

Delivering the seeds of success— thanks to IoT

- **Business needs** - Connectivity to power robots for agricultural quality inspection and sorting, often in remote locations
- **Networking solution** - AT&T Global SIM cards help deliver the bandwidth that food and agri-producers need to determine the quality and purity of seeds, beans, and grains, to share data with colleagues, and to sort large lots.
- **Business value** - Global connectivity helps QalySense empower its customers, increasing sustainability and preventing food waste.
- **Industry focus** - Agri-food technology
- **Size** - Scale-up

About QalySense

QalySense AG is a Swiss company focused on advanced robotic and cloud solutions for seed processing and quality inspection. Its QSorter® is the world's only technology able to measure the compositional and physical quality of each seed at very high speeds. It can sort 30 to 3,000 seeds per second, depending on type.

The situation

Farms and food production plants are often located in rural areas, where it can be a challenge to access fast and reliable internet services. QalySense and its customers needed a way to connect to the QSorter® technology in the field to transfer data, update software, and debug systems in real time.

Solution

AT&T Global SIM cards support the breakthrough QualySense inspection and sorting devices. With AT&T IoT wireless connectivity, the company can use its artificial intelligence technology to analyze and sort seeds, grains, and kernels to deliver a large amount of quality data to help breeders, food processors, and inspection companies better understand the value of their raw materials.

Improved quality for the world's food chain

More than a decade ago, scientist and entrepreneur Francesco Dell'Endice envisioned a way to reshape the world of food and agricultural technology. With a background in rocket science and space technologies applied to agriculture and a doctoral degree in spectroscopy remote sensing, the QualySense founder and CEO understood that producing high-quality food requires superior ingredients, beginning with the seeds.

Dell'Endice developed a way to use artificial intelligence, robotics, and sensing technology to analyze and sort seeds more quickly and accurately than ever before. He soon joined forces with Olga Peters and Paolo D'Alcini, an entrepreneur who brought deep experience in automation and 25 years of experience managing complex technology projects to create QualySense.

"We started to build prototypes of Francesco's idea together," D'Alcini said. "After 12 years in the business together, the sparkle is still there. The promise that we are bringing to the market is huge, so we are working full speed to achieve it."

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Francesco Dell'Endice
Founder & CEO, QualySense

Dell'Endice said he and his partners share a vision of improving the quality of the food chain and giving customers the ability to enhance the quality of their goods. "QualySense is the only company that has the technology able to screen quality from the inside out of every grain, seed, or bean at very high speeds,"

Dell'Endice said. "People can have a full view from a physical, biological, and performance perspective. This could mean growing better-tasting coffee or enhancing the genetic purity of a seed."

A new standard in quality

The company's QSorter® technology is designed to make the path from seed to consumers' meals more efficient and nature friendly. "We want to make sure that the food we eat is exactly what the product was meant to be, while we limit our impact on the environment," Dell'Endice said.

The QSorter® Explorer is an advanced robot for single kernel analysis and sorting. Powered by advanced mechatronics and artificial intelligence, it is designed to provide rich data that was previously unavailable. The solution quickly captured the world's attention. QualySense won the Venture Kick Award and a sizeable grant to accelerate the development of its technology. The company has continued to receive awards from influential organizations every year since its founding.

The QSorter® Horizon, which QualySense calls “the sorting rock star,” uses high resolution near infrared spectroscopy and 3D imaging. It determines compositional properties, such as protein, oil, sucrose, caffeine, as well as physical parameters, such as color, damage, and size. What's more, it does all this in a single pass with 99% sorting mechanical accuracy.

The QSorter® technology recently helped a coffee importer learn that the beans he purchased were a blend, rather than the pure origin coffee he expected. The knowledge will help him ensure that he gets coffee of the quality he paid for. “This is a new level of information that we supply the industry with,” Dell'Endice said. “We want to establish a new standard in quality.”

Reliable and consistent data

In addition to helping customers realize more value, QualySense technology enables them to ensure purity and other variables. “We help them get much more reliable and consistent data,” Dell-Endice said. For example, a multinational producer of ready-to-eat breakfast meals turned to QualySense to help it certify that its products sold as gluten-free meet government standards.

While Dell'Endice, D'Alcini, and Peters started their company in Switzerland, they initially had a difficult time generating much interest close to home. “In Europe, I was receiving a lot of rejections,” Dell'Endice said. Potential customers told him to come back when he could show them results from other customers.

