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These are Chicago's Most Innovative Companies 2022

The list includes icons and startups that are using AI, cloud computing, LEDs, Big Data and the internet of things to reinvent themselves or solve new problems.

JOHN PLETZ  

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Stuart Frankel is CEO of Narrative Science.

John R. Boehm

Crain's Most Innovative Companies list includes icons and startups that are employing artificial intelligence, LEDs, cloud computing, Big Data and the internet of things to reinvent themselves, adapt to changing needs or solve new problems.

You'll find grill maker Weber and sports-equipment provider Riddell alongside startups such as Narrative Science and NuCurrent, as well as tiny companies with big innovations, such as Lynk Labs and MemoryWeb.

Behind each one are stories of passion, persistence and inspiration harnessed to create something new.

Our ranking is based on the quality of patents awarded last year to Chicago companies, as assessed by Ocean Tomo, an advisory, investment-banking and consulting firm specializing in intellectual property. Ocean Tomo is part of J.S. Held.

1. Narrative Science

What it makes: Business-intelligence software

Patents last year: 16

Narrative Science is a patent powerhouse.

Although it has only 100 employees, the maker of artificial-intelligence software has been awarded 59 patents since it was founded in 2010, says CEO Stuart Frankel. Last year, the company was [acquired by tech giant Salesforce](#) for an undisclosed price.

Narrative Science, which spun out of Northwestern University, has been an early leader in data analytics, teaching computers to communicate more like human beings by turning data into words in a process known as [natural-language generation](#).

The company started out transforming baseball scores into sports stories and graduated to business intelligence—the idea of turning financial data into words and sentences that users can easily understand. Narrative Science’s algorithms have progressed from simply helping people use data to answer questions to predicting the questions they should be asking and providing the answers.

“We have patents around the ability to call out the drivers of why a metric changed,” says Nick Beil, Narrative Science president. “If data is not your job, our AI will not only let you know a metric has dropped but give you reasons as to why that is.”

It’s part of a bigger challenge in the evolution of business intelligence, a \$30 billion industry that’s growing at 15% a year: how to push data beyond the domain of a relatively few highly trained technologists to the masses by making the tools easier to understand and use.

“Our approach is going beyond the 30% of people who have access to business intelligence tools or know how to use them,” Beil says. “That means there are 70% still using Excel and trying to do their own analysis. We’re providing data understanding to everyone in the organization who isn’t a data analyst.”



Riddell is adding technology improvements to its football helmets by including sensors that connect to a cloud data-storage platform and mobile-phone app that will make the system cheaper, easier to use and more widely deployed.

2. Riddell

What it makes: Sports equipment

Patents last year: 8

Riddell's efforts to help football players avoid concussions doesn't stop with the helmet.

The company also has been developing technology to [help coaches monitor](#) what's happening to players heads while they're on the field.

Riddell took advantage of technology improvements, adopting smaller, less-expensive sensors that connect to a cloud data-storage platform and mobile-phone app that will make the system cheaper, easier to use and more widely deployed.

Instead of using accelerometers like those found in car airbags, today's version relies on newer sensors used in hospital beds. It also upgraded equipment to transmit data. As a result, the associated hardware cost has declined from about \$1,500 to \$100, says Thad Ide, Riddell's senior vice president of R&D.

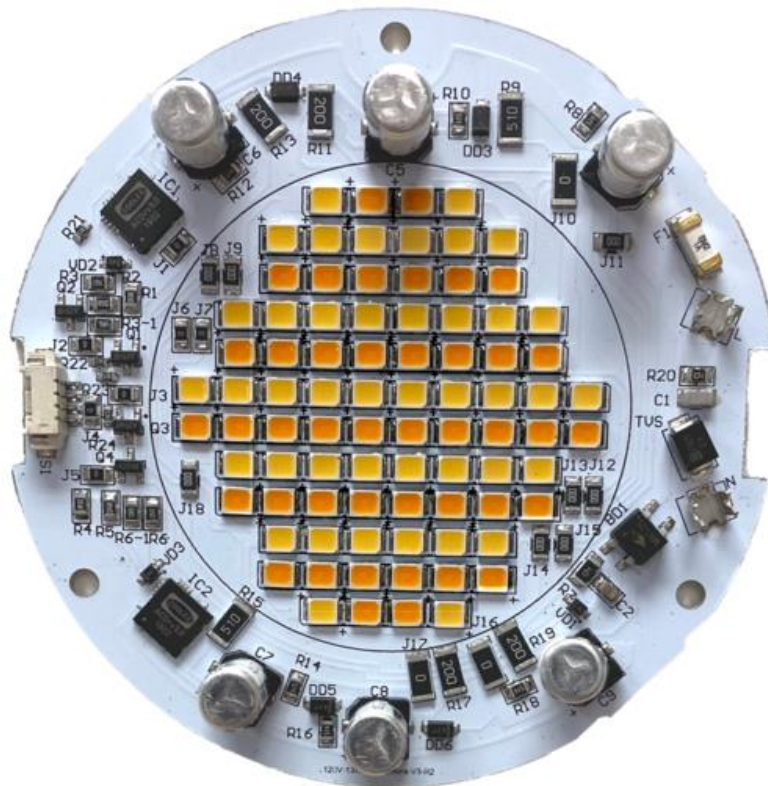
Better batteries can last a full season on a single charge. Because the hardware is smaller, it gives Riddell more freedom in how it designs helmets.

