



FreshSurety



Deep Dive: FreshSurety

4/20/2021

FreshSurety offers multiple food value chain visibility and traceability technologies which increase accountability and motivate food value chain participants to reduce inefficiencies in their operations.

Food waste costs retailers, restaurants, and food service providers in the U.S. almost \$2B in potential profits every year. In a world of shrinking margins and more vulnerable supply chains, it is crucial for food businesses to identify where food waste happens in their value chains. There is an enormous profit recovery opportunity for those that take steps to reduce it.

Grocery store efficiency - FreshSurety's Supply Chain Visibility and Event Management System reveals the current and future monetary and nutritional value of the food product. Food value supply chain managers get direct feedback on the current value of their inventory, not a "guess". For the first time Taguchi Methods can be used for food products. These methods revolutionized the Japanese automobile industry, think what they can do for the food industry.

Consumer experience - As an add-on to retail grocers, we offer an app that makes the nutritional history of the individual food product visible to their customers. Using our technologies, FreshSurety has made many discoveries unknown to science. Unfortunately, one discovery is that many consumers are purchasing foods which have lost much of their nutritional value and only energy calories remain. Using our products Retail grocers gain huge strategic advantages and increase customer loyalty, because consumers can see the nutritional history that they are paying for.

Perishable products are different:

Unlike most other products in supply chains, fruits and vegetables are living biological entities performing a number of metabolic functions which can be divided into three major stages: growth, maturation, and senescence. Supply chains are most concerned with senescence, the period when chemical synthesizing pathways give way to degradative processes, leading to aging and death of tissue. Fruit ripening is the result of many complex changes, some interactive but many independent of one another.

Two metabolic functions of particular importance in fruits and vegetables are respiration (the breaking down of carbohydrates, giving off carbon dioxide and heat) and transpiration (the giving off of moisture). Once the fruit is harvested, respiration and transpiration continue, but only for as long as the fruit can draw on its own food reserves and moisture. It is this limited ability to continue vital metabolic functions that defines fruit as perishable.

Post-harvest, processing, packaging, and supermarket shrink occur because of changes that take place during storage as fruits and vegetables begin to overripen; this can cause the formation of extreme colors, development of strong off-flavors with intense aroma, softening of the flesh, onset of physiological disorders, and manifestation of disease. Many bacteria and fungi, for instance, are involved in decay after harvest. Typical fungi

277 Douglas Ave. Suite 1002 Altamonte Springs, FL 32714

include *Alternaria*, *Botrytis*, *Monilinia*, *Penicillium*, and *Rhizopus*. These fungi are generally weak pathogens, in that they usually invest only weak or damaged fruits and vegetables.

FreshSurety is different:

FreshSurety's key innovation is the development of a low-cost gas sensor with outstanding sensitivity combined post processing algorithms to achieve both high selectivity and high precision. Our AI algorithms measure the relative distribution of 100's of gases in the food headspace to determine in real-time the changes in perishability dynamics of fresh foods.

Based on this information we can determine the current and future monetary value of each pallet of food in the supply chain. For the consumer, we can also reveal the nutritional history of the food product. For the first time, Taguchi methods can now be applied to food goods; grocery supply chain managers can optimize inventory and save money. We can predict onset of spoilage within 10-minute window. Retailers improve customer experience and generate increased loyalty by transparently showing the complete nutritional history of food items.

For a food pallet, we typically measure the relevant food gas species at concentrations under a part per billion 20 times per hour over 32 sampling points. Since a full truck can have over 750 sampling points sampling every 3 minutes, it is no wonder we have accumulated the world's largest data sets of fresh foods in real operational environments. Based on these data sets, we have developed machine learning codebooks which convert a measured energy landscape to a predicted net present value and depreciation rate. Each perishable food product has its own codebook. Our current success rate is 99.3% with a 95% confidence level.

Because they do not have our gas measurement technology, the vast majority of our competitors attempt to use measurements of time or time combined with temperature to predict food spoilage. Their premise is simple. Food spoilage is a chemical reaction which takes place over time. Since high school chemistry teaches the hotter the reagents the faster the reaction proceeds. Right? Wrong.

This explanation totally ignores the fact that food spoilage consists of multiple chemical reactions which can temporarily dwell within a given probability at multiple (sometimes overlapping), steady state points on the food's complex biochemical energy landscape. Wrong mathematical tool, wrong answer.

Mathematically, any attempt to predict the output of this complex spoilage process by measuring the inputs (time and temperature) is mathematically absurd. Despite all evidence to the contrary, this has not stopped people from trying because it is perceived to be "simpler". All they can really do is guess, kind of like playing a slot machine.

