

Tesla Roadster

LOTUS POSITION

The Tesla Roadster is a high-performance, electric-powered sports car. It produces zero emissions and can accelerate from 0 to 60 mph in 4.0 seconds. Performance aside, avoiding any association with the legacy of odd-looking electric vehicles was paramount. A futuristic look was rejected for a familiar, accessible aesthetic that would help put drivers at ease with the technology—ultimately proving that electric vehicles do not have to be slow, boring or ugly.



Designed by Barney Hatt and Russell Carr of **Lotus Design Studio**, UK and Elon Musk, Martin Eberhard, Malcolm Smith and Barrie Dickinson of **Tesla Motors Inc.**; and **Bill Moggridge, FIDSA**



Article by Martin Eberhard

Martin Eberhard is the co-founder and president of technology of Tesla Motors.

Editor's note: The following is adapted from Martin Eberhard's July 25, 2006, blog post about the Tesla Roadster.

Mapping a Direction

When working on the design for the Roadster, Tesla Motors hired Lotus Engineering for various bits of analysis, engineering, supply-chain help and, of course, body styling. In the beginning, I thought we would carry over some of the body panels from the Lotus Elise sports car—because the cost of tooling so many parts seemed daunting when Tesla had practically no money.

But Tesla's chair Elon Musk (who, as a McLaren F1 owner, has pretty high expectations for a car's looks) pushed me not to be such a wimp. Supercars are not made of fiberglass, and our target market will demand a more sophisticated look than the Elise. Once I was convinced that carbon fiber was the way to go, everything Elise went out the window except (if you will forgive me) the front and side windows.

Though expensive and time consuming, this decision gave us the opportunity to fix a few things: Unlike the Elise, the Tesla Roadster has federally compliant 2.5 mph bumpers and headlights and all-LED rear lights. A car's windshield is an expensive and tricky bit, entangled with safety, rollover protection (when you consider the windshield surround), legal visibility requirements, waterproofing, interaction with the wipers, etc. It made a whole lot of sense to use the "glass house" and rubber seal system from the Elise. However, even there we improved: **The Tesla Roadster's glass has an expensive but effective UV- and IR-reflecting layer embedded in it to keep the cabin cooler on hot days.**

With the basic vehicle dimensions, the glass house and the drivetrain requirements settled, we hired several well-known sports-car stylists to submit proposals for the Roadster's styling. I knew exactly what I wanted the car to look like—at least in my own mind. But I am one of those engineers who can't even draw a circle. My six-year-old son draws better cars than I do. I spent time with a couple of these stylists, describing what I wanted. The proposals

came back all wrong. They looked like cartoon electric cars—all kinds of doodads, fake solar panels, bogus cooling thingsies. Not even close to what I wanted.

I have a good friend, Bill Moggridge, one of the founders of IDEO, a major design studio that designs practically everything except cars. Bill is a designer's designer with cutting-edge taste and impeccable style. He also knows me well enough to listen patiently to my ramblings and sort out what I want. Bill wrote a keynote presentation for me in which he invented a five-axis space that describes the looks of cars. For each axis (e.g., macho at one end, curvaceous at the other or throwback at one end and futuristic at the other), Bill provided example cars that typify the extremes. Then we negotiated where, exactly, on each axis I imagined the Roadster.

We gave this presentation as a brief to the stylists. What a difference. Suddenly we were getting proposals that looked like what I had in my head.

Navigating the Styling

When the proposals came in, I emptied a room at my house down to blank white walls and hung up the dozens of sketches from each designer. We invited everyone we could rope into the task to vote on the proposals. I was in favor of a lengthy questionnaire, asking the viewers what they liked and did not like about each design. Bill had a better idea: Give each viewer three red sticky notes and three green sticky notes. Red is bad, green is good; put 'em wherever you want. It was amazing.

