

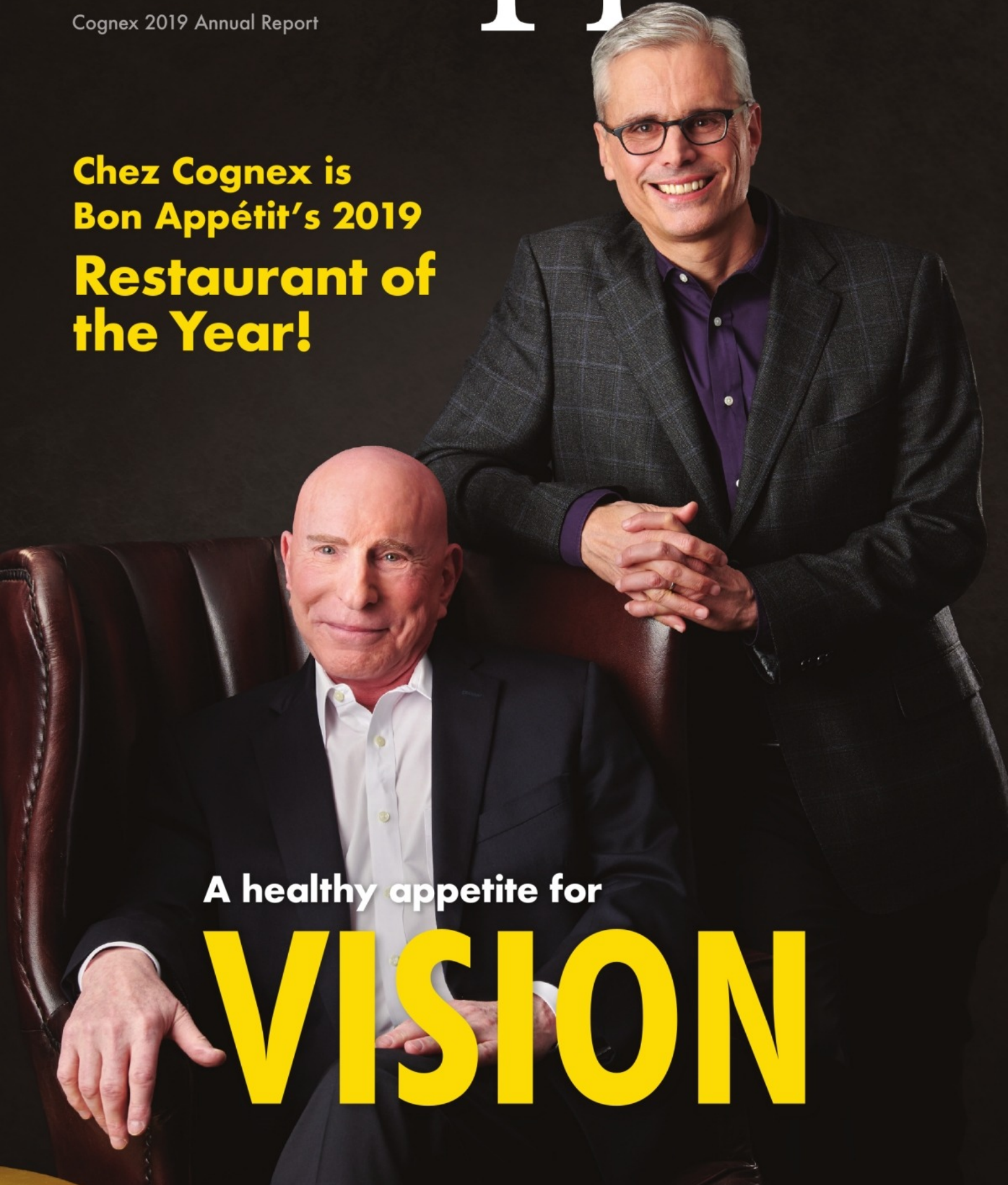
# bon appétit

Cognex 2019 Annual Report

**Chez Cognex is  
Bon Appétit's 2019  
Restaurant of  
the Year!**

A healthy appetite for

**VISION**



# Bon Appétit Reveals 2019 Restaurant of the Year

The votes are in for Bon Appétit's Restaurant of the Year, an annual recognition honoring innovation and excellence in the food industry. Each finalist was judged on the freshness of their ideas, the quality of their ingredients, and their ability to ensure that guests receive their meals the way they ordered them every time—flawlessly.

After many hours analyzing the world's finest establishments, one clearly stood head and shoulders above the rest. Please join us in celebrating this year's winner, Chez Cognex!

Specializing in highly technical cuisine, Chez Cognex has been serving industry-leading dishes to delighted customers for nearly 40 years. In the pages that follow, Chez Cognex founder, Dr. Bob Shillman, and executive chef, Rob Willett, will finally divulge their carefully guarded recipe for worldwide success.