He found a bolder attitude in the U.S. “They said, ‘I want to be the first, and by the way, I want to give you some money to test your assumptions,’” Dell-Endice said. He found the support he was looking for after a 2011 meeting in Kansas with scientists from the United States Department of Agriculture (USDA). “These guys were actually solving industry problems for people who come to them,” Dell'Endice said. “So I came back with a \$1.5 million collaboration agreement with the USDA, which has really helped us develop our business in the States.”

“We connected directly to AT&T Business, and it was super-easy. We found the right vendor when it comes to competence, friendliness, and availability to help. We are now able to offer complete solutions to our customers.”

Paolo D'Alcini

Co-Founder, Chief Operating Officer & Head of Production, QualySense

Internet of Things expertise

As the business took off, it became clear that delivering the necessary connectivity to the company's QSorter® technology was problematic. D'Alcini said location often created problems. "The main challenge was that many of our customers are farmers or research centers. They're not downtown; most of the time they're in the countryside, where there can be poor connections."

QualySense needed connectivity to provide remote support, push software updates, and troubleshoot any customer difficulties. D'Alcini investigated local suppliers but found few that could accommodate the company's growing global clientele. "So we went directly to AT&T Business," he said.

Like many tech startup entrepreneurs, the QualySense founders pride themselves on being technology-savvy. "We're geeks," D'Alcini said. "We follow technology. We knew of the expertise AT&T Business has in the Internet of Things. So, we connected directly to AT&T Business, and it was super-easy. We found the right vendor when it comes to competence, friendliness, and availability to help. We are now able to offer complete solutions to our customers."

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It's now a simple matter for QualySense to connect its devices in the field. "We can open a huge variety of products that were not possible for us to offer before," D'Alcini said. "And we're saving money. We are also collecting data that we didn't have before, including the ability to monitor the performance of our devices through the AT&T IoT connection."

Answers and reliability

AT&T Business has helped the company establish a presence in the United States and QualySense looks forward to expanding worldwide. It has sales agents in North America, Europe, the Middle East, Africa, Asia, and Australia. Dell'Endice said the company counts on AT&T Business as it continues to grow.

"It's very important to have a prepared vendor, especially when you encounter strange, one-of-a-kind problems that require us to investigate and find a solution," Dell'Endice said. "With AT&T Business we found the answers. AT&T Business is a reliable vendor that is always ready with an answer and an action plan to implement what we need, maybe from a different perspective."

For example, AT&T IoT remote connectivity enables QualySense to debug systems in near-real time. "The reliability of the AT&T Business connection is very important because through that connection, we can access the control system and our software engineers can transfer data and apply patches," Dell'Endice said.

This helps QualySense support its customers wherever they're located. "We also have built a cloud solution that extracts data and shares it instantaneously," Dell'Endice said. "This enables customers with offices all over the world to receive quality reports immediately so they can decide whether a product is good for any particular location."