"We went from manufacturing a few hundred units a year to tens of thousands of the new system," says Ide, who oversees an R&D team of 15 to 20 people in Des Plaines that's growing and evolving to meet new challenges. "Because of these newer technologies, we now have electrical engineers on staff."

The head-impact monitoring technology launched in the early 2000s. But it was expensive and required a lot of computing resources by the customers. The updated version is web-based.

The new smart-helmet technology comes standard in Riddell's new Axiom line of helmets. Teams can use the technology to generate custom reports about what's happening on the field.

"One university customer found on practice days when they wearing helmets only, the head-impact exposure was higher . . . so they stopped helmet-only practices," Ide says.



An LED light fixture.

3. Lynk Labs

What it makes: Lighting technology

Patents last year: 7

Mike Miskin has had plenty of bright ideas.

The latest is for a way to change the colors of LED lighting with a switch. LEDs use less power than old-school lightbulbs. But a challenge with LEDs has been to make the light as pleasing to the eye as traditional incandescent bulbs.

Miskin's Elgin-based company, Lynk Labs, developed a switch to change the

color.

"It used to be that someone would grab a flush-mount LED fixture, get it home and it looks blue," says Miskin, a self-trained inventor who founded Lynk 25 years ago. "So the consumer goes back to the store and exchanges it. No one can figure out which light they're buying. This switch allows them to adjust the lighting."

The switching technology is among seven U.S. patents Lynk received last year, bringing the company's total to 67, quadrupling the output since it was first named to [Crain's Most Innovative Companies list](#) five years ago.

Among Miskin's innovations is solving the challenge of making LEDs run off conventional alternating-current power typically found in homes and buildings, as well as eliminating transformers and making the lighting dimmable.

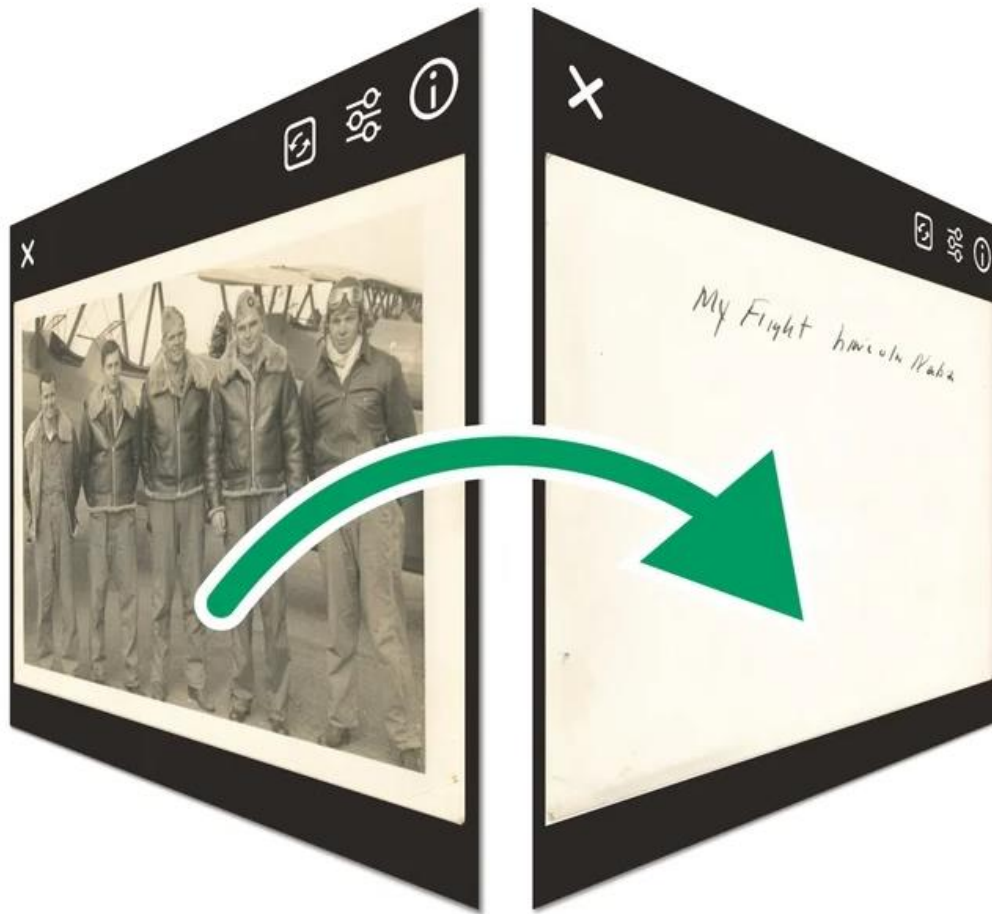
"I pride myself on being ahead of the curve," he says. "We've been struck by lightning multiple times. We've created things that have become standards, and I'm proud of it."

