

proto labs<sup>®</sup>

# Journal

2010 ISSUE 1

# THE ROAD AHEAD

page 4

**COOL STUFF**  
page 3

**NOW I KNOW**  
page 6

**HOT SHOP**  
Page 7

# → WHAT'S UP?



I've been thinking about the prognosis for the economy.

Needless to say, the patient had a rough year. But after all those months on life support, we're seeing signs of recovery. In fact, Proto Labs just finished a record quarter.

Now here's the question: Is it really a recovery? Or is it more of a recuperation period? Is the economy getting better fast, ready to stride full speed ahead? Or will it limp along in a slow convalescence?

Either way, design engineers will need to respond successfully. And either way, Proto Labs can play a key supporting role.

Consider this. If it's a fast recovery we're talking about, fast response will be the order of the day. That means getting products to market in a hurry. Speed will be the number one requirement for prototype parts, and when speed is what

you need, Proto Labs is the answer.

On the other hand, if it's a slow and bumpy recuperation, caution will rule. With risk aversion up and budgets down, the pressure will be on to get from design to functional part as efficiently as possible. By using Proto Labs' high-speed, low-cost production to try, test and make products market ready, companies minimize risk.

The good news is, recovery or recuperation, the pulse is picking up on product development. That means now's the time to invest, innovate, and get in position for future success—and a healthier economic outlook in the months ahead.

Brad Cleveland, CEO  
brad.cleveland@protolabs.com

## HOW ARE WE DOING?

"I'm absolutely amazed and thankful for how fast you were able to get my project done, from finalized quote to parts in hand was around 22 hours. This kind of turnaround is unheard of in my experience." —*Eric Mueller, Team Hazardous Robotics*

"First Cut delivered ahead of schedule and as promised. The part was perfect. First Cut took my CAD file and morphed it into reality!" —*Michael D. Johnson, JCReminders, Inc.*

"Excellent, you do great work and quickly! Working with Proto Labs has become a significant part of our development plan." —*Bill Pedersen, Field Logic, Inc.*

"Our parts look great and helped us meet our deadline. Finished complex parts delivered to our door in less than a week including cross-continent international shipping. You guys are unbelievable!" —*Ben Berkmortel, Seon Design, Inc.*

"I received the parts and couldn't be happier. Proto Labs did a great job, nothing but good recommendations from this end." —*Ed Adams, Maxera LLC*

"The fast, precise parts were exactly what we were looking for. Great job! Nobody is faster than Protomold." —*Jan Pielechowski, Zodiac Aerospace*

"YOU ROCK! Your customer service and product are top-notch." —*Nate Calvin, Kinetic Engineering Group*

"We just received our parts; very impressive! How you produce parts in that short of a time frame is beyond me." —*Steve Moore, Eastman Kodak*

We would love to hear from you! Send us your comments at [news@protolabs.com](mailto:news@protolabs.com)

## AquaNotes®

For those of us who do our best thinking in the shower, only to see your brilliance washed away because we can't capture the thought, no more excuses. The ultra-waterproof (and completely recyclable) AquaNotes pad is there for you to jot down those gems of wisdom that cross your mind while exfoliating your knees—logarithms to grocery lists—Goodbye brain drain!

[www.myaquanotes.com](http://www.myaquanotes.com)



## Ergonomic Wireless Optical Mouse

It looks and handles just like an old-fashioned gaming joystick, but it can rid you of some serious joy-killing pain from Repetitive Strain Injuries (RSI). Because you direct this new mouse from 3M using the entire arm rather than just the wrist, it takes stress off the wrist and keeps arms and shoulders in a more relaxed, neutral position. Game on!