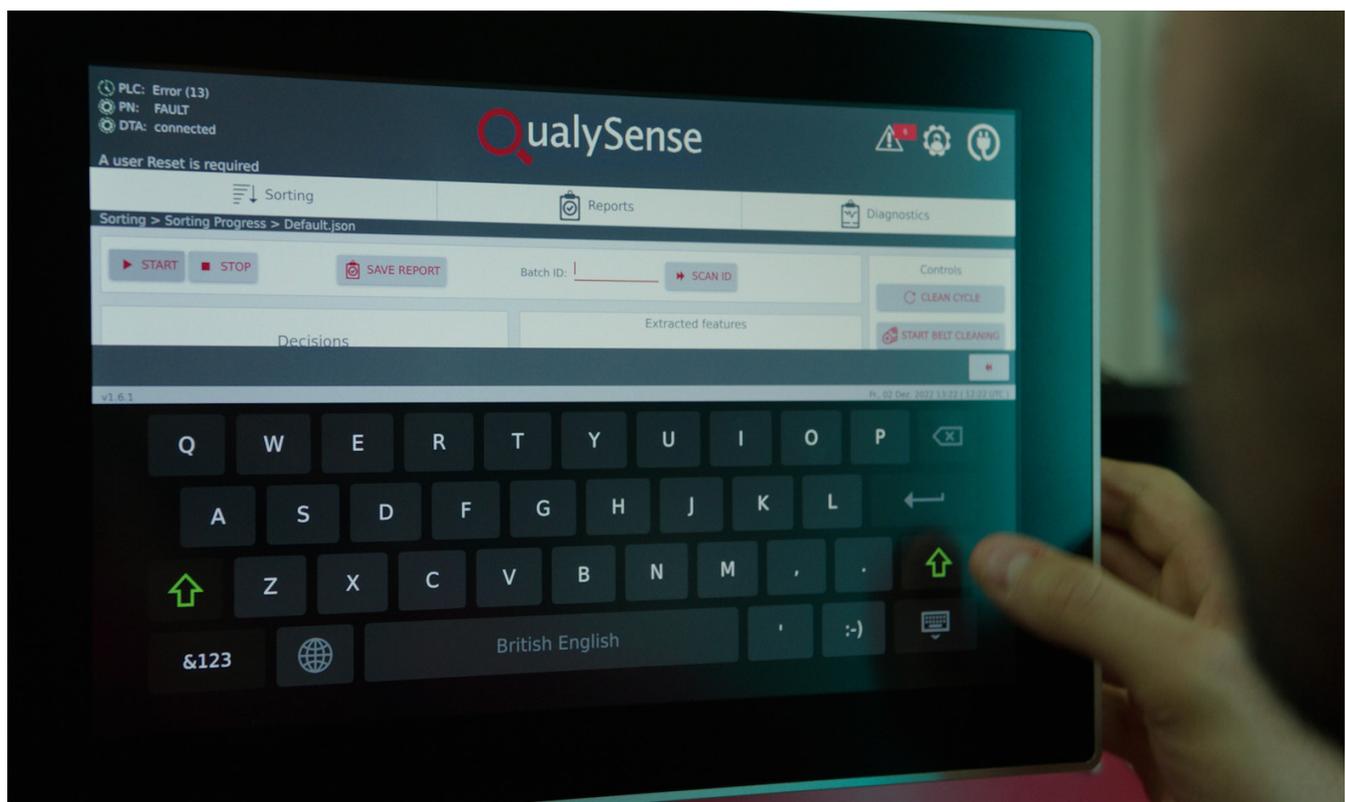
Serving customers in real time

Customer service is extremely important to QualySense, but Dell'Endice has found it lacking in some vendors he's worked with. "Many companies underestimate the power of service, and they tend not to pay so much attention to it," he said. "The attitude that we show to customers is what keeps us in business today, on top of our unique selling proposition and the value that we bring with our technology. You want to have someone who helps you solve problems."

This is why the relationship with AT&T Business is valuable to QualySense. "You want to work with someone that helps you solve problems," Dell'Endice said. "So the open channel with the support team at AT&T Business is very, very important. They are reliable, which is what we're looking for."

AT&T Business is also responsive to QualySense. "I never had to ask twice," Dell'Endice said. "We had questions relating to the contract and connecting our infrastructure to the AT&T IoT portal. AT&T Business answered our questions and supported our team. Everything was super smooth."

D'Alcini believes the AT&T Global SIMs have enabled QualySense to go beyond what it could have accomplished without the solution. "We saw a reduction in the number of service tickets, simply because we are able to reach more customers in real time," D'Alcini said. "We were able to turn on the connection remotely, which was great. And from here on, I only see things improving. As Francesco said, once you know the possibilities, it's our job to invent the business around them and find ways to take advantage of the benefits AT&T Business is offering."



A symbol of quality

The QualySense founders look forward to connecting cloud data from customers and sharing feedback, which will require the ability to move huge amounts of data quickly. “We are still in a preliminary phase of the discussion, but the main advantage of AT&T Business, besides the infrastructure, is the global coverage,” Dell’Endice said. “This will let us have the same service almost anywhere in the world.”

He expects the global presence and infrastructure of AT&T Business to support the company’s goal of becoming the new world standard for inspections. QualySense has launched a new logo that will convey the power of its abilities. “It’s called ‘Smart QSorter Inspection Insights,’ or SQI squared,” he said. “We hope people will come to recognize SQI2 as a symbol of high quality.”



Additionally, the company anticipates helping customers eliminate waste and optimize profits. It recently helped an American company with 200,000 pounds of corn which was contaminated by genetically modified organisms, making the produce unsuitable for sale. QualySense technology was able to identify the few contaminated kernels. “We gave that company the equivalent of \$400,000 of value, so they could earn money from something that would have been garbage. The farmers would have worked for an entire season for nothing,” he said.

QualySense will support the data required by consumers who are becoming more attentive to sustainability and quality. “Especially in the Western world, we see so many trends, such as high in fiber, high in protein and other content, and we believe that this needs to be supported by a reliable quality inspection system,” Dell’Endice said.