

Focused on Improving Cold Chains



Vision

The Integrated Food Chain (IFC) Center is an industry/academic joint initiative to identify and resolve critical integration issues across the end-to-end food chain. The focus is on designing, analyzing and continuously improving cold chains for perishable food products. An essential characteristic of successful food chains is that every enterprise within the chain performs at a high level and that the handoffs of food products between enterprises be executed without compromising food safety, food quality, environmental impact or economic value. The goal of IFC is to provide the collaboration, research and education necessary for exceptional quality and efficiency of both domestic and international food chains.

The IFC provides strategic leadership and direction for collaboration among all of the stakeholders in the food chain to understand and prioritize problems; research and determine the methodologies, processes and technologies to overcome these problems; and leverage education to provide the human capital necessary to plan and execute exceptional food chains.

The IFC Center was established by Georgia Tech's Supply Chain and Logistics Institute and Sterling Solutions LLC as a collaborative effort among academic, government and industry constituents. Our vision is to assure that growers, processors, retailers and logistics providers can deliver on their "quality promise" in highly efficient ways through the use of systematic and synchronized linkages throughout their supply/cold chains. Much of this can be done through business process management and integrating the use of GPS, RFID and other readily available technologies in tracking, monitoring and validating the process and movement of key products in real time. Moreover, our work in predictive modeling can be integrated throughout the entire cold/supply chain in identifying and avoiding problems before they occur, thus avoiding millions of dollars loss and wasted efforts.

Need

There is a critical common need for both domestic and international food chains to embody engineering systems that integrate the flow of food through the diverse components of the chains. Most food chains are loosely coupled entities with limited coordination, imperfect alignment, and inconsistent infrastructure and processes. The result is tremendous waste and excessive safety risk combined with loss of product and excessive logistics costs. Indeed, some people estimate that more than one-third of fresh produce is lost in distribution and that this can be reduced by half with a better understanding of postharvest biology and better coordination. Furthermore, minimizing the food loss is more environmentally friendly and economical than increasing production to compensate for losses.

Much of the scientific foundation for IFC effort lies within the disciplines of "supply chain and logistics" and "food science". These two areas have scarcely overlapped in the past. Postharvest food science concentrates on intense engineering of the components of the food chain (production, storage, transportation) but with limited attention to system-wide issues addressed by supply chain researchers, who focus on integrating these components within the business decision environment (demand forecasting, inventory planning, supply chain alignment and synchronization). Research in supply chains and logistics has mostly ignored agricultural and food products to focus on manufactured goods such as autos, electronics, and apparel. Many of the most-discussed ideas in supply chains, such as just-in-time production, are simply not compatible with food chains, where production, tied to the seasons and weather, is much more variable and has longer lead times.



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Furthermore, supply chain and logistics have concentrated on providing commodity services and have neglected the special concerns of the fragile food chain.

It is also the case that cold chain solutions have historically favored large firms where economies of scale are required to justify expensive technology. Most of the industry has not been able to develop effective solutions due to the burdens brought on by the lack of skilled staff, funds and resources. Furthermore, practical solutions have proven evasive because of the lack of integration of food science and quality assurance knowledge and protocols throughout the distribution process. As such, there are limited solutions to track information and product flows within perishable supply chains. This lack of visibility creates disputes among all supply chain partners. Information that does eventually 'leak through' is so delayed and distorted that its validity and usefulness are, at best, marginal.

Consumers want to know more than ever that the products they buy are safe, no matter where they are grown, raised, processed, distributed and purchased. Retailers, too, want the same assurances, and are requiring suppliers and distributors to demonstrate that they are providing safe, quality products that meet consumers' expectations. Retailers and wholesalers worldwide have identified the need for consistent, internationally accepted product safety and quality management systems. Just as important, is the ability to replenish products that maximize sales while minimizing waste.

Companies are seeking comprehensive answers and practical solutions to product integrity and supply chain effectiveness in light of the rapid rise in public health issues. At the same time, they are concerned about the cost impact of satisfying pending new government regulations. The role of IFC is to bring together these concerns together with a focused effort to address them.

Value

Collaboration between food engineers and supply chain engineers will make it possible to address the complete problem of getting quality food to the consumer, all the way from production to delivery in the most efficient and safest ways possible. Every stakeholder will benefit:

Consumers: Reduced waste and variability in the food chain will result in more timely deliveries, fresher products, better quality and less cost for a bigger group of consumers.

Retailers: More visibility adding to predictable and longer shelf life in the stores together with less variability in cycle time will allow the retailers to provide a higher quality product with less loss and less inventory and higher sales. It will also assure more responsive tracking and traceability when needed.

Importers and exporters: Better prediction of product quality, better visibility, and reduced variability in the chain will allow importers and exporters to better coordinate timing of shipments and amounts with markets. Furthermore, they can respond more quickly to disruptions. Ultimately, this will support increases in cross-border trade of food products.

Logistics service providers: Improved knowledge of the status and quality of products as they move through the chain will allow each logistics service provider to both reduce their own cost by better requirements planning and provide better service to their customers.

Food producers and processors: Better forward visibility and integration of the food chain will allow producers and processors to improve forecasting and planning of demand for product in different markets which will result in expanding their markets and improving their profitability.

Technology providers: Results from research on engineering systems for integrating food chains provides broad opportunities for technology providers to develop innovative new technology, particularly technology related to information and decision technology and automated sensing.

Government oversight: Better integration and process visibility within the food chain will allow easier determination of potential quality problems before they become critical and will aid in identifying causes when a problem occurs.

In addition, firms that work with the IFC will be able to better integrate their Global Food Safety Initiative efforts in ways that will be more effective and efficient.

To date, there has been no center to study, research and apply economically feasible industry-wide solutions in cold chain management. The IFC fills that void. We invite you to become a part of this industry research center.

Georgia Tech Supply Chain & Logistics Institute
The Integrated Food Chain (IFC) Center

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