## OCTA.BOT

Back in '00—that is 1900—Alexander Graham Bell introduced the space-frame construction, an ingenious structural system that has always posed daunting technical problems if you stray from very simple assemblies. Enter the OCTA.BOT. A universal fitting housing eight swivel points



that allow struts to rotate freely about a common point, the OCTA.BOT promises to make Space Frame technology practical for a promising variety of everyday applications, saving materials, energy and assembly time. [www.sciarc.edu/exhibition.php?id=1613](http://www.sciarc.edu/exhibition.php?id=1613)

## Geometoy

We at Proto Labs think everybody's life would benefit from spending a little more time playing around with plastic parts. Just saying. Which is why this excellent isosceles tetrahedral construction toy belongs on every engineer's desk. Snapping together from every face to create an endless array of forms, shapes and puzzles, Geometoy is the perfect creative outlet for the visually inquisitive and mathematically inclined. You know who you are.



# → PROTOCOLTURE

## CookingForEngineers.com

reviewed by **Steven Hauschulz, Mechanical Engineer**



Dark Chocolate Soufflé baked by author

*As site founder Michael Chu explains, he selected the name "Cooking for Engineers" on a whim, having no idea whether it means "to cook for the purpose of providing engineers with food" or "to instruct engineers in the science and art of cooking." He likes the ambiguity, and other people seem to find the name interesting. He regrets that the name can be misread (when in a rush) to be "Cooking Foreigners".*

Actually there's a lot more than just cooking on Michael's site. It is a one-stop shop for all of your cooking/eating needs, with features including an ingredients dictionary (very useful—ingredients are photographed rather than just described, which makes them easy to spot in the grocery store), kitchen equipment information, blogs, forums, book reviews, a section on dining out, cooking articles, gift shop, and so forth—in addition to recipes.

PROTOCOLTURE CONTINUES ON PAGE 6

# THE ROAD AHEAD



This is where we'd ordinarily unveil the trends and ideas that we think will shape our industry in 2010—which, we realize, is already underway. **HOWEVER...**

Our crystal ball being somewhat out of alignment after the turbulence of '09, we turned to techno-futurist Jack Uldrich for a glimpse into the months ahead. Here are a few highlights from our conversation:

**The recovery will be an unlearning opportunity.** Challenging times are a learning opportunity. Right? Maybe not, says Jack. Smart companies use teachable moments like these to unlearn ways of doing things that didn't serve us well in the first place. Take that sacred cow, collaboration for instance. "We are in the habit of teaming with like-minded people who all have the same ideas. But what we need is to pay more attention to the pain-in-the-ass outliers whose ideas don't fit with the norm, who frankly make collaboration difficult and annoying. They're the ones who will take us into the future."

### The robots are coming. Really!

"I grew up watching 'The Jetsons' and I've been waiting all this time for those cool robotic contraptions to show up in real life. Well finally they are making their way into the everyday world. This trend will not be pushed by young consumers so much as pulled by aging ones, who can use robotic gadgets to live longer, better lives. For example, robotic pets will serve as companions, watchdogs, housecleaners and healthcare monitors. Voice recognition technology inside the robot will be able to detect if a person's speech is slurring and immediately connect to a healthcare professional."

### Some of the most successful new products will be invisible.

"Those of us who love technology need to understand that most people really don't. They don't want to look at it, or think about it, or learn how to use it. They are not interested in dealing with technological advances. They just want the benefits." A product that does amazing breakthrough things may look like nothing new. And that's the way a lot of consumers want it.



### Prototyping technologies will change the manufacturing paradigm.

"A lot of products are currently manufactured in huge quantity in China and other overseas locations. But as companies begin taking advantage of fast, inexpensive prototyping technologies, they will be able to experiment faster, fail faster, respond faster, improve faster, manufacture in smaller quantities, and get new products on the shelf faster." It's all about bypassing

the "supply chain nightmare of large-scale overseas production" in favor of more local, flexible product development and manufacturing strategies.