Figure 1 is a graphical representation of how an increase in food quality variation within specification limits leads to an exponential increase in food waste.

The common thinking around limits is that a food is good as long as the variation stays within the limits. If the variation exceeds the limits, then the food is immediately deemed bad and discarded. Prior to our technologies

the quality of perishable foods is invisible. Therefore, it is only possible to set both lower side limits and upper side limits at the point that quality becomes visible. For this reason, traditional analysis of food loss uses the only loss function available, a step function (i.e. good vs bad). In this interpretation there is only good and not good leaving a huge gap around the optimum point which turns into food waste.

Our technologies allow us to implement Taguchi methodology because we can **measure** the actual state of food in real-time. Because we can measure the condition, we can obtain the **Operational Curve** using our proprietary AI algorithms for each food product in operational environments. With the Operational Curve we can **optimize** the food value chain to determine the loss of monetary and or nutritional value. Most importantly, we can use the optimization to reduce food waste.

As shown in Figure 2 utilizing our approach there is a large amount of recoverable waste compared to current approaches. Additionally, there is a region of customer dissatisfaction using current approaches because bad food is mislabeled as good. We get Freshness Right 99.3% of the time and Predict onset of spoilage within 10-minute window. Unlike normal Taguchi methods we also consider time.

For this reason, all three zones, waste, recoverable waste, and dissatisfaction zones also dynamically change the lower side and upper side limits, tightening or loosening as required to maintain a specific population quality level. Grocery Chains can reduce their food waste from the USDA average 24% to as low as 1%

Like Taguchi we also argue that food quality should be considered more broadly. We believe this should include the loss to society from poor food quality, and that those losses eventually find their way back to the organization responsible. This is why we created our food value chain visibility and traceability technologies. By increasing accountability this will motivate food value chain participants to reduce inefficiencies in their operations.

FreshSurety's Competitors:

Seeq, Seattle, Washington, USA. <https://www.seeq.com/> Seeq offers predictive analytics based on time and temperature. Seeq has raised a total of \$87.2M in funding. Their latest funding was raised on September 9, 2020 from a Series B round.

Strategic Weakness: Leveraging their predictive analytics tool which works for manufactured goods does not work for perishable goods. They are not the same. Based on time and temperature, they are only right 16% of the time (Note: they do not quote a confidence level because it is not possible to do so). Garbage in garbage out.

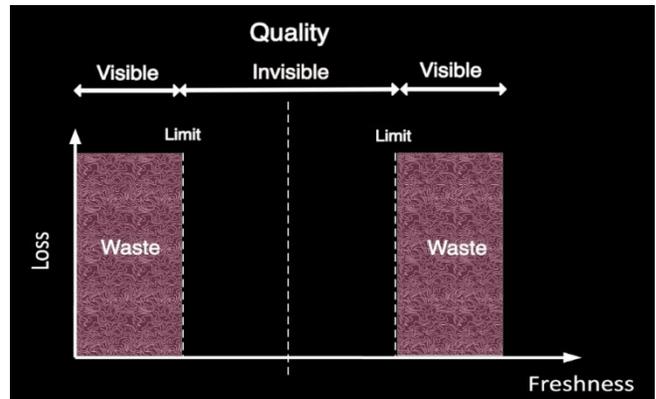


Figure 1: Everybody Else's Fresh Food Quality Loss Function

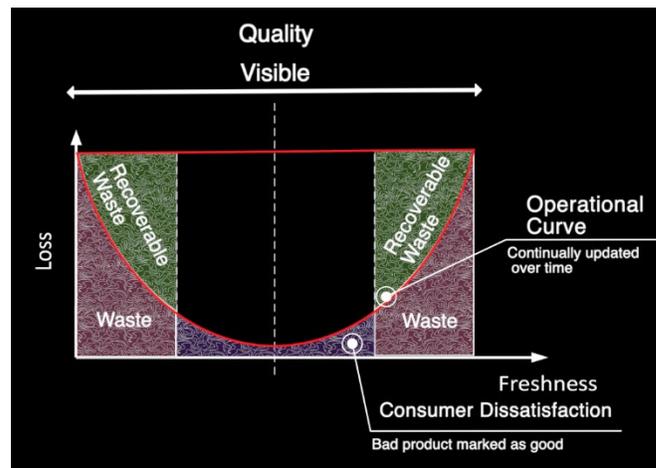


Figure 2: Our Fresh Food Quality Loss Function

Seebo, Tel Aviv, Israel. <https://www.seebo.com/> Seebo offers predicative analytics based on time and temperature. Seebo has raised a total of \$46M in funding over 6 rounds. Their latest funding was raised on Mar 4, 2021 from a Series B round.