*(Hint: It all starts with one key ingredient—machine vision!)*

So delicately place your napkin on your lap, pull your chair in, and enjoy a sumptuous serving of Cognex humor!

*Disclosure: For many years, Cognex's annual reports have parodied famous publications, pop culture icons, and current events to inject creativity and humor into an otherwise boring annual report process. So, if you haven't already guessed it, this publication is not an issue of Bon Appétit. And, although Cognex machine vision systems, sensors, and barcode readers are key ingredients for success in factory automation, they are not edible.*

## Delightful New Dishes

Bon Appétit is impressed with these scrumptious dishes introduced by Chez Cognex in 2019



### 1: DATAMAN® 370 WITH HERBS

High-speed fixed-mount barcode reader able to solve a broad range of applications at 2x the performance of competitive devices in the same class. DataMan® 370 provides the fastest and most reliable auto-tune capability on the market. The result is application setup in just seconds.



### 2: 3D-A1000 SAVORY STEW

Designed specifically for logistics and package-handling applications. Delivers fast and accurate results with impressive quality inspection and dimensioning capabilities in a small package at an affordable price.



### 3: PAN-ROASTED 3D-A5000

Acquires detailed area scan 3D images in a fraction of the time of current methods. With a variety of fields of view and measurement ranges, this 3D area scan camera delivers speed and accuracy for applications in the automotive, consumer goods, and logistics industries. Features patent-pending 3D LightBurst™ technology.



### 4: SPICY DSMAX™ SALSA

3D laser displacement system that significantly increases throughput compared to traditional laser displacement sensors. Uses telecentric optics and unique high-speed laser scanning technology to acquire fullframe, high-quality images.



### 5: PATMAX 3D™ PASTA MEDLEY

Transfers Cognex's unmatched PatMax® 2D pattern-matching capabilities into the 3D vision market. A fast and accurate solution for locating and identifying objects that are tilted, stacked, or not properly seated with a fixture.

# Chez Cognex: The Man Behind the Brand



Doctor Bob, Award-Winning Entrepreneur & Restaurateur, “Chez” Cognex

## Speak softly and carry a big spoon!

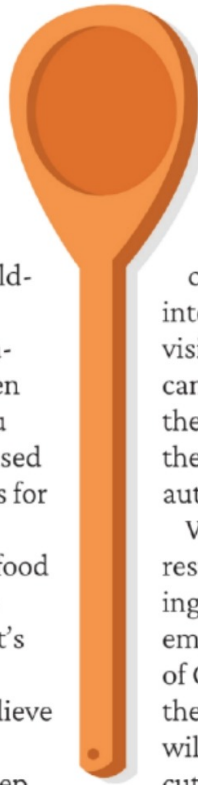
▶ **WHEN I FIRST OPENED CHEZ COGNEX**, it was, to say the least, a small operation. It was the equivalent of a roadside diner with a few vinyl-covered barstools, an ancient grill, and some dinged-up frying pans. But thanks to hard work and a strong appetite to improve, we expanded our operation to include dozens of locations worldwide with a staff of over 2,000!

Through it all, the one ingredient that has separated Chez Cognex from the competition has been industry-leading machine vision algorithms. You can taste it in all our dishes—and they have pleased the taste buds of our most demanding customers for nearly 40 years.

But to everything there is a season. And in the food industry, palates—and ingredients—are always shifting to reflect what’s fresh and trending. That’s why Chez Cognex is reinventing its menu.

In 2019, we increased our focus on areas we believe will deliver higher growth in the future. This includes logistics, 3D vision, life sciences—and, deep frying...whoops, I mean deep learning.

I’ll admit that I was skeptical of deep learning at first. After all, industry experts had been discussing its promise for decades, but had nothing to show for it. Because of the incredible advances in the processing speed of new computer chips, this technology pie is now fully baked and ready to serve hot!



With that in mind, we made two key acquisitions to expand our deep learning capabilities—ViDi Systems S.A. in 2017 and Sualab Co., Ltd. in 2019. Ah, the possibilities now are simply delicious and provide for a broader menu of delectable choices for our customers. For example, when incorporated into our existing state-of-the-art, rule-based vision at just the right temperature, deep learning can greatly expand the role of machine vision in the automated detection of cosmetic defects on the surfaces of consumer products ranging from auto bodies to cell phone cases and displays.

While dining trends are fickle, what makes a restaurant great remains constant. Quality ingredients and knowledgeable, hard-working employees who are dedicated to the Cognex value of Customer First. By maintaining our focus on these important fundamentals, Chez Cognex will always be a five-star operation that is a cut above the rest.

Robert J. Shillman (“Doctor Bob”)  
Chairman and Chief Culture Officer

A man with short, light-colored hair and glasses, wearing a black chef's coat with white piping, stands in a professional kitchen. He is smiling slightly and looking towards the camera. The kitchen background features stainless steel countertops, a range hood, and several copper pots hanging from a rack. The lighting is warm and focused on the man.