Jack Uldrich is a well-known global futurist, business speaker, and best-selling author, whose books include *The Next Big Thing is Really Small: How Nanotechnology Will Change the Future of Your Business*, and *Into the Unknown: Leadership Lessons from Lewis & Clark's Daring Westward Expedition*. His latest book is *Jump the Curve: 50 Essential Strategies to Help Your Company Stay Ahead of Emerging Technologies*. Check out his full Technology Forecast for 2010 at [www.jumpthecurve.net](http://www.jumpthecurve.net). 



## OTHERS WEIGH IN

Gerald Celente, founder of The Trends Institute, predicts the rapid growth of a new class of product: **"TECHNOLOGY FOR THE POOR."** "Growing with the same speed as the Internet Revolution, the trend will be recognized, explored and exploited by legions of skilled but jobless geeks, innovators and inventors who will design and launch a new class of products and services affordable by millions of newly downscaled Western consumers..."

Meanwhile, Faith Popcorn of The BrainReserve says in response to the turmoil of war and ongoing distrust of big corporations and big finance, 2010 will be **"THE YEAR OF LIVING LOCAL."** The "combination of a threatening world and a frown on all things big will propel demand for local goods and services... It's an implicit 'anti-big' statement, and a desire to connect on a deeper level."

In what may be the ultimate anti-big statement, former KBG analyst, academic, and Russian media personality

Igor Panarin tells us the **U.S. WILL FALL APART** in 2010. Apparently mass immigration, economic decline, and moral degradation will trigger a civil war and cause the U.S. to disintegrate around June or July of 2010, with the U.S. breaking into six pieces. Alaska will revert to Russian control.



On the bright side, Pantone LLC, the global authority on color and color standards has chosen **PANTONE 12-5519 TURQUOISE AS THE COLOR OF THE YEAR** for 2010.

As the Pantone people explain, turquoise evokes "soothing, tropical waters and a languorous escape from the everyday troubles of the world, while at the same time restoring our sense of well-being."

Finally, even as we stock up on small, cheap, locally-made turquoise civil war survival kits we may do well to recall the words of Mark Twain: **"THE ART OF PROPHECY IS VERY DIFFICULT—ESPECIALLY WITH REGARD TO THE FUTURE."**

# → "NOW I KNOW"

## Game Designer Hits the Jackpot with First Cut

"In 2008 I was working on a new latch assembly for one of our computerized gaming machines," says Diane Strachan, product designer at International Game Technology in Reno, Nevada. "I wanted to make it work more smoothly, reduce the number of parts, and control costs. I wanted a material that would provide some lubricity and chose Kepital®, which also provides good dimensional stability, thermal stability, and wear resistance."



Using ProE, Strachan developed a 3D CAD model. "We wanted a sample part made of Kepital or something similar to make sure it would work in the machine. We called around to see if we could have parts machined, but no one would do it. We were willing to pay an arm and a leg and still couldn't find anyone interested. Then I called Proto Labs where a sales representative told me about First Cut. We're used to vendors that get back to you in a week. The part then takes another two or three weeks. Proto Labs offered a quote in just hours and parts overnight. You can understand why we were a bit skeptical."

Strachan uploaded two versions of her design—one with draft and one without—

to Proto Labs' FirstQuote® online quoting engine. "I was hoping for a price between \$500 and \$600 per part," she says. "I was afraid they might cost \$1,000 each. When I got the quotes I thought I was dreaming. The drafted version was \$133;

**"We got beautiful parts with draft, which only a system like First Cut could have given us, at a fraction of the price I was willing to pay."**

the undrafted version was even less. We chose the drafted version so we could test exactly what we'd get out of a mold."

At 6:00 PM Strachan ordered two parts machined from her CAD model. At 6:00 AM the next morning, she was informed that the parts were ready to

ship. "They say you can't have good, fast, and cheap, but that's exactly what we got," she says. "We got beautiful parts with draft, which only a system like First Cut could have given us, at a fraction of the price I was willing to pay."

