

## Trum Design tackles complex design projects with T-Splines

*>T-Splines 2.0 powerful editing tools make the most challenging product design projects fast and easy.*

**TRUM**

Product design &amp; Visualization

Company:  
Industry:  
Headquarters:  
Webpage:

Trum Design  
Product Development & Design Visualization  
Buenos Aires, Argentina  
[www.trumdesign.com.ar](http://www.trumdesign.com.ar)

Trum Design is owned by Joaquin Laborda, an industrial designer who has been working on product design and development in Argentina since 1997. Joaquin is constantly exploring new methods and techniques for both design and manufacturing in his client projects.



Modeled as a single gap-free T-Splines surface

"T-Splines allows us to cross the barrier from subdivision models to NURBS seamlessly and without effort. We can now bring our exploratory design concepts directly to the final production model without redesign or any compromise in our aesthetic goals."

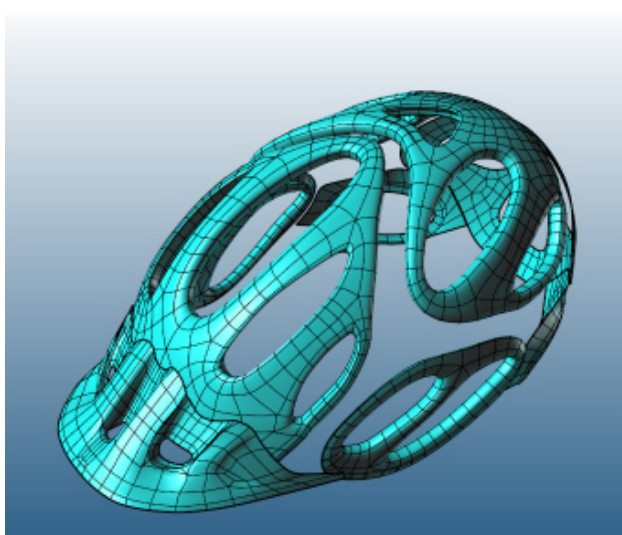
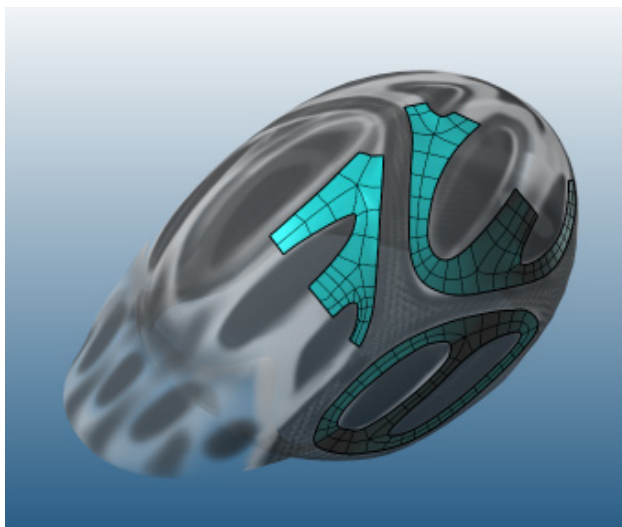
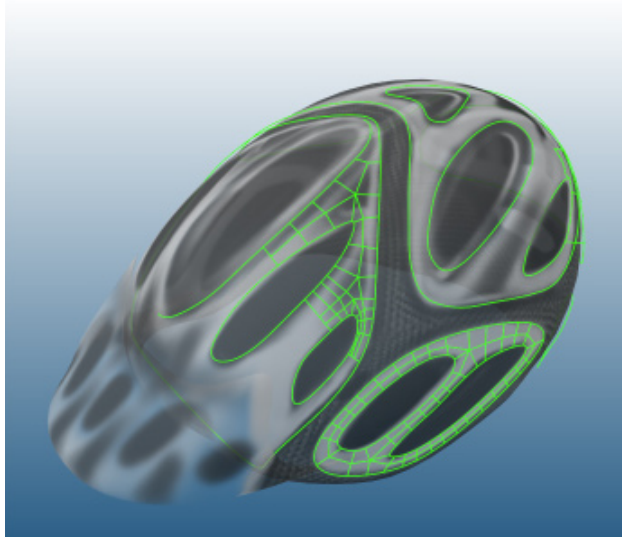
**Joaquin Laborda, Owner, Trum Design**

### The challenge

The design for a cycling helmet has to combine aesthetics with the critical functional requirements of good aerodynamics, strength, light weight, comfort and safety. It is a challenging modeling effort for any application.

For my helmet design concept I wanted to create an organic and fluid shape that gives the product a dynamic personality, as well as convey its strength and light weight.

In many projects like these, I have to compromise or simplify our initial design concepts and sketches in order to be able to model it with traditional software design tools and techniques. I was looking for a tool that would give me the freedom to create the designs without compromise.



## The solution

With T-Splines, I was able to create exactly the design I had envisioned in our early concepts without compromise. T-Splines has been a critical component of my design tool set for a number of projects, and it provided invaluable again for the helmet design.

Starting with sketches and some fixed dimensions to respect the ergonomic requirements, I modeled the interior shape in T-Splines from a simple box.

Then I exported this model to Modo and “painted” different designs on the model in 3D, much as one might draw on a 2D model in Adobe Illustrator. This was strictly for visualization, none of the CAD geometry was changed. After selecting my favorite concept, I went back to Rhino and used this mapped mesh to trace a set of curves.

From these curves, I then used the T-Splines surface skin command to make all the shapes and connect everything into one watertight and gapless surface, exactly as I had envisioned it.

I used the T-Splines Thicken command to turn the surfaces into a solid volume. Also, the ability to maintain symmetry across the helmet centerline in my modeling saved me a lot of time.

The final result is ready to be detailed in Rhino or exported to another CAD or CAM package for creating the production mold and tooling. I was able to complete the entire design from concept to finish in a single smooth workflow without compromise to my aesthetic goals.

## Future direction

I am now using T-Splines as part of my regular toolset for all my personal and client industrial design projects, from big roto-molding products to intricate jewelry pieces.

## Learn more

To learn more about T-Splines and how it could help accelerate and improve your design process, please visit [www.tsplines.com](http://www.tsplines.com). To learn more about Rhino, please visit [www.rhino3d.com](http://www.rhino3d.com).