Opening Statement
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Before the Committee on Health, Education, Labor, and Pensions
November 15, 2006

Mr. Chairman and Mr. Ranking Member, thank you for the opportunity to testify today. And thank you for your attention to the issue of food safety and your interest in how technology can be deployed to potentially help contain outbreaks of food-borne illness and, particularly facilitate recalls when an issue is discovered.

I'd like to focus my statement today on three specific areas that highlight how IT solutions are being developed and could potentially be used to improve food safety and recalls. The first involves using a shared network of information to track the movement of food throughout the supply chain. The second involves using RFID to facilitate the capture and accuracy of the information within the network. Finally, the third involves the use of RFID-enabled temperature tracking devices to monitor the handling of product throughout the supply chain.

Before elaborating on these points, let me first tell you a little about my company and my background. Franwell is a technology development company based in Plant City, Florida (in the process of relocating to Lakeland, Florida). We offer technology products and services to the food and pharmaceutical industries, with a particularly close affiliation with the fresh food industry. We offer RFID integration services to many diverse industries and have developed and deployed RFID applications to improve product tracking in the supply chain.

We are a technology partner with the Georgia Tech Research Institute (GTRI) and University of Florida's Center for Food Distribution and Retailing (CFDR). We started RFID research with GTRI in 1993 and continue to work with their signal engineers on developing new products and overcoming RFID challenges. Franwell is an Associate Member of the CFDR, and is responsible for the contribution, installation and maintenance of RFID technology used in the center's RFID lab. Franwell also serves as a technology partner for many of the Center's research initiatives. The mission of the CFDR is to provide the food industry and the scientific community with a unique environment for developing knowledge that will assure food quality and safety throughout the whole distribution chain. In addition to our involvement with academia, Franwell is also an active member of industry groups, such as EPCglobal, the Cool Chain Association, United Fresh Fruit and Vegetable Association (UFFVA), and Produce Marketing Association (PMA).

I joined Franwell in March of this year, prior to joining Franwell I was with the Information Technology Department at Publix Super Markets for 23 years. The last 13 years of my career there, I was responsible for the strategic planning and implementation of all technology in Publix's distribution centers and warehouses, providing technology to run more than 8 distribution centers and 20 warehouses, shipping product to more than 900 stores. I was also responsible for researching RFID in order to determine a corporate strategy for implementation of the technology at Publix.

Now to get back to today's topic and the points I'd like to make.

Tracking Product through a Shared Network:

Before a food product reaches your dinner table, it has been through an expansive supply chain with many links along the way. Imagine the journey that your bagged salad takes -- starting in the field, lettuce or spinach is harvested and then taken to a processing plant, once processed it is then placed in a distribution center, loaded onto a truck, only to end up in another distribution center and on yet another truck before making it to your grocery shelf. And this is the short route, assuming no secondary processing plants, additional distribution centers, or consolidation centers are involved and not to mention the added journey that imported product takes. Is all this movement easy to track? Well, quite frankly, no.

In today's supply chain, the individual links do a fair job of tracking the product within the confines of their organization and their own inventory tracking systems, but load that product on a truck destined for another company and you have just lost visibility of the product, where it came from and where it is going. When it arrives at its new destination it begins a whole new life within their inventory tracking system, with very little, if any ties to its roots. In the case of a food-borne illness outbreak or any other need for recall, the thing that is missing is complete visibility of where any of the tainted product is within a complex supply chain that is in constant movement every minute of every day.

In order to execute any large-scale recall in a timely manner, the real key is an infrastructure that provides a network of shared data about product and its life cycle. If the shipment data about product is available in a shared network, showing where every occurrence of a particular lot of product is located, that product can quickly and efficiently be removed from the supply chain. Ideally, all tainted product is quickly removed and safe product will still be available, resulting in less losses to industry and in the case of food-borne illness, preventing the even more devastating loss of lives.

Franwell has been involved in an RFID trial led by the University of Florida's CFDR, the goal of this research project has been to prove the viability and value of sharing this level of information across supply chain trading partners. Dubbed Visibility Validate or V2, the project tracked shipments from three fresh produce suppliers to a retailer's produce distribution center. Data about the shipment and receiving of product was posted to a shared network and everyone involved had access to the data via the

internet. Although only one product code was tracked from each of the suppliers, the research project demonstrated that it is possible to use a network to share this data among trading partners.

This type of research is very important and needs to be expanded. We need to prove it can scale to support the enormous amount of data that would be collected once many or all products were being tracked through a network. There also needs to be continued effort on defining exactly what information is the most important to capture, at what points in the supply chain and the technology needed for this much data to be aggregated and accessed efficiently.

RFID for Accurate and Efficient Data Capture:

I said earlier that companies do a pretty good job of tracking product within their own organizations, but even to track the product internally, many of the processes today are manually intensive. Introducing new points for capturing this data can be very costly due to the manual nature that is used to do so. When tracking product from the field to a processing plant or distribution center, there are many steps along the way and when this data is being captured manually, mistakes can be made.

RFID technology involves placing a tag on product cases that contain a tiny computer chip and an antenna. An RFID reader or scanner is a proximity reader, which means it does not require contact between the reader and the tag. This ability to read the information from the tags without line-of-sight or direct contact is the primary advantage of RFID tags for identifying product. The antenna enables the chip to transmit information to a reader. The reader converts the radio waves returned from the RFID tag into a form that can then be passed to computers that can make use of it. RFID technology is not new; it has been around since World War II. What is new is the mainstream use of RFID technology that we witness every day. RFID is used for automated toll payment systems, ID badges, secured entry to buildings, and even for transportation on the Metro System.

When used on product cases, the RFID tag contains information about the product; standards call for an Electronic Product Code or EPC. The EPC is unique to each case of product and is used to look up or update information about that case of product in computer systems and shared networks.

For example, today if you purchase a 16 oz can of green beans, there is a bar-code on that can. The can came out of a case, and there was a barcode on the case. The bar-code actually contains a Global Trade Identification Number, known as a GTIN, which identifies what that product is. Every 16 oz can of green beans from a particular manufacturer will have the exact same GTIN. Scanning the bar code will tell you the product and can be connected to information systems to provide information such as the price or inventory count, but it won't give you any unique characteristics about that particular can or case of cans. The EPC on the other hand, is designed to identify not only

the product, but a particular instance or occurrence of the product by including a serialized code along with the GTIN.

I am sure you can imagine how much more valuable it is to identify product by a serialized code, rather than just knowing where all canned green beans are, you could know where all the cans of green beans, processed on a particular day by a certain manufacturer are. Keep in mind, that for this information to be useful to track and trace product, it requires a shared network of data which contains information about all the active Electronic Product Codes within the entire supply chain.

In addition to the value of the EPC and a shared network, RFID adds value through automation. Today, much of the process for tracking product harvested from the field is captured on paper and paper records are notoriously error-prone. Even if the information is ultimately entered into a computer system, handwriting is hard to read, pages get lost, data-entry falls behind or the information gets keyed incorrectly.

With RFID, cases or totes could be tagged with a unique EPC before being taken into the field at harvest. By knowing which totes are taken to which area or field, those EPCs could be associated with the harvester and the field. Or a more flexible method would be to have handheld RFID readers right out in the field and associating the EPC on the case or tote with that product from that field on that day and time. GPS technology could even be added to validate the exact harvesting location. When the cases packed in field are the actual cases that will ultimately be shipped to your local grocery store, this same RFID tag can be used to track the product through its entire journey. If product is harvested and sent for further processing, then the tracking would have