After the first 50 or so people voted with their sticky notes, we saw the following: Several designs had a smattering of red and green notes on various features—a bunch of red notes on an ugly grille, a few green notes on an interesting taillight, etc. One stylist was so disliked that his name was covered with red (Okay, his last success was an SUV, so what should I expect?). But Barney Hatt—one of Russell Carr's designers at Lotus Design—collected a wall of green.



“A high-octane experience with low-voltage rush. The Tesla Roadster represents the best mix of innovation, environmental care and style. Definitely the kind of product new consumers are willing to try.”

—Franco Lodato, IDSA, Head, R&D Division, North American Region, Pininfarina Extra USA

No doubt about it. Barney had a few red notes to be sure, but he was hands down the winner. I never expected it because his first proposals (before Bill's brief) were awful.

Elon and the Tesla team subsequently spent a lot of time—and several trips to England—working with Barney to perfect the styling. We changed many things from his original proposal, and we worked with him to get what we wanted from the several clay models.

I won't bore you with the details, but here are a few anecdotes: Barney originally designed the Roadster with a ridge down the hood that ended in a peaked front. This made Elon and me cringe, but I couldn't sway Barney. What was it about the “beak” that looked so bad to us but not to Barney? Then it hit me. I was driving down the street and passed one of those iconic Pontiac Firebirds from the '70s. Remember, the ones with the chicken barfing on the hood?

That Firebird had the exact same beaked look. To an American eye, the beak screamed redneck. But the British had the taste never to import that car. I sent him a few choice photos of the Firebird, and he got it.

Also, Barney's original sketches included a black front that was an attempt to integrate off-the-shelf headlights. This looked terrible on the quarter-scale clay model—someone dubbed it the “Lone Ranger” look. No matter how we tweaked it, the front looked bad. Again, Elon pushed us to spend the considerable money necessary to develop custom (and DOT-compliant) headlights to make the front look great.

Just about three years from the day Marc Tarpenning and I started Tesla Motors, we saw our first real Roadster from the assembly line. What a car! Bye-bye golf carts: This is what an electric car should look like. ■

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- 1. HERMAN MILLER LEAF STRATEGY** Designed by Yves Béhar, IDSA of fuseproject for Herman Miller
- 2. GREENSCAPES MOUNTAIN SNEAKER** Designed by April Turner, Norm Gress, Dan Latham, Sam Hewitt, Pete Girard and Betsy Blaisdell of The Timberland Company
- 3. INTERACTIVE MODEL OF LOWER MANHATTAN FOR THE WALL STREET RISING DOWNTOWN INFORMATION CENTER** Designed by Lisa Strausfeld and Nina Boesch of Pentagram Design for Wall Street Rising

■ Indicates Silver winner. ■ Indicates Bronze winner. Complete descriptions can be found starting on page 154.