"Our functional testing found some things that needed to be addressed, but the machined part itself worked fine. Still, it points out why we need testable parts. The nice thing about working with Proto Labs is that, if the plastic parts need to be changed we can get new ones in just days." And now I know.

To read this case study in its entirety, [www.firstcut.com/CaseStudies.aspx](http://www.firstcut.com/CaseStudies.aspx)

### Cooking Continued from page 3

Anyway, this engineer found the site useful. Right away I liked that the recipes gave both the mass and volume measurements because it removes the guesswork and the need for conversions. For example, the recipe for Chocolate Souffle calls for 1/6 of a cup of sugar. I don't recall ever having a measuring cup that size, nor do I have the cup-to-tablespoons- and teaspoons conversions committed to memory. I did, however, know I needed 35 grams which is quick work on a kitchen scale.

I also like the recipe's step-by-step picture guide. It is always reassuring to see that what is in front of me looks like it is supposed to. The flowcharts at the end of each recipe also make for a quick reference as you go. Very user-friendly.

I would have enjoyed some simple fun food science facts along the way. For instance—back to the chocolate soufflé—the scallops on the outside of the ramekin that you bake it in are not just nice looking; they increase the surface area which increases the heat absorption. Thermodynamics in a baking dish! Also using egg white foam to inflate the soufflé is a nice example of Charles' Law.

In any case, my soufflé turned out great. Who knows, baking may become the next big thing here at Proto Labs.

*To make your own soufflé:*  
<http://www.cookingforengineers.com/recipe/160/Dark-Chocolate-Souffle>

# HOT SHOP



**NOVO ENGINEERING**  
A Product Development Company

## **Novo Engineering**

A firm with the all-around savvy to take proprietary products from concept to full-scale production with consistent quality of design and success in the market

## **Specializing in:**

Projects such as electromechanical consumer products and medical devices where all engineering disciplines come into play in a critical way, in a single package.

## **Why they're hot**

Exuding that elusive chemistry that comes from mixing hard-core science with market-seasoned industry veterans, they show again and again why systems engineering rules.

## **The secret to their success?**

It's all about teams. Integrated, multidisciplinary teams mean greater efficiency, innovation, ability to bridge the gap from lab to factory, and ultimately, speed to market.

## **The view in your crystal ball**

With certain projects like consumer electronics becoming more commoditized and moving to Asia, we are looking for our strongest growth in the area of medical product design, which suits our way of engineering perfectly.

## **Why Proto Labs? President and CTO Rajan Ramaswamy explains.**

- **IT FITS OUR WAY OF WORKING.** A lot of our clients are looking for dollar-efficient phased development on projects, with high-quality designs generated on accelerated schedules. That means fast, efficient prototyping, which for us means Proto Labs.
- **THE RIGHT AMOUNT, IN THE RIGHT TIME.** In the course of designing a product and commercializing it there's that stage where you need too many parts to make them in-house, and too few to justify the time and cost of full factory production. That's Proto Labs' sweet spot, and we take full advantage of it.
- **QUALITY AND PREDICTABILITY.** We need to know that the parts we're getting are the parts we had in mind, time after time after time. And Proto Labs delivers.
- **SPEED, SPEED, SPEED.** To have a resource where we can get such quick turnaround on such high quality parts at such a nominal cost is a huge asset for us.

## **Novo Engineering, Inc.**

Vista, CA  
Phone: 760-598-6686  
Email: [info@novoengineering.com](mailto:info@novoengineering.com)  
Web: [www.novoengineering.com](http://www.novoengineering.com)

The Device Company



TDC Medical provides design, development, quality systems and manufacturing services for the creation of innovative therapeutic medical devices.

