it so much easier to incorporate the vehicle body and shell into my mechanical design. Working together in SOLIDWORKS, we were able to compromise when necessary to strike a balance between ergonomics, aesthetics, and manufacturability, and achieve the best possible design."



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— Ernie Aylward, Technical Lead

FASTER DEVELOPMENT, REALISTIC VISUALS, FEWER PROTOTYPES

Using SOLIDWORKS, Mellowcabs was able to cut vehicle design time in half while simultaneously reducing prototyping requirements. "The ability to iterate between industrial and mechanical design within the same environment decreased design time by at least 50 percent," Aylward says. "The enhanced visualization in SOLIDWORKS—and more recently, the software's integrated simulation tools—also decreases prototyping time because it allows us to foresee and address mistakes."

"The video animations and rendered images that we create in SOLIDWORKS Visualize software also make a huge difference when presenting our vehicle and ideas to prospective clients," Cassim adds.

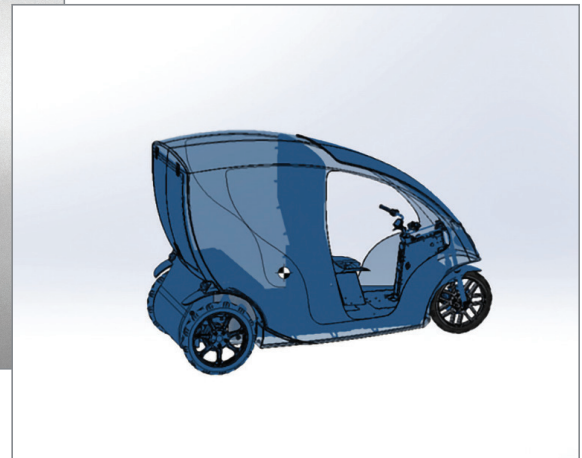


Because Mellowcabs designers and engineers were able to do both surface and solid modeling in SOLIDWORKS, they cut their development cycle in half without sacrificing design aesthetics or ergonomics.

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