Wild Ducks Episode 6: Business Intelligence Podcast  
Preserving an Italian Culinary Treasure with Data Analytics

Bernhard: We’ve got something a bit different for you today. We’re on a dairy farm called Caseificio Scalabrini in Emilia Romagna, a region in north-central Italy. This land is the birthplace of Ferrari, Pavarotti and the king of cheeses, Parmigiano Reggiano.

Why the king? Because parmesan, as it’s also known, is one of Italy’s oldest culinary exports. It’s also a 2.6 billion dollar global industry. We’ve been watching Luigi Fino make parmesan all morning with his wife and assistant.

In these parts, they call Luigi a cheese master. Luigi only speaks Italian, but has nevertheless gamely volunteered to give us an intro. OK, Luigi. You’re up!

Benvenuti ascoltatori di Wild Ducks! Wild Ducks?

Jeff: Perfetto, Luigi! Welcome to Wild Ducks, a podcast brought to you by IBM. We bring you stories of ambitious people using the latest scientific and technological tools to tackle age-old problems and revolutionize business. Today, we’ve got the story of a flock of Wild Ducks who together are using advanced data analytics and collaborative software to radically change a business that’s older than Italy and even older than the Italian language. Give us your ears for the next 10 minutes or so, and I guarantee you’ll never think of cheese the same way again. I’m Jeffrey O’Brien.

Bernhard: And I’m Bernhard Warner.

Monks began making it a thousand years ago. Popes and princes gifted the hard, savory cheese to the royal courts of medieval Europe.

You might prefer yours grated over spaghetti bolognese or on a Caesar salad. Me, I love a good hunk of parmesan with a glass of sangiovese or...

Jeff: Alright, alright. Let’s skip to the main course. It may seem strange that we’re talking about a thousand-year-old cheesemaking process in a tech podcast. But this is a really interesting old-meets-new tale. Luigi and more than
300 other cheese masters are on the cutting edge of using data to protect the Parmigiano Reggiano brand and to ensure that every time you buy their product you’re getting the good stuff – a cheese that undergoes a strict regimen of production, aging and quality control.

Bernhard: There are no shortcuts in the making of parmesan. By law, each wheel must be aged at least a year. Usually, cheesemakers age it longer, for at least 24 months to achieve its distinctly sharp flavor and rich texture. After 12 months, an inspector taps the wheels with a hammer, listening for dead spots and paying strict attention to the hammer’s vibrations. If everything’s not absolutely perfect ...

Jeff: It gets grated and mixed with other cheeses and sold for dimes on the dollar. Or just discarded. Which sounds cruel. But it’s the only way to justify the price premium that the king of cheeses enjoys. A wheel of parmesan goes for about 1,000 euros. That translates to about $13 a pound at retail.

Bernhard: Luigi is the descendant of a cheese making process that has gone largely unchanged for centuries. That process starts with a simple recipe. Listen closely to this clip. It’s me talking with Simone Ficarelli of the Consorzio del Parmigiano-Reggiano. He heads up external marketing for the consortium that promotes and protects the Parmigiano-Reggiano brand.

Bernhard: How much has it changed in a thousand years? This is a product that’s been produced in this valley for a millennium.

Simone: Yes. Nothing has pretty much changed because we wanted to be faithful to the old monk’s recipe and it’s still as it was.

Bernhard: It’s milk, the calf rennet and salt. Nothing else?

Simone: Yes. That’s all. And love and passion maybe are two other ingredients.
Jeff: Pretty simple stuff. Rennet, by the way, is a natural enzyme found in a calf’s stomach. So parmesan has no additives or preservatives. But of course not any old milk, rennet or salt will do. For a cheese to bear the name Parmigiano Reggiano it must be made in this northern part of Emilia Romagna and come from local cows on a strict diet. We saw first-hand that they eat pristine grass. And only pristine grass. There are no chemicals in their food and nothing in the milk or cheese to speed the aging process. This is pretty unusual in cheese making. But the way these cheese masters see it – and EU authorities, too -- if any of these measures are not followed, you’re eating an inferior knock-off.

Bernhard: Cheesemaking is engrained in Emilia Romagna the way that winemaking is in Bordeaux. Families and communities here build their lives around the product and pass the skills down through the generations. But this is really the first generation that’s scaling production for a global appetite. To do that, they’re carving a lot of waste out of the system.

*Until 100 years ago, the ratio of success in the production of Parmigiano Reggiano cheese was, more or less, 50 percent. So it was really like flipping a coin. Now, we can assume that the success percentage ratio is roughly 92 percent.*

Jeff: So less than a century ago, according to the consortium, only half of all parmesan cheese was deemed worthy of carrying the brand name and now it’s 92 percent. That’s real progress, but it means that nearly 1 in 10 wheels still fail inspection. The cheese makers want to reduce the margin of error even further, which is why the consortium turned to IBM. Using a data analytics suite, the cheese masters can now track every ingredient in the production process. For the first time, they’re learning why some cheeses pass inspection and others have to be tossed. Here’s Luigi. Bernhard will jump in and translate.