The challenge is getting paid for it. Lynk uses contract manufacturers to make components that it sells to other lighting makers. It also attempts to license its technology to lighting providers, wireless-phone makers and automotive-equipment suppliers.

Last year Lynk sued Home Depot, one of the largest sellers of LED lighting, in federal court in Atlanta. The retailer denies infringing on Lynk's patents. Samsung has sued the company in Chicago, asking a federal court to invalidate Lynk's patents.

Lynk won an undisclosed settlement in 2017 with Acuity Brands, a large maker of lighting products. The company also has signed licensing deals with lighting makers Feit Electric and Mount Prospect-based Good Earth Lighting.

"Mike is good at seeing unique combinations of technology and evolves to stay in front of it," says Chris Serak, vice president of engineering for Good Earth Lighting. "He's been doing this a long time and has some good (intellectual property)."



MemoryWeb is an app that became a hit among genealogists.

4. MemoryWeb

What it makes: Software for organizing photos

Patents last year: 5

Nancy Desmond's innovation was born of frustration more than a decade ago when she and her husband were digitizing family photos.

When they made backups, all of the information they added about who was in the photos was lost. Unable to find an off-the-shelf product that suited them, "we realized we'd need to create it," says Desmond.

Fortunately, Desmond, her husband, Chris, and their friend Michael Taylor also knew a few things about technology. They built software that turned into MemoryWeb, an app that became a hit among genealogists.

"They offered something nobody else offered, and it worked," says Maureen Taylor, who runs the Photo Detective, which helps people uncover, investigate and manage family pictures. "Genealogists don't want to learn a complicated program. This is easy."

Users pay \$9.99 a month, or \$99 a year, for the app, as well as digital storage. Since the product launched in 2016, Desmond has added a stream of features, including one that finds duplicate images and automatically incorporates identifying data found elsewhere.

Another feature allows users to flip the digital image to see the data on the back. Many old photos have information written on the back. A challenge in digitizing such photos is keeping the image and the information together.

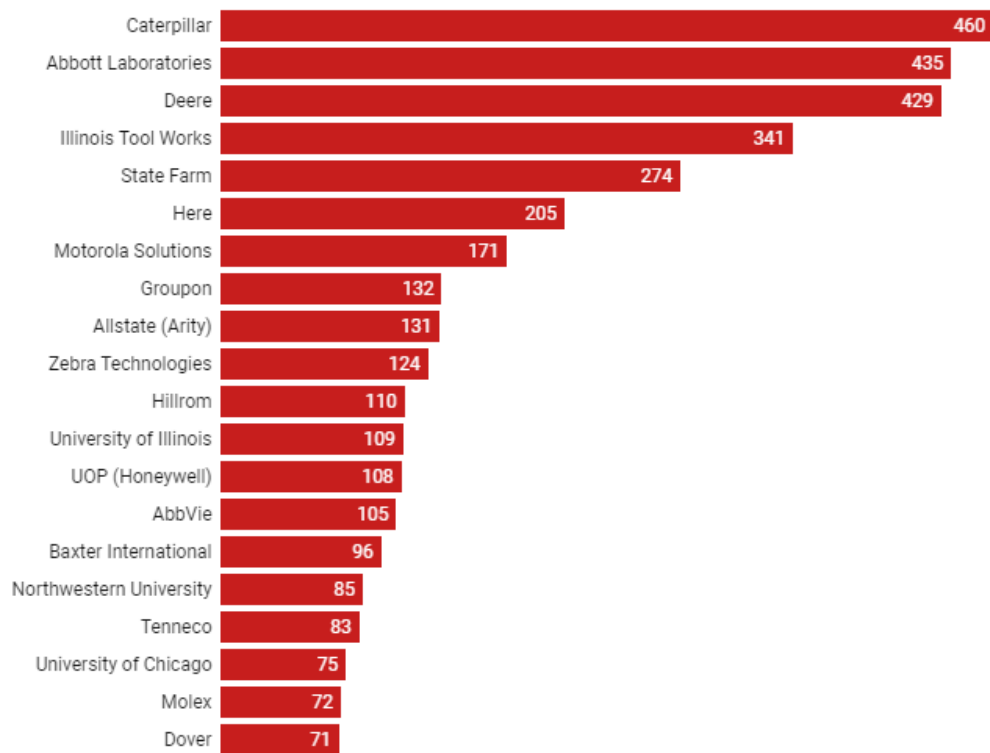
It also developed technology that allows users to compare facial features across photos, which was among the five patents the company received last year.

