

Biotech



Randy Werneth and Carlsbad medical device maker Acutus Medical Inc. closed a \$75 million Series C round to develop 3-D imaging for heart procedures. **Page 4**

Leadership



Cheryl K. Goodman views her new role as executive director of Athena San Diego as a chance to assist, connect and inspire women in the local business community. **Page 8**

Software



Dina Moskowitz founded SaasMAX after she saw a need for a matchmaker in the quickly emerging marketplace of software as a service (SaaS). **Page 19**

The Lists

SaaS Companies **Page 18**

Wheeling More Power

TRANSPORTATION: San Diego Emerges as Hotbed of Electric Bike Industry

By MICHAEL LIPKIN

Electric bikes are far from ubiquitous on California streets but are quickly growing in popularity as American consumers catch up to the far more ebike friendly Europe and Asia. And San Diego is a hotbed of ebike makers, with both American headquarters of major European manufacturers and budding local companies.

The six-city Electric Bike Expo stopped in San Diego last month, where more than a dozen brands showed off their latest models,

some with high-tech features including the ability to lock the bike from a smartphone app.

All ebikes have an electric motor and battery that can either propel the bike itself or work together with a rider to reach speeds up to 28 mph, with ranges of up to 130 miles. Models range from about \$2,000 to \$10,000. Ebikes have been relatively slow to catch on in the U.S., seen by some as a novelty for those too old to pedal themselves.

"It's a little counter-intuitive to say, let's put a motor on this bicycle," said **Pete Prebus**, **► Bikes page 12**

Photo courtesy of Virtue Cycles

Virtue Cycles in San Diego makes a velomobile, an electric bike surrounded by an enclosure that resembles a very thin car.



Bosa's Buys Put It in Position Downtown

PROPERTY: Acquisitions Likely for Residential Plans

By LOU HIRSH

Downtown San Diego's residential condominium boom of the early 2000s is not expected to make a comeback anytime soon. But **Bosa Development**, a prolific producer during that period, appears to be gearing up for the next wave.



Nat Bosa

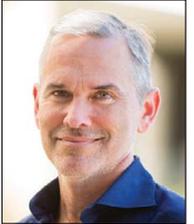
Between 2000 and 2008, the Vancouver, B.C.-based company, led by President **Nat Bosa**, completed seven downtown condo projects with a total of nine towers, containing nearly 1,700 for-sale units. It is currently building

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Loan Servicer Leverages Growth in Alt Lending

FINANCE: First Associates Excels at Educating Consumers

By MICHAEL LIPKIN



David Johnson

When **David Johnson** was searching for something to rescue him from the doldrums of retirement in 2008, he honed in on **First Associates Loan Servicing LLC**.

First Associates was a loan servicer working exclusively on mobile home loans, processing monthly billing statements, remitting payments back to lenders and following up on delinquencies. Johnson,

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Car2Go Revs Up By Unplugging E-fleet

CLEAN-TECH: Co. Cites Lack of Charging Stations

By BRITTANY MEILING

San Diego's leading car-sharing company, **Car2Go**, is replacing its all-electric fleet with gas-powered cars. The decision — which stemmed from a lack of local charging stations — is a setback to the city's climate action plan, and a shakeup for the company's business model.

When Car2Go entered the San Diego market in 2011, the company made San Diego the first U.S. city to house an all-electric fleet. That decision was based on a promise by San Francisco-based **ECotality** to install 1,000 charging stations around the region by the end of 2011.

► Car2Go page 71

Special Report: Technology / Internet of Things

Secure Investment

The local cybersecurity landscape is rapidly evolving, with established businesses seeing marked growth in the space and new ones emerging to answer the demand. Right alongside are venture capitalists.



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Bikes:

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editor of the **Electric Bike Report** and marketing director for the expo. "But it can make cycling accessible for so many more people. It's easier to deal with headwinds and steep hills, and means you won't sweat too much on the way to work."