## Inside the Cognex Kitchen

.....  
*CEO and Executive Chef Rob Willett Deconstructs 2019*  
.....

While our 2019 financial results were not what we had hoped for, there is still a lot to whet the appetite at Cognex. As a market leader in machine vision technology, we continue to out-innovate the competition and develop new products that exceed the expectations of our customers' evolving tastes. We are confident in our focus on industrial machine vision for many reasons.

Driven by rising factory wages, desire for faster throughput, ever-increasing emphasis on product quality, and growing requirements for traceability, we believe that the long-term prospects for our technology have never been sweeter.

On a sourer note, our two largest markets—automotive and consumer electronics—contracted simultaneously for the first time in many years. Each is on the brink of significant transformation and technological change, and customers have scaled back their calorie intakes as they anticipate the next waves of innovation. This contraction was further impacted by deteriorating general manufacturing confidence, particularly in business related to China. After a nine-year feast of consecutive growth, Cognex's revenue declined by 10% year-over-year. As our nearly 40-year history demonstrates, Cognex's growth is not linear. That variability does not distract us from our long-term goals.

I'll share more later about evolving customer appetites and promising new culinary techniques being applied in the automotive and consumer electronics industries. But first, I want to report on some of our newer markets, such as logistics, deep learning, 3D vision, and life sciences, where the menus are especially tantalizing.

**The Bread is Rising:  
Capitalizing on Rapid Growth in Logistics**

Opportunity in the logistics market is being driven by the explosion in e-commerce, which has disrupted the retail industry. Also known as "the Amazon effect," the ability to deliver rapidly and cost-effectively seems to be defining who wins. Consequently, the world's leading retailers are investing in automation—and often Cognex machine vision—to transform their supply chains, enable faster delivery, and reduce dependency on seasonal labor.

Cognex has the industry's broadest portfolio of industrial vision-based barcode readers to help logistics customers quickly and accurately decode even the most damaged, distorted, blurred, or low-contrast barcodes. Our superior read rate performance helps e-commerce distribution centers ship more packages with less labor. When comparing our performance to the competition, customers frequently report a 50% reduction in the number of packages that require manual handling. Logistics customers are also starting to move beyond barcode reading into vision applications, such as the in-line dimensioning and inspection of packages.

Logistics represents our largest new market opportunity today. Like bread rising in the oven, our revenue from logistics has grown at rates exceeding 50% in recent years. While growth in



**THE NOSE KNOWS.** Doctor Bob and Rob Willett take in the Market Share Merlot, a full-bodied red known for its perfumed aroma of freshly minted bills.

**LET THE GOOD  
TIMES FLOW**

The Machine Vision Cabernet is a perfect complement for larger projects. It serves up to eight cameras and features oaky hints of artificial intelligence.





## **HIP NEW KOREAN RESTAURANT**

**NAME:** Sualab Bistro

**LOCATION:** Seoul, South Korea

**SPECIALTIES:** Sundube-jigae (soft tofu stew) and deep learning-based vision software

**WHY PURCHASED:** For Sualab's world-famous bibimbap (mixed rice) and considerable intellectual property, engineering expertise, and market coverage.

this market can be volatile over shorter periods—our revenue grew by approximately 15% in 2019—we believe we have the opportunity to continue to grow our logistics revenue over the long term. We are diversifying our customer base by adding more traditional retailers and solving new applications in underpenetrated regions and market segments. The future looks tasty indeed!

### **New Flavor Combinations: Enriching our Future with Deep Learning**

Our second major growth driver is deep learning, an emerging technology that is expanding the boundaries of what machine vision can do. Using neural networks that mimic the way humans process images, deep learning makes it possible to distinguish anomalies, such as subtle surface defects on manufactured goods, while tolerating natural variations. For the first time, because of the rapid increase in processing speed provided by new computer chips, this technology is reaching a level of performance where it can replace and improve upon hundreds of thousands of visual inspectors who work in manufacturing. Like the emergence of Asian fusion cuisine, we think this is one of the most exciting developments in machine vision in the last 20 years.

Cognex is a leader in deep learning-based industrial machine vision. We estimate that the served market is currently small in terms of annual revenue, but is increasing rapidly. While deep learning represents less than five percent of our business, revenue from this technology nearly doubled in 2019. Given our robust product pipeline for this exciting AI technology, we believe we can continue to grow our deep learning revenue for years to come.

### **Make Mine Extra Spicy: Significant Potential in 3D Vision**

The market for 3D vision systems continues to be extra spicy. It offers Cognex an exciting growth opportunity as we bring to market new technologies developed or acquired in recent years. With high potential in many industries, 3D vision is great for solving in-line applications where a height or volume measurement is required, including measurement of critical features such as object flatness, surface angles, or part volumes.