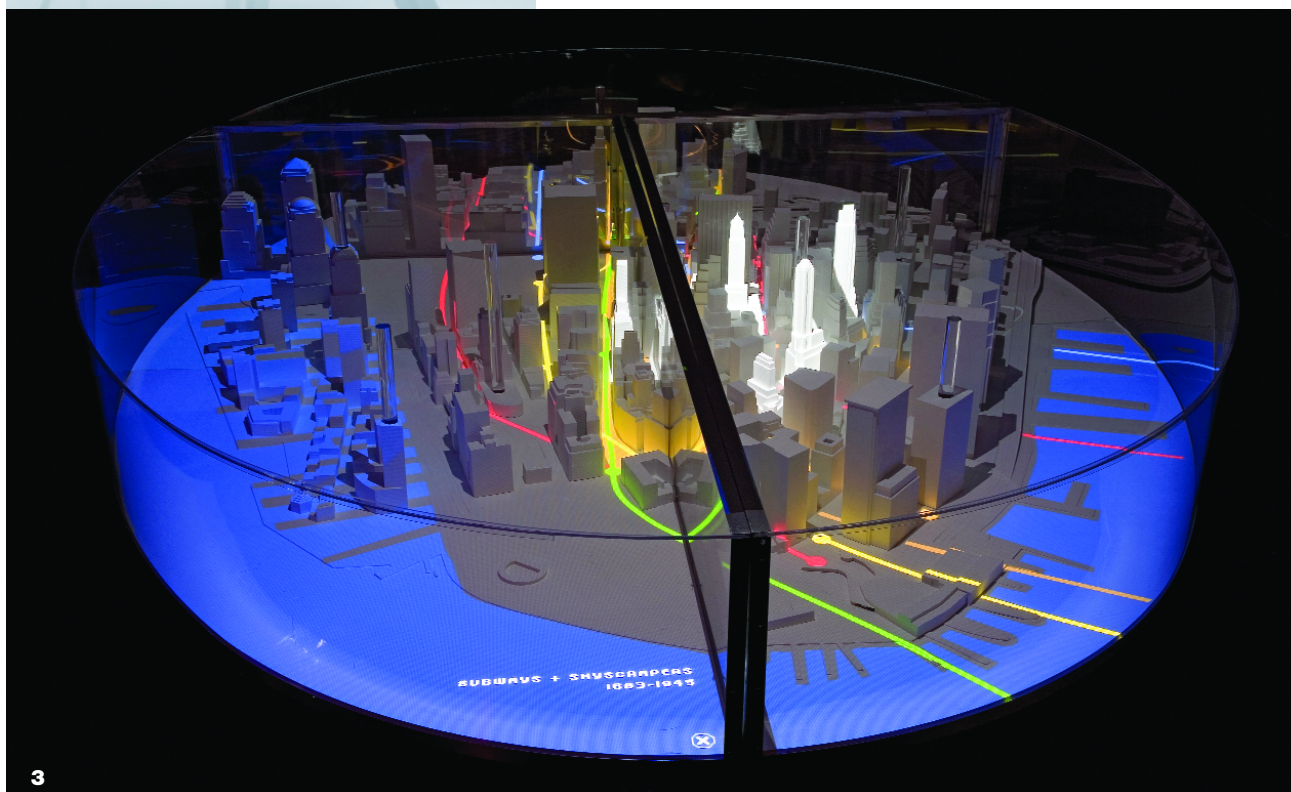


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Furniture

4. KEY BICYCLE RACK Designed by Lagranja Design, Spain and Francesco Mainardi and Josep Maria Serra, Affiliate IDSA of Santa & Cole, Spain

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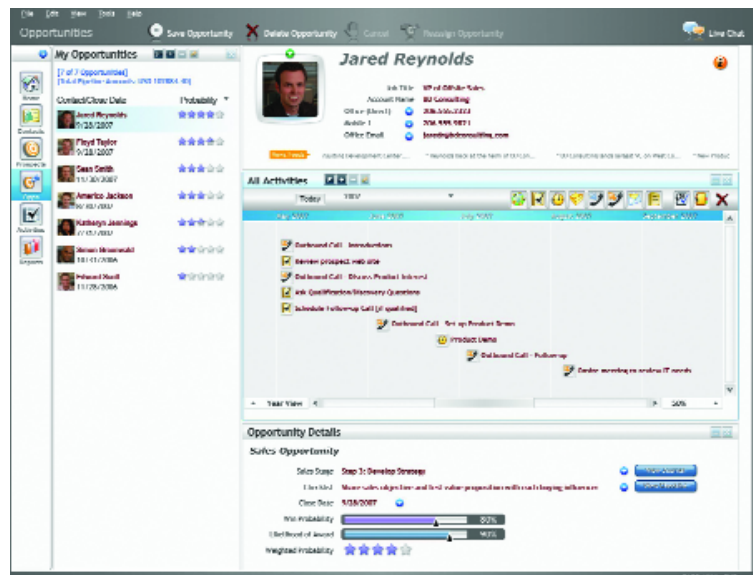
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