



## Zest Fresh for Beef, Poultry, Pork and Seafood

# True Transparency for Freshness Management, Food Safety, Authenticity and Traceability

### Solution Benefits:

- Reduces the over \$10 billion waste in beef, poultry, pork and seafood at retail per year
- Documents provenance and authenticity of product (including free range, antibiotic free, grass fed, etc.) from harvest or processing to retail or restaurant
- Documents animal pedigree from birth through to retail or restaurant
- Utilize IoT, AI-based predictive analytics that drive intelligent routing which ensures delivered freshness (product will meet or exceed freshness requirements at delivery)
- Provides fresh and frozen supply chain visibility for proactive management
- Enables true transparency for advanced food safety, with integrated HACCP reporting and improved recall management throughout distribution
- Integrated blockchain support that automatically translates supply chain events into recorded transactions
- Improves margins, brand value and customer loyalty

Zest Fresh™ is the freshness management solution for today's beef, poultry, pork and seafood industries. It provides true transparency through autonomous, end-to-end fresh and frozen food supply chain visibility for proactive decision making. Zest Fresh improves delivered freshness, reduces shrink and spoilage due to temperature mishandling, documents pedigree, provenance and authenticity, and provides a complete traceability record for advanced food safety. By monitoring and managing the processing and quality of each pallet or case of product from the ranch, farm or sea, Zest Fresh ensures that food is properly handled and tracked from origin to the store. It provides real-time alerts to focus workers on issues as they occur, providing product and location specific corrective actions for proactive management. With integrated blockchain support, Zest Fresh addresses food safety requirements, automates traceability and chain of custody tracking, and improves consumer trust, brand loyalty and profitability.

### The Need for Freshness Management

Americans consume well over 200 pounds of meat, poultry and seafood per person annually. According to the NRDC, 8% of seafood, 4% of chicken and 5% of beef is wasted at the retail level each year. This equates to over \$10 billion of product shrink at the retailer that cannot be sold to consumers. Consumers expect the freshest product with the highest quality and are increasingly demanding documentation for provenance, pedigree and legitimacy. Yet with 33% of seafood being mislabeled, and challenged claims regarding grass-fed or free range authenticity, your brand is at risk if you can't validate delivered product. Protein products often travel through complex supply chains with multiple processing steps along the way leading to many opportunities for mishandling or mislabeling that can impact freshness, quality, authenticity and safety. Seafood often faces more extreme challenges due to the distance between catch and retail delivery. Traditional temperature loggers and location tracking devices provide inadequate data to address the challenges encountered in the protein supply chain.

### The Challenge

Like produce and other perishable foods, beef, poultry, pork and seafood have a dynamic shelf-life which can be negatively impacted by temperature and time leading to accelerated degradation in shelf-life, quality and value. Pallet- or case-level temperature



excursions above or below the optimal product-specific temperature range occur frequently — especially during the myriad of shipping and processing steps — and present significant food safety and quality issues. When meats are exposed to higher temperatures in processing, shipping and handling, lipid oxidation rates increase, negatively impacting the quality and shelf-life — decreasing the flavor, color, texture, nutritional value and acceptability. Temperature excursions also significantly increase the risk of food borne illness. Because the shelf-life for proteins is typically only 1-3 days post purchase, it's essential that product was properly handled in the supply chain to ensure the optimum customer experience. These temperature and time constraints, coupled with the high value of the product, make it essential for producers, restaurants and retailers to manage the dynamic shelf-life for these products to ensure delivered freshness and safety for the consumer.

### The Solution

Zest Fresh delivers the ability to proactively manage the beef, poultry, pork and seafood supply chains — at the pallet or case level — for optimal shelf-life and food safety controls. Zest Fresh utilizes product profiling for modeling optimal processing and shelf-life. Zest Fresh then uses wireless sensors to autonomously collect operational product data for the provenance, pedigree, time, temperature and location of each pallet/container of protein from harvest or processing through the entire supply chain to delivery. Real-time analysis of the operational data relative to each product profile enables predicting actual shelf-life based on specific product handling, and the ability to intelligently route pallets based on these results. Zest Fresh also monitors for proper handling (e.g. temperature control) for food safety and provides real-time tracking for actionable response to recalls.

Using cloud-based predictive analytics, Zest Fresh dynamically calculates the remaining shelf-life of meats based on the type of protein (beef, chicken, pork or seafood) and cut, its temperature and handling history, and its packaging, generating a Zest Intelligent Pallet Routing Code (ZIPR Code) freshness metric for each pallet or container. The ZIPR Code enables intelligent routing to ensure delivered freshness to the store, reducing shrink and improving margins. Improved freshness consistency also attracts and retains loyal customers.

Zest Fresh documents the authenticity of the product and provides complete track and trace capabilities, with integrated blockchain support, to document that proper processes were followed to improve food safety. Zest Fresh enhances workflows by providing real-time operational visibility and corrective action alerts to maximize freshness and retail customer satisfaction.

### Zest Fresh Solution

- Gain complete supply chain visibility, ensuring optimal process, temperature and quality adherence
- Enables seamless matching of the retailers' and restaurants' freshness needs with the actual product freshness
- Documents provenance and authenticity to reduce fraud
- Complete track-and-trace, with integrated blockchain support, to address food safety and recalls
- Utilizes autonomous, wireless and food safe IoT sensors that don't require changes to processes or increase labor costs
- Utilizes AI and machine learning to calculate a freshness metric of the dynamic remaining shelf-life for each pallet or container to facilitate intelligent routing
- Can be used for most all types of meats, poultry and seafood
- Exception-driven management with real-time notifications sent for staff to initiate corrective actions
- Real-time dashboards for computer and mobile applications for easy management and use
- Open APIs for integration into enterprise systems including ERP and WMS

### For More Information

To learn more, please visit our website or contact us directly. We look forward to hearing from you.

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