We are particularly focused on opportunities in the area of snapshot sensing. Cognex expanded its menu in 2019 by launching several high-performance 3D products, including two snapshot-sensing platforms and advanced 3D part-finding algorithms. Each of these products has been well-received by the market, and we are particularly encouraged by the feedback on our high-speed and low-cost 3D-A1000 dimensioning system. This product combines 2D and 3D technology to capture the volume dimensions of fast-moving packages in logistics applications.

In our view, 3D vision represents a large served market for Cognex where we are targeting growth well in excess of the long-term market growth rate. Our menu of products and our pipeline will allow us to replace older 3D technologies where limits on package variability, system cost, and ease of setup frustrate customers today.

### **Reservations for 20: Design Wins in Life Sciences Provide Predictable Revenue**

The life sciences market uses machine vision to improve efficiency, prevent counterfeiting, and increase throughput in devices performing

**Sualab** *Bistro*

# Kimchi, Anyone?

## Work Hard, Play Hard Hospitality Buys Korean Restaurant

With the acquisition of Korea-based Sualab in 2019 (and Swiss-based ViDi™ in 2017), Cognex catapulted to the head of the pack for deep learning-based industrial vision software. Simply put, this technology solves repetitive inspection tasks better than humans. Table for one, please!

### NO FLASH IN THE PAN

Even though the chefs at Chez Cognex prefer flashy pans, the advanced capabilities acquired with Sualab are anything but a flash in the pan. Quite the opposite, actually.

Deep learning should make a world of difference for many years to come by expanding the boundaries of what's possible with Cognex's industry-leading traditional rule-based algorithms.

This acquisition expands Cognex's presence in Asia, which is one of the world's hottest industrial markets for deep learning.

## A first-timer's guide to ridiculously tasty **Life Sciences Bouillabaisse**

The  
**101**

Cognex vision and ID are key ingredients in clinical equipment that performs everything from simple diagnostic tests to sophisticated DNA analysis.

### **Dracula's Cocktail**

Took a blood test at your doctor's office? Chances are it was processed with the help of Cognex vision and ID to ensure that:

- Sample vials are linked to the right patients.
- Test samples are properly filled, labeled, and capped.
- Vials are properly aligned.

### **Steady Diet of Ideas**

Cognex is now impacting more therapeutic areas of healthcare.

- **3D vision** – Integrated into equipment that delivers radiation more accurately to cancer patients.
- **Deep learning-based software** – Used to differentiate between intact and damaged cells in research microscopy (e.g., those that carry a malaria virus).

### **Mix in Some Early Detection**

Automating diagnostic devices using machine vision helps reduce laboratory errors and contributes to faster and more effective detection of disease and infection.

### **Now We're Cooking**

Cognex products can now perform tasks that previously required human inspectors. In blood analyzers, Cognex deep learning-based software:

1. Examines centrifuged samples to ensure the blood has been properly separated before testing.
2. Evaluates features such as turbidity and plasma color to determine if the sample meets necessary quality standards.
3. Separates good samples from bad samples.

### **Picking Up the Tab**

Clinical diagnostic OEMs rely on Cognex for product intelligence using industry-leading vision technology.



**In the life sciences market, Cognex is expanding what is possible with machine vision.**



everything from simple diagnostic tests to DNA analysis using deep learning. While this market has used some vision and barcode reading technology in the past, we have seen that higher demand for quality control and traceability is increasing customer needs for machine vision.

Adoption in the life sciences market often takes the form of design wins where our technology is specified by OEMs into new devices, such as medical imaging equipment or liquid handling workstations. Although these wins take a long time to convert to larger-volume sales, we expect them to deliver a growing and predictable stream of recurring revenue once the devices finally come to market over the next few years. It's a lot like waiting for fruit to ripen.

Cognex has been investing in the life sciences market for a number of years. We made a lot of progress in 2019, with 20 new design wins, including our first customer in China. A recent win was with Bayer®, which specified Cognex machine vision technology for a new Syringe Identification Module (SIM) that will be rolled out in over 1,000 CAT scan injection pumps over the coming years.

While life sciences is currently a small percentage of our revenue, we expect to grow our share in this market over the long term.

### **The Pot is Simmering:**

#### **Preparing for the Next Upcycle in Consumer Electronics**

2019 was a down year for us in consumer electronics, with customers deferring investments in machine vision, primarily related to smartphone manufacturing. Unit volumes of smartphones seem to be slowing due to a combination of market saturation, increasing durability, and longer replacement cycles.