Desmond runs the virtual company from her home in the western suburbs with the help of some contractors, and her partners started filing for patents even before she started working full time on MemoryWeb in 2013. The company has nine overall.

It has [sued Apple](#) and Samsung for patent infringement.

“As soon as we started coming up with the innovation, we knew it was important to start thinking about protecting the intellectual property,” says Desmond, who worked with Taylor at Chicago intellectual-property technology firm ktMine before launching MemoryWeb.

Illinois companies with the most patents



Source: Ocean Tomo - Created with [Datawrapper](#)

5. SunCoke Energy

What it makes: Fuel for blast furnaces

Patents last year: 20

SunCoke is the biggest supplier of coke, purified coal that's used in blast furnaces to make steel.

The company also is looking to be the most innovative, whether that's coming up with more efficient ways to turn coal into coke, new approaches to designing ovens that make coke or to cool the coke once it's been made.

SunCoke provides about one-third of the coke used in U.S. blast furnaces. It has long taken a unique approach to making coke, burning off volatile components, such as tar, instead generating steam or electricity to resell rather than reselling the byproducts.

Among the noteworthy patents granted last year was one that involved recycling waste material and coke dust, and another to improve the process of quenching, or cooling, the coke.

"The whole industry is looking at ways to cut down on emissions and be more efficient during production," says Chris Pistorius, co-director of the Center for Iron & Steelmaking Research at Carnegie Mellon University.



NuCurrent has patents to make it easier to charge wireless earbuds.

6. NuCurrent

What it makes: Wireless-charging technology

Patents last year: 21

People love wireless earbuds. NuCurrent is betting consumers will love them more if they're easier to charge.

The Chicago-based company last year received patents for technology that eliminates the tiny spring-loaded prongs involved in many wireless-earbud chargers. "It opens up the possibility of charging earbuds by placing them on the back of the phone," CEO Jacob Babcock says.

NuCurrent got its start in 2009 with the idea of wirelessly charging electronic devices, which had [roots in an innovation class](#) at Northwestern University. Variations of its technology have been used to power phones, fitness trackers and cordless earbuds.

NuCurrent has become a patent dynamo, earning 21 patents last year. It already has received 48 patents this year, Babcock says.

Among the company's recent innovations are transferring both power and data, as well as increasing the performance of near-field communications technology that is used for electronic payments using wireless phones.

The company turned heads a few years ago when it took on consumer-electronics behemoth Samsung. Babcock says only that the case has settled and "Samsung is a licensee of NuCurrent's technology."

Babcock estimates that more than 500 million products using NuCurrent technology have been shipped since 2015, ranging from smartphones and watches to hand-held barcode scanners and industrial sensors. Customers include Klipsch, PopPower, Honeywell, Whoop and Spalding.



The Weber Connect digital hub connects with your smartphone to tell you exactly how long to cook a piece of meat.

7. Weber

What it makes: Barbecue grills

Patents last year: 5

Innovation and patents have been at the heart of Weber since George Stephen got his first patent for a kettle-shaped grill in 1966.

Over the years, the company has grown beyond its roots as a metal bender, adapting to propane and wood pellets. Now it's harnessing the internet of

things, using wireless technology and algorithms to make it easier to grill the perfect steak.

The Palatine-based company earned patents last year for its Weber Connect digital hub, which connects to your smartphone to tell you exactly how long to cook a piece of meat. Duane Miller, vice president of product development, says the technology takes the stress out of grilling.

"People new to barbecuing can be a little intimidated," he says. "We monitor the temperature, tell you when to flip it, when to take it off the grill and how long to let it rest."

The Weber Connect technology came out in 2020 with the launch of its SmokeFire grill, which uses wood pellets as fuel to smoke meat such as brisket or pork shoulder. The technology has been extended to other types of grills, as well.

"Once they have it, they never want to go back to not having it," Miller says.

The technology grew out of a partnership with San Francisco-based startup June, which Weber eventually acquired last year. As a result, Weber has far more electrical engineers than in the past, including a team in San Jose, Calif., says Chief Operating Officer Mike Jacobs.

Weber isn't done innovating, Jacobs says. "We still see a lot of upside opportunity in the pellet space."



Pregis makes machines that can fold sheets of paper to fill the voids in all those boxes of stuff that consumers buy online.

8. Pregis

What it makes: Equipment for packaging materials

Patents last year: 15

One of the big challenges for packaging companies these days is what goes inside the box.

"The consumer hates plastic and loves paper," says Tom Wetsch, chief innovation officer at Chicago-based Pregis, which makes packaging machines and supplies, such as bubble wrap and cardboard and foam mailing pouches.

"Twenty-five percent of the growth in the business is replacing plastic with paper. Five or six years ago, we were 90% plastic," Wetsch says. "Now it's 60% plastic and 40% paper."

For Pregis it means making machines that can fold sheets of paper to fill the voids in all those boxes of stuff that consumers buy online.

"With e-commerce growing, it means more packaging at home," Wetsch says. "Consumers don't want it, and they want to be able to get rid of it at the curb. A lot of times they can't put plastic in their bins, so they can't recycle it."

Consulting firm [McKinsey estimates](#) only 16% of all plastic waste is recycled to make new plastics. Most of it is incinerated or sent to landfills.

Pregis was spun off in 2005 from food and beverage packaging company Pactiv Evergreen. Pregis, which counts Amazon and Walmart as customers, has a long history of innovation: It was a pioneer in inflatable pillows used to cushion packaged items and recently launched a line of padded mailers made from recycled paper.

Wetsch's team is tackling another big problem for e-commerce: finding enough people to package all the things we buy. It's developing machines that will fill and close boxes. "We're working on lights-out automation because it's hard to get packers," he says.



Provisur makes meat-separating equipment for food processors.

9. Provisur

What it makes: Equipment for the food industry

Patents last year: 16

Sometimes innovation means improving on a previous invention.

Provisur helps food companies get the most of their raw materials, which means not leaving meat on the bone.

The meat-separating equipment used by poultry processors is far less expensive than the machines built for large-scale beef processors. A customer asked the Chicago-based company if it could figure out a way to adapt technology used for chicken processing for beef.

A well-placed groove inside the machine, which allowed the larger beef bones to be pushed out, made all the difference. "One of our engineers came up with the idea," says Brian Perkins, president of Provisur.

The company was able to grow its market by coming up with a cost-effective machine for smaller customers, which weren't doing the heavy volumes of big processors. "For the traditional separators, you have to do about 450 head of cattle a day to make it viable," he says. "This is more economic for smaller customers. We created a new segment that didn't exist."

The privately held company, affiliated with the Crown family's CC Industries, has about 700 employees.

Provisur's Formax division is **best known for** equipment used by companies that supply burgers and chicken nuggets to restaurants. The company also makes high-tech equipment for processing and slicing bacon. Provisur operates a 20,000-square-foot **innovation center** in Mokena, where its food scientists work with customers to develop new products.



RTC's "profit pusher" systems automatically push products to the front of shelves and make it easier to load merchandise.

10. RTC

What it makes: Retail shelf-display equipment

Patents last year: 17

RTC has been making it easier for retailers to reload their shelves for years.

But in the tightest labor market in decades, a convenience is looking a lot more like necessity, says Richard Nathan, CEO of the Rolling Meadows-based company.

"Before, labor wasn't a grab-you-by-the-throat issue," he says. "It's not just that the cost has soared so dramatically, (retailers) can't find enough people."

Retailers are being squeezed by supply-chain challenges and labor shortages that are making it harder to keep shelves stocked. Full shelves translate directly to higher sales needed to offset rising merchandise and labor costs.

RTC's "profit pusher" systems automatically push products to the front and make it easier to load merchandise, cutting the time to maintain store shelves by half.

"We've always understood productivity enhancement was the significant win," Nathan says. "It took our customers longer to get there because they were taking a lot for granted. They didn't need to measure productivity as much as they are now. It's survival."

And it's good for business at the 72-year-old company.

"When you've been preaching for years, and all of the sudden you're getting 'When can we see you?' It's fun," Nathan says. "Frankly, it's a little crazy."