Strategic Weakness: Predicative analytics based on time and temperature (see above for why it does not work).

P&P Optica, Waterloo, Ontario, Canada. <https://ppo.ca/> P&P Optica uses optical imaging technology with AI data analytics. P&P Optica has raised a total of \$8.8 M in funding. Their latest funding was raised on February 5, 2019 from a late-stage VC round.

Strategic weakness: What is old is new again. We have been in this business long enough to see both the failure and rebirth of optical technology used to measure food perishability dynamics. This technology failed because: 1) it is impossible for light energy to penetrate the surface of food more than a few millimeters creating unknown regions and 2) the sugars used as a basis for estimating senescence are not uniformly distributed within foods (literally one side of the product will produce a different answer than the other).

AgShift, San Jose, California, United States. <https://www.agshift.com/> AgShift uses optical imaging technology with AI data analytics. AgShift has raised a total of \$6.2 M in funding. Their latest funding was raised on April 30, 2019 from an early-stage VC round.

Strategic weakness: Optical technology used to measure food perishability dynamics in small batches will be impossible to scale (see above for why it does not work).

Demetria, Columbia. <https://demetria.ag/> Demetria uses predicative analytics for coffee based on manual inspection. Demetria has raised a total of \$3 M in funding. Their latest funding was raised on March 2, 2021 from a seed round.

FreshSurety's Business

Our business model is based on making a single sale and turning it into thousands of subscribers. Our target customer are channel partners within the reusable transport packaging industry. They sell to food retailers every day.

Our channel partners sales reps do not have to introduce themselves to potential corporate grocery customers. They have been buying their products for years, day in and day out. Their sales are flat, and their market is consolidating, as our partner, they double their profit with the same sales effort.

Today millions are spent by groceries trying to solve this problem. The Business Profit Potential for our direct addressable market is over \$1 billion. https://refed.com/downloads/ReFED_Report_2016.pdf

Sensing this huge opportunity, we know of \$95 million VC dollars wasted on our competitors' failures. We KNOW our customers are interested because they are paying us hard cash and utilizing internal R&D on the effort. We have had two paid-in-advance, cost-plus contracts with a major company to develop this product for Japan. We have multiple contracts with a Homegoods supplier to develop our product and are set to start high-rate manufacturing in Vietnam this September.

We have a unique business model:

- 1) FreshSurety sells hardware at cost to Channel Partner.
- 2) Our Channel Partner up-sells its existing grocery customers with our information service as an add-on
- 3) FreshSurety charges Grocery Supply Chain managers a subscription fee for information.
- 4) Grocery Chains reduce their food waste from the USDA average of 24% to as low as 1%
- 5) FreshSurety pays Channel Partner a commission – less hardware cost and doubling their profit on the sale.

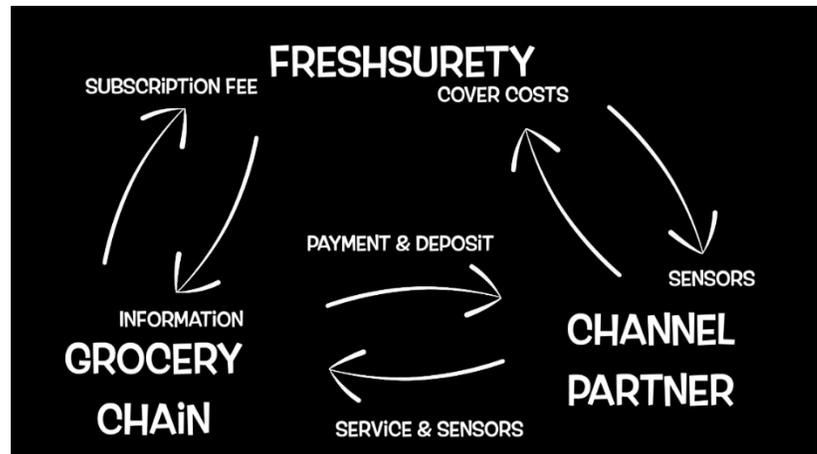


Figure 3: Business Model

Our market will only grow due to the increased use of grocery handling automation.

The accelerated trend towards online food shopping means consumers will expect higher quality food delivered straight to their door. The on-line sale MUST always be made twice, delivering spoiled food is not an option.