*Si dice tutto latte e’ uguale. Non e’ cosi’. Il latte cambia. Cambia anche di giorno in giorno. Cambia con le condizioni climatiche*
Bernhard: The gist of it is this. Luigio’s telling us that artisanal cheese production is highly variable. The main ingredient is milk. But not all milk is the same, even when it’s coming from the same cow. Luigi says the quality and consistency change with every passing weather front. Same cows eating the same hay, yes. But the milk that cows produce in hot humid weather – like on the day we visited -- is far different from what they deliver in the dead of winter.

Jeff: So you have just three ingredients, but combine those with all the natural forces that can affect quality, and you get a really complex formula. For centuries, artisanal cheese makers honed their instincts for how to master this formula in isolation. Now, for the first time, they’re all connected. They have a communal database, an analytics platform, and a digital social forum so they’re continually learning from each other.

Bernhard: The cheese makers start their days around 4am. They mix, stir and form the cheese all morning. Sometime around noon, they log into a central database and enter the day’s output along with details about where the milk and rennet came from, plus the quantities of raw ingredients and the average weight of each wheel produced. Listen in as Luigi and Simone demonstrate how it’s done.


Simone: So now, he is entering the data in the database.

Luigi: Ecco!

Simone: It’s as important as the cheesemaking.

Jeff: That beeping noise is Luigi scanning a unique QR code. The rind of each wheel has one. Look for it next time you’re cheese shopping. That QR code
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makes each wheel trackable. It also contains data about the day that the wheel was made and information on the source of its ingredients. This is all critical for quality control. So if the wheel doesn’t pass inspection in a year, Luigi can analyze the culprits. Was it the milk? Too much salt? Was it especially hot or humid that day? With this data he can be on the lookout for other wheels that might not pass inspection or even better, use the information to avoid repeating mistakes. That’s the power of data analytics. The consortium also uses the findings to create predictive demand models to help with marketing.

Bernhard: Luigi had this wonderful description for cheese making that I want to share. It’ll sound familiar to anybody trying to manage a complicated supply chain. He told me that making a kingly cheese is all about finding simplicity in the complicated—creating order out of the unpredictable. In Italian, he says it’s an art that is “tanto semplice, quanto difficile.” Data helps him draw the simple out of the difficult.

Jeff: That’s nice. Especially in Italian. And now Luigi and his peers are pushing the consortium to use technology to help battle fraud. Here’s Simone to explain.

Simone: In the future I’m looking forward to having this kind of traceability even on the commercial point of view.

Jeff: And what will be the effect, potentially, of that?

Simone: You have to think that we have so many frauds.

Some people may find parmesan cheeses not made not in the area, bearing the Italian flag, or bearing sometimes the Colosseo or the Pisa Tower so they think they are buying the real Italian Parmigiano Reggiano, but they are not. Usually, these kinds of cheeses are full of additives and they are not as artisanal as ours. So, think about what if with your smart phone you could track back all the history and the origin of the product? Maybe, OK, I’m in a supermarket, I’m going to
buy a cheese. Maybe I scan it. And I realize that Luigi made this kind of cheese on June 12, 2012, let’s say. This would be very very important.

Jeff: Fraud is a big issue for the Consorzio. According to Italy’s farmer’s association, the number of hard cheeses that carry a name similar to Parmigiano Reggiano hit an all-time record last year. In fact, there was more quote-unquote fake parmesan in the market than the real stuff. There’s a lot at stake. The consortium’s dairy farms produce a combined 3.3 million wheels of cheese each year. Tracking that amount of cheese is a huge challenge. Nevermind finding imposters. A mobile app like the one that Simone envisions wouldn’t necessarily help nab the fraudsters, but it could help consumers identify the real thing by showing them the dairy farms where the cheese came from and the cheesemasters who did the hard work of making it.

Bernhard: Luigi referred to fraud as a battaglia lunga. A long battle. But he believes data analytics can make a difference. He says his ability to track the cheese making process all the way back to the grass that the cows ate is already helping him make the best cheeses of his life. And he thinks that extending the traceability forward to store shelves can make a difference, too.

Wearing an apron and stirring huge vats of milk throughout the morning, Luigi is proof that Wild Ducks show up in all kinds of industries. He’s incredibly enthusiastic about the power of technology to improve his life’s work.

So much so that he says there’s now a crucial fourth ingredient in parmesan cheese, and that’s data. Which pretty much sums up the philosophy of the entire Consorzio. They’re embracing data to protect Luigi and his fellow cheese masters as well as their prized centuries-old product – and you, the consumer, too.

In our sector, what I mean to say is, the strength of a particular product is proportional to the knowledge that you have of the
product. This is a key point in our production. Knowing better means spending better. It means eating better. And it also means living better.

Jeff: And that wraps up this episode of Wild Ducks. You can read a Q&A with Simone Ficarelli at ibm.com/wildducks. We've also posted an infographic on the cheesemaking process and some photos and videos taken at the Scalabrini dairy farm outside Reggio Emilia. Check us out on Twitter @IBMWildDucks and if you've got a favorite dish involving Parmigiano Reggiano, let us know. I'm Jeffrey O'Brien.

Bernhard: And I'm Bernhard Warner. You know, Luigi, who's also a chef, told me something that might be scandalous to most foodies.

Jeff: Oh, yeah? What's that?

Bernhard: He said it's perfectly fine to sprinkle his cheese on fish. Me? I'll keep matching my parmesan with a glass of sangiovese.

Jeff & Bernhard: Cin-cin, everyone!