Contact Richard Abraham at 508.597.1705 or email [rabraham@tdcmedical.com](mailto:rabraham@tdcmedical.com)

[www.tdcmedical.com](http://www.tdcmedical.com) • Marlboro, MA  
Boulder, CO • Sunnyvale, CA

## **Concepts to CAD to Prototypes... Fast.**

PRODUCT DESIGN  
ENGINEERING  
ERGONOMICS  
CAD FOR MFG



**DD DESIGN DESIGN**  
Define Strategies. Design Solutions.

610.444.8868 | [www.designdesignonline.com](http://www.designdesignonline.com)

An innovative product solutions company



[www.logicpcd.com](http://www.logicpcd.com)

If you have a design firm that you'd like featured in our Hot Shop area or to be put into the lottery ad space, please contact Kristyn Vickman at [kristyn.vickman@protolabs.com](mailto:kristyn.vickman@protolabs.com) or 763-479-7638.



## USA

Proto Labs, Inc.  
5540 Pioneer Creek Dr.  
Maple Plain, MN 55359  
United States

P: (877) 479-3680  
F: (763) 479-2679  
E: info@protolabs.com  
www.protolabs.com



## EUROPE

Proto Labs, Ltd.  
Unit A, Hortonpark Industrial Estate  
Hortonwood 7, Telford  
Shropshire  
TF1 7GX United Kingdom

P: +44 (0) 1952 607 447  
F: +44 (0) 1952 677 126  
E: info@protolabs.co.uk  
www.protolabs.co.uk



## JAPAN

Proto Labs G.K.  
729 Nakano  
Ebina City, Kanagawa  
243-0425 Japan

P: +81 (0) 46-237-3951  
F: +81 (0) 46-239-1932  
E: info@protolabs.co.jp  
www.protolabs.co.jp

**protomold®**  
Injection Molding Service

**first cut®**  
CNC Machining Service



## Join the discussion!

Email article ideas, cool projects or great design stories to the editor at Stacy.Sullivan@protolabs.com

# → THE SPEEDWAY

## A quick look at what's new from Proto Labs

### FREE CNC MACHINING TIPS



Want expert advice about designing parts for CNC machining? You're in luck. Just sign up for the new First Cut Machining Tips e-newsletter, and once every quarter a motherlode of tips and techniques for efficient, cost-effective machined prototype parts will arrive in your inbox.

Subscribe today at  
[www.firstcut.com/MachiningTips](http://www.firstcut.com/MachiningTips)

### IT'S COMPLICATED!

#### FAST DOES NOT HAVE TO MEAN SIMPLE.

We've created the excellent Protomold Torus to demonstrate a few of the more interesting and complex features you can design into your Protomold injection molded parts. The Torus comes with an informative key describing the techniques we used.

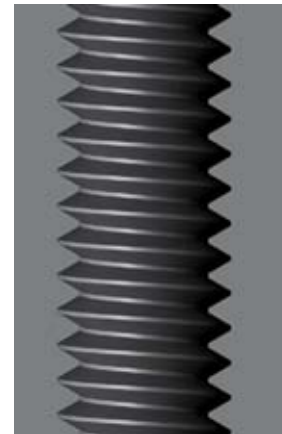
Get your **free Torus\*** at  
[www.protolabs.com/parts](http://www.protolabs.com/parts) Enter code PLJ10



\*At this time, we are shipping The Torus in North America only.

### THREADED HOLES IN FIRST CUT PARTS

Good news: Now you can design First Cut CNC machined parts with threaded holes. This is a new capability, so at the moment we're offering a limited selection of diameters and pitches. To see what's available, go to [www.firstcut.com/ThreadedHoles.aspx](http://www.firstcut.com/ThreadedHoles.aspx).



### CATCH US AT THESE TRADESHOWS

#### Medtec Europe

March 23–25, 2010  
Hall #8, Stand #2810  
Stuttgart, Germany

#### Medtec Japan

April 15–16, 2010  
Yokohama, Japan

#### BioMed Device

April 21–22, 2010  
Boston, MA

#### Medtec UK

April 27–28, 2010  
Stand #1810  
NEC, Birmingham  
UK