So far, we have:

1. Identified our true customer and answered the question, who pays?
2. Made discoveries new to science.
3. Perfected our sensor and algorithms.
4. Built a cloud-based infrastructure and App.
5. Accumulated huge amounts of AI training data.
6. Recruited a major Homegoods supplier as a direct sales channel partner and are in beta testing with them.

By the numbers

Homegoods Our Homegoods consumer product will launch nationwide in the second week of September. The product is a food freshness and/or nutrition estimator service add-on to the existing Homegoods producers' container product line. FreshSurety has performed detailed model optimization and projections based on 100,000 subscribers with a plan sub-population breakdown of; Platinum, 8%; Gold, 63%; Silver, 29%. In our models, we assumed a 4% cost of money. We use an 8% churn rate, for the first two years, a step 40% loss rate after the two-year commitment, and a continuing churn rate of 8% for years three, four, and five. We feel these industry average rates are probably pessimistic based on Homegoods producers' very high customer engagement.

Expectations are that we will hit 100,000 subscribers within 3 months with a revenue of \$1,300,000 per month. The average customer lifetime value, CLV, is \$536 and the average consumer margin, CM, is \$370. As a basis of estimate, we are using 100K subscriber blocks. We have high confidence that this subscriber level will allow us to

achieve an EBITA of \$4.8 million per year. We feel this is a conservative basis for estimate and can be revised upwards as required.

Food Value Chain With our Supply Chain channel partner, we redefine the subscriber to be a pallet of food and reuse the same sensors, AI Algorithms, Cloud datastore and modified App to deliver results of optimized value chain resulting in less food waste.

Our best customers are channel partners within the reusable transport packaging industry who sell to grocery retailers every day. They double their existing profits selling our subscription to grocery retailers who reduce food waste & save money.

The top 5 US grocers ship 65 million pallets of fresh vegetables, fruits, seafood, and meat each year. Freshsurety and the channel partner split \$11.92 profit per pallet per trip. At their current level of service, the channel partner profits average \$5.95 for this same pallet. Each new channel partner we can service has the potential to be worth \$44 million per year.

After raising \$1.4 million three years ago, we have self-funded until now. We have a greater demand for our services than we can handle; additional capital is the solution.

We are offering 5% of FreshSurety at \$4.25 dollars per share to the crowd funding market. This additional capital will allow for explosive growth in the huge food supply chain market.

Team

John CEO is a serial entrepreneur with broad experience in business leadership and company creation in the electronics technology industry for more than 30 years. He has founded and guided several technology companies from concept to liquidity event, including a NASDAQ listing. He is a subject matter expert in AI/machine learning and an accomplished electronics development manager with leadership in over a hundred projects.

Lilly CFO is an expert in overseas logistics operations. Lilly has over 25 years of business experience directing all aspects of accounting operations. Lilly speaks four languages and also has degrees in food economics.

Travis CTO has years of experience in the tech industry with an emphasis on machine learning, parallel programming, and database systems. He has earned respect in his career for his ability to solve complex engineering problems.





Cash Flow

Table 1: 5-year cash flow Homegoods product only (per 100K Subscriptions)

All Plans (NPV)	Total Subscriptions	Gross Revenue	Data Expense per 100K per month	Hardware Expense (MACRS 3 Year)	Gross Profit	Homegoods Commission	Homegoods Rebate	FreshSurety Net Revenue
Year 1	100,000	\$16,527,323	\$96,000	\$5,394,023	\$11,037,300	\$ 5,518,650	\$5,490,023	\$ 5,518,650
Year 2	92,000	\$14,609,907	\$96,000	\$7,193,649	\$7,320,258	\$3,660,129	\$7,289,649	\$3,660,129
Year 3	55,200	\$8,422,787	\$96,000	\$2,396,804	\$5,929,983	\$ 2,964,991	\$2,492,804	\$ 2,964,991
Year 4	50,784	\$7,445,618	\$96,000	\$1,199,211	\$6,150,407	\$3,075,203	\$1,295,211	\$3,075,203
Year 5	46,721	\$6,581,815	\$96,000	-	\$6,485,815	\$ 3,242,908	\$96,000	\$ 3,242,908
Total		\$53,587,451		\$ 16,183,688	\$36,923,763	\$18,461,882	\$16,663,688	\$18,461,882



For more Information

See <https://pitchbook.com/news/reports/q2-2021-pitchbook-analyst-note-ai-opportunities-in-foodtech>

And

For Investors <https://vimeo.com/531962691>

How it works: <https://vimeo.com/538864119>

Contact: John W Hodges

277 Douglas Ave suite 1002

Altamonte Springs, FL, 32714

PH # 321-209-8699 EX 702