Nexus for Ebikes

The expo visited San Diego in part because of the cluster of local manufacturers here. The Swiss company **Stromer**, a subsidiary of **BMC Switzerland**, and the **Pon Bicycle Group**, a part of the Dutch firm **Pon Holdings**, have their U.S. headquarters in San Diego. Pon Bicycle includes the German brands **Focus** and **Kalkhoff**, as well as the Dutch brand **Gazelle**. Manufacturing happens abroad, but sales, marketing and distribution are based in San Diego.

At last year's Interbike International Expo, the main bike industry trade show, four of the five nominees for ebike of the year had a San Diego connection: winner Stromer, Focus, and local companies **e-JOE Bike** and **Juiced Riders**.

San Diego has become a U.S. nexus for ebike in part because of its history of sports manufacturing and proximity to cities such as San Francisco, Seattle and Portland where urban biking is most popular, according to **Taylor Jackson**, e-bike account manager and marketing coordinator for Focus.

"California has just been a hotspot for electric biking," Jackson said. "The ebike wave is coming."

Urban Transportation

Ebikes are most popular in countries where bikes are relied on primarily as a



Stephen Whalen
Willy Suwandy is managing partner of **e-JOE Bike**, one of the growing number of electric bike companies based in San Diego.

means of transportation, opposed to the U.S., where recreation and exercise are the top reasons most riders use bikes, **Light Electric Vehicle Association** founder **Ed Benjamin** said.

U.S. ebike imports almost doubled from 2013 to 2015, growing from 73,000 to about 130,000, according to Benjamin, but that pales in comparison with the 30 million ebikes expected to be sold in China this year or the 2 million in Europe. Ebikes will make up about half of China's overall bike sales this year, while the U.S. buys about 15 million bikes annually.

Much of ebikes' appeal is that they can help riders get to work or pick up groceries without the same level of effort, but some purists have looked down at ebikes as a tool for the lazy, according to Stromer's North American marketing director **Scott Anderson**.

"The perception is that electric bikes could be considered cheating — why don't you just ride a normal bike?" Anderson said. "We're trying to push the concept of biking as urban transportation."

Focus' Jackson said the goal was to create an alternative for short car trips,

not displace more traditional bike riding.

"It's a bike you can add to your quiver," Jackson said. "It's not going to replace your bikes."

Novel Models

Local ebike makers are taking advantage of battery enhancements in hopes of competing with larger international players.

Willy Suwandy, a former **Sony** and **Siemens Healthcare** electric engineer, first saw ebikes at a trade show in Beijing and founded e-JOE Bikes in 2008 to make affordable ebikes. As batteries have gotten cheaper and smaller, he's been able to make a \$1,500 foldable bike with a range of about 50 miles. A more sport-focused bike, which netted the Interbike nomination, runs about \$1,700. Last year, Suwandy sold about 1,000 bikes.

"Having the best value is our targeted goal," he said. "We don't want to be the iPhone; we'd rather be the Android."

Virtue Cycles makes both conventional bikes and ebikes, with its ebikes on the more novel side of the spectrum. Founder **William Mulyadi** first looked into ebikes

after the birth of his first child in 2010 and saw electric power as a way to help parents haul their children around on a bike. He makes several models, for about \$2,000, that feature a large wooden bucket in front of the seat with room for several kids.

Virtue Cycles also makes a velomobile, a bike surrounded by an enclosure that resembles a very thin car, for about \$5,000. Other velomobiles were based on recumbent bicycles and close to the ground, designed more for racing than street use, Mulyadi said. The vehicle is about 200 pounds, so battery power was a necessity.

"Most other velomobiles were so low that on the street you're staring straight at car bumpers," he said. "But this is still as narrow as a bicycle and fits in a bicycle lane."



ELECTRIC BIKE LAWS

Starting this year, California has new electric bike regulations, defining three classes of ebikes. Riders don't need a license or registration to ride any of the ebike classes.

Class 1: A bike whose motor only works when riders are pedaling and stops assisting once the bike is going 20 mph

Class 2: A bike whose motor can be used on its own and tops out at 20 mph

Class 3: Similar to class 1, but has a maximum speed of 28 mph. This class has several restrictions. Riders under 16 can't ride these bikes and anyone riding them needs to wear a helmet. They're also not allowed on all public trails.



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