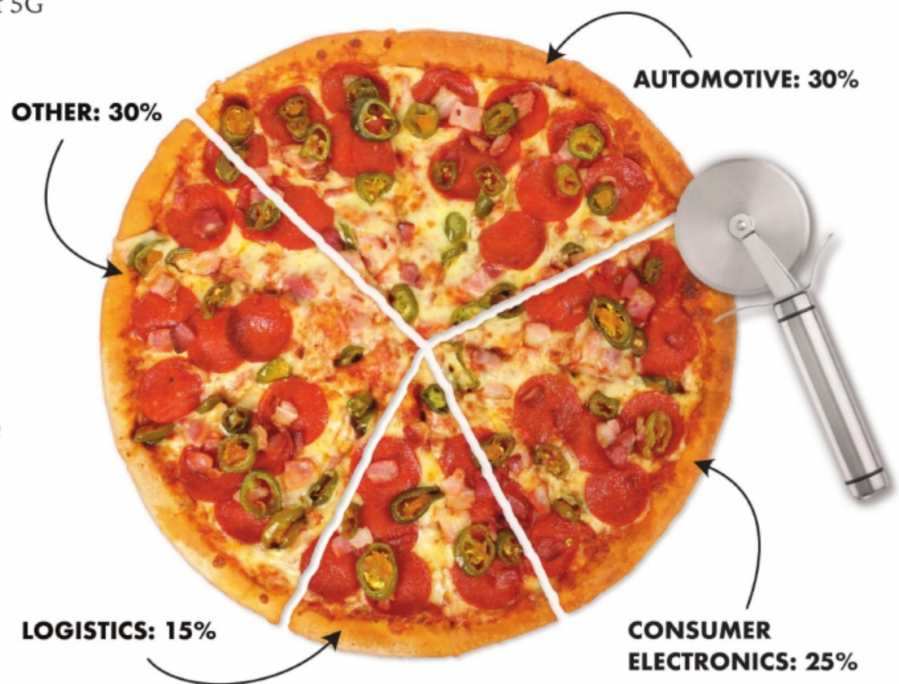
We are confident that companies will continue to innovate, and there are several emerging technologies expected to boil over soon. Foldable phone screens, wireless charging, augmented and virtual reality, and the proliferation of 5G are just a few of the innovations that will require more complex manufacturing processes with sophisticated machine vision.

Despite exciting aromas on the horizon, revenue from consumer electronics declined in 2019 by about 30% year-over-year. Even so, we believe that consumer electronics remains a growth opportunity for Cognex over the long term, and as we have seen in the past, this business can recover very quickly. When it does, we'll be ready to go with our aprons on.



**EN GARDE!** Chef Willett chooses his weapons wisely in the battle against defects.

**2019 TOTAL REVENUE BY INDUSTRY**  
(PERCENTAGE ROUNDED TO THE NEAREST 5%)





### **CROWD-PLEASING SIDE DISH**

Hosting a party? Things can get stressful in a hurry when you're dealing with **too many cooks in the kitchen**. Connecting Port Sauté is a great dish for a hungry crowd—and it doesn't require a large group of people to prepare. Avoid this common mistake:

#### **WRONG WAY TO MAKE CONNECTING PORT SAUTÉ**

1. An inspector sits at a computer monitor, fingers poised over two buttons: green for good, red for bad.
2. Four different views of the cell phone connector port appear on the screen simultaneously.
3. The inspector has 3 seconds to visually inspect these four images for cosmetic defects.
4. The inspector hits a green button for "pass" or a red button for "fail," and four new images appear on the screen.

#### **COOK LIKE A PRO**

When you've got thousands of mouths to feed, don't rely on teams of human inspectors. For a defect-free dish, use Cognex deep learning software—**it's delicious!**

### **Upside-Down Cake: Automotive Market in State of Transition**

In many respects, there are similar "waiting for the next course" dynamics happening in the automotive market as it confronts major transformation. This market appears to be in a trough between old combustion engines and the ramp up of investment in automation for electronic vehicle (EV) production. However, there is uncertainty over when the transition will happen.

In addition to a slowdown in capital spending, overall automotive sales in China fell for a second straight year in 2019 after years of growth, impacted by policy changes and a broader economic slowdown.

As a result, our revenue from the automotive market declined by approximately 10% year-over-year in 2019. Despite the current conditions, we believe there are several emerging application areas that offer new opportunities for Cognex, including the use of deep learning for EV battery inspection, the assembly and integration of an ever-increasing number of electronics and sensors in new car models to enhance safety and driver experience, and access to digital data from the factory floor to improve operations.

These tasty treats give us confidence that we will see a return to growth in the automotive market again, but not necessarily in the near-term.

### **Sharp as Knives: Ensuring our Technical Edge**

The sophistication of Cognex software and our application experience provide an advantage in our served market. We are a high-intellectual property business with more than 1,000 patents issued and pending. To prepare the award-winning dishes on Chez Cognex's extensive menu, we employ over 500 of the world's top chefs—more than any other machine vision company in our served market. These culinary artists are trained in a range of techniques including software, hardware, mechanical, optics, and illumination.

We are proud of our engineers and their innovation. From our DataMan® line of industrial barcode readers, to our In-Sight® family of vision systems, Cognex engineers create products that are the cream of the crop. In fact, at our global engineering conference last summer, the vice president of one of the world's largest chip suppliers spoke about how Cognex engineers are even better at programming their chips than they are themselves.

This expertise gives us a competitive edge because it allows us to provide vision tools that run faster, generate less heat, and run on lower-cost hardware platforms, making Cognex products more efficient and easier to integrate. This is a critical advantage. There are many engineers around the world who can come up with acceptable machine vision algorithms, but coding those algorithms to run very quickly on low-cost chips is a complex problem that can only be solved by exceptional engineers whom Cognex has successfully recruited and retained since its founding in 1981.

We are committed to maintaining our position as a technology leader in machine vision. This requires a significant investment in research,

## Too Many Cooks in the Kitchen

Unfortunately for shoppers, many manufacturers in consumer electronics still perform inspections with costly and error-prone people.

One manufacturer, for example, uses human inspectors to make sure charging ports on smartphones are defect free, so charging cables can connect properly. As many as 500 workers per day are dedicated to this single task.

These human inspectors have an accuracy rate of only around 80%—which means that even after inspection, 20% of the phones may contain a defective connector port. Finding random surface errors like dirt, cracks, and soldering issues that can cause failures has traditionally been beyond the capability of machine vision.

But Cognex deep learning software has changed that. Along with achieving inspection accuracy approaching 100%, the savings in personnel costs means Cognex technology pays for itself in just months.

*For more details, see sidebar on page 8.*

# Beef Up Your E-Commerce

Just add a dash of machine vision

Traditional retailers are under increasing pressure to deliver low prices, online shopping, and same-day delivery options for consumers. They are looking to bring their stores and e-commerce businesses together in a digitally connected way that seamlessly integrates online and offline commerce.

Fortunately, Cognex's machine vision systems and vision-based barcode readers are helping to transform distribution center operations, resulting in a convenient shopping experience.



## Spicy BOPIS

Many big box retailers have begun offering a service known as "buy online, pick up in store," otherwise known as BOPIS or "curbside pickup." The basic premise of BOPIS is that customers can browse items and purchase online, and then pick them up from a brick-and-mortar store.

With BOPIS, shoppers no longer must search for their items in-store or stand in line for checkout. Not surprisingly, this trend is gaining momentum.

## Chez Cognex To Go

In addition to perfecting the soufflé, Chez Cognex also excels at barcode reading on products whipping by on high-speed conveyors at distribution centers. Cognex chefs have turned out a complex dish containing over 20 barcode readers configured in a tunnel that envelops the conveyor, and that can read labels on all six sides—even located on the side of the box lying on the conveyor. How is that possible? It's the chef's secret recipe.

## Retailer Operation

- Dozens of merchandise distribution centers.
- Thousands of brick-and-mortar locations across the United States that serve as pick-up locations for online orders.

## Customer Requirements

- Barcode-reading speed and accuracy.
- Real-time information on every product leaving its distribution centers.
- All items on the right trucks and routed to the right stores at the right time.

## WHITE-HOT BLACK FRIDAY

Consumer holiday shopping:<sup>[1]</sup>

- BOPIS grew by 35% year-on-year in 2019.
- Most BOPIS shoppers make additional purchases while picking up their orders.

## Sharing the Recipe

Chez Cognex shared its culinary skills with one of America's largest retailers so it could optimize its BOPIS initiative.

## Delicious Results

- The Cognex system performed at least one percentage point faster than competitive solutions.
- Because the retailer ships over one million packages per day, a one percentage-point improvement on read rates provided by Cognex can mean that 10,000 more packages get to their destination on time.

[1] CMO by Adobe, "2019 Online Holiday Shopping Growth Driven Primarily by Smartphones," January 2020.

development, and engineering (RD&E). In 2019, we invested roughly 16% of annual revenue, or \$119 million, in RD&E. We believe this level of investment differentiates us from our competition in terms of RD&E for machine vision.

**Cognoids: The Crème de la Crème**

As CEO, ensuring that Cognex attracts and retains the best Cognoids (as we call ourselves) is one of my most important areas of focus. Since our founding in 1981, creating a distinctive, entrepreneurial, and innovative culture has been central to our mission. For us, it is about much more than posting company values on the cafeteria wall. From our Ministers of Culture Program, which ensures global offices celebrate our culture, to our ReCOGnition Program that rewards employees who best embody our values, we take culture very seriously.

As a result, we can attract and retain top technical talent, creating a virtuous circle of success: Our unique “Work Hard, Play Hard, Move Fast” culture appeals to world-class engineers, who join Cognex to develop great technology and superior products, which then attract the best salespeople, who then fuel our continued revenue growth and investment in culture.

**Summary**

Despite a difficult 2019, we believe in our ability to deliver high-quality revenue growth over the long term, both through our core 2D and ID businesses, as well as in the high-potential areas of logistics, deep learning, 3D vision, and life sciences.

Our innovation engine is piping hot. We continue to maintain a crème de la crème culture, and, because of our continued investments in engineering and sales, we are better positioned than ever to capitalize on new trends in our target markets.

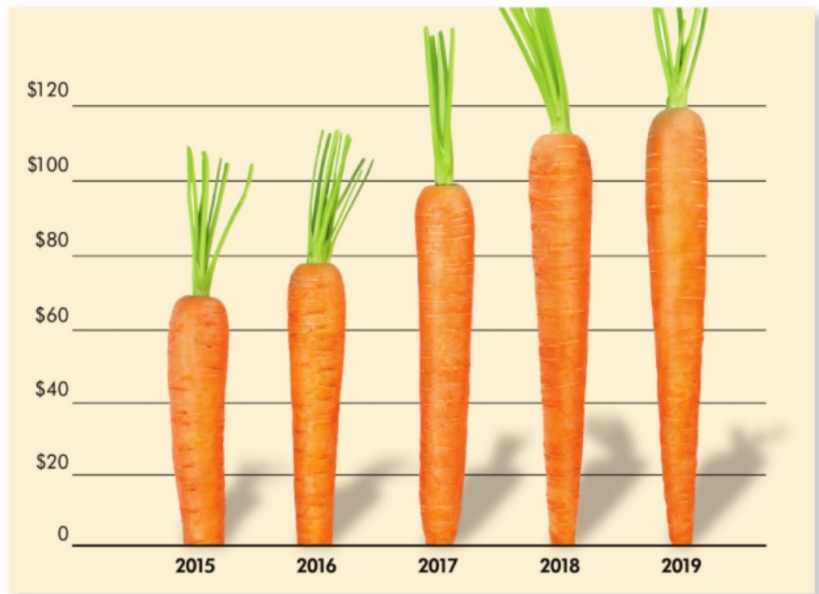
There are literally hundreds of millions of people doing things with their eyes and brains in manufacturing that they are not doing very well or consistently. In a world where lights-out manufacturing—plants without human operators—is increasingly the goal, machine vision like ours is perhaps the single most important technology required to make the factory of the future a reality.

In closing, my management team and I will continue to focus on the fundamentals that have led to our success as one of the largest and most respected machine vision providers in the automation world. We look forward to updating you on our vision and progress in the years ahead. Until then, we’ll save you a cozy table by the window.

Robert J. Willett  
President and Chief Executive Officer

**RD&E INVESTMENT**  
(DOLLARS IN MILLIONS)

Cognex sustains its technology leadership by consistently investing in RD&E.





### LITHIUM ION BATTERIES OVER WILD RICE

This complex recipe takes a long time to prepare, but it's well worth the effort! *Hint: Look for Cognex brand machine vision in your local supermarket.*

#### INGREDIENTS (4-6 SERVINGS)

**6 TBSP.** electric vehicle demand

**1** large investment in manufacturing, finely chopped

**4** garlic cloves

**2 TBSP.** quality assurance

**1 LB.** package of Cognex deep learning software

**½ CUP** traditional Cognex rule-based vision

**1 BOX** organic wild rice

#### ASSEMBLY

Heat market for electric vehicles until red hot. Slowly stir in a large investment in automation and Cognex machine vision. Now add in robust quality assurance. Do not chill; stay vigilant. If not made properly, the battery can cause a fire.

#### TO SERVE

Ladle battery over wild rice and serve with toppings of your choice.



## Look Who's Talking!

Smart factories (and kitchens) require connected systems

"Two prime ribs, medium rare, one no jus!" "Table 18 on the window!" When a restaurant is busy, communication is key. Every person in the house—from the sous chef to the wait staff—must rapidly share information for the operation to be successful.

The same dynamic is in play on manufacturing floors. But, instead of bartenders barking orders to busboys, it is about connecting systems to improve production, quality, and cost effectiveness—and Cognex can help.

#### OVER 2 BILLION SERVED

OK, let's talk turkey: Cognex vision systems are used in the manufacture of over two billion products each day. A large consumer is the automotive industry, where carmakers and their Tier 1 suppliers use digital data, much of it provided by Cognex vision systems, to improve operations.

But that might be just the appetizer. Cognex expects to benefit from the increasing adoption of Industry 4.0,

a concept built around smart factories. The company is focused on software to enable its vision systems to communicate real-time data that is becoming increasingly valuable. In fact, the Cognex In-Sight® family of vision systems is already Industry-4.0 ready.

In a nutshell, this means In-Sight® supports the OPC Unified Architecture (OPC UA™) data-exchange protocol that enables streamlined communication and information sharing with other industrial automation assets in smart factories.

Sure, it is more complicated than making sure the right person in the Johnson party gets the Baked Alaska, but the basic premise holds true. Is information being shared from system to system? Do you have effective communication throughout your operation? The answers better be "yes," as customer satisfaction—and your reputation—depend on it.

# This Dish Is Eclectic—and Electric!

Increasing demand for electric vehicles is expected to spur a wave of manufacturing investment in the automotive industry, and Cognex vision and ID have a big role to play in this transition.

One area underway is the manufacture of electric vehicle (EV) batteries. Cognex products are at work in many critical stages of lithium ion battery production, a complex process requiring up to 30 separate steps. Robust quality assurance is essential—if the batteries aren't manufactured properly, they can fail, or worse, cause a fire.

## EV BATTERY (LEAKS) NOT INCLUDED

One critical inspection required is checking the battery for chemical leaks, which is highly challenging for rule-based machine vision. The reason is that liquid leaks vary in size, location, and appearance, and the texture and reflective qualities of the battery's metal surface add to the complexity. Manufacturers typically employ a human visual inspector to manually check the cap and the sealing welds of each battery.

Cognex deep learning software enables manufacturers to automate this previously "unsolvable" inspection task. First, Cognex inspects the battery's sealing pin weld to ensure that it's properly placed, uniform, and meets acceptable standards. Next, the system performs a top cap inspection to check for evidence of chemical leakage. And, unlike human inspectors, Cognex products operate 24x7 and maintain the same level of quality on every line, every shift, and in every factory.







# Sweet Taste of Success

## Five Things You Must Know About Cognex Culture

### **1. BAKED-IN PHILOSOPHY**

Cognex's unique culture starts with a simple motto: "Work Hard, Play Hard, Move Fast." This forms the bottom layer of your sweet treat. Everything else depends on it.

### **2. A GENEROUS AMOUNT OF FUN**

Cognex never skimps on fun. From game rooms to Frisbee fields to offbeat events, fun is a key ingredient for employee satisfaction. Heck, employees even come to work on Halloween decked out in full costume.

### **3. HOSTS WITH THE MOST**

Cognex appoints a Minister of Culture (MOC) at each of its largest offices worldwide. In addition to their day jobs, they host holiday parties and social events, as well as oversee recognition programs.

### **4. JUST DESSERTS**

Cognex believes in helping the communities where it has offices through its Corporate Donations Program. Each year, the company supports a variety of worthy causes in the towns and cities where its major regional offices are located. This program is lick-your-plate good!

### **5. FINISH WITH FLAIR**

Once it comes out of the oven, a successful company culture allows Cognex to attract and retain smart, highly educated, and motivated employees who want to accomplish something special every day, every week, every quarter, and every year.



## COGNEX

### MINISTERS of CULTURE

**SIMPLY IRRESISTIBLE:** Doctor Bob, Sheila DiPalma, and Cognex's Ministers of Culture—Cognoids carefully selected from offices around the world—roll up their sleeves during Cognex Culture Camp at the company headquarters in Natick, Massachusetts.

As Senior Vice President of Employee Services and Pastry Chef, Sheila makes sure Cognex's work culture is tempting enough to lure the finest job candidates.

## Shareholder Information

### COGNEX BOARD OF DIRECTORS:

**Robert J. Shillman**

*Chairman & Chief Culture Officer*  
Cognex Corporation

**Patrick A. Alias**

*Senior Vice President*  
Cognex Corporation

**Eugene Banucci**

*Founder, Former Chairman  
& Chief Executive Officer*  
ATMI, Inc.

**Theodor Krantz**

*Former Chief Financial Officer*  
Airmar Technology Corporation

**Dianne M. Parrotte**

*Independent Consultant*

**Jerry A. Schneider**

*Financial Expert, Business  
Consultant & Philanthropist*

**Anthony Sun**

*Former Managing General Partner*  
Venrock Associates

**Robert J. Willett**

*President & Chief Executive Officer*  
Cognex Corporation

### COGNEX EXECUTIVE OFFICERS:

**Robert J. Shillman**

*Chairman & Chief Culture Officer*

**Robert J. Willett**

*President & Chief Executive Officer*

**Sheila DiPalma**

*Senior Vice President,  
Employee Services*

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A copy of the Annual Report on Form 10-K filed with the Securities and Exchange Commission is available free of charge upon written request to Cognex Investor Relations at the address above, or via online request at [www.cognex.com/investor](http://www.cognex.com/investor).

### FORWARD-LOOKING STATEMENTS

This report, including the Chairman's letter and the CEO's letter, contains "forward-looking statements" within the meaning of the Securities Act of 1933 and the Securities Exchange Act of 1934. For further information, please see the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Form 10-K. A discussion regarding risks associated with forward-looking statements is included under the heading "Forward-Looking Statements." All information in this report is subject to change without notice.

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D E L I V E R Y S E R V I C E

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Can't make it to Chez Cognex in person? No problem! Just punch in your food order and let Drone2Door do the rest. Using Cognex's advanced vision algorithms, we'll make sure your

meal gets delivered to your front door in no time. And if you leave the door open, we'll even plate the food for you—right on your kitchen table. *Now that's customer service!*

**Official meal delivery service of Chez Cognex**

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These vintages are  
“off the chart”!

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Shillman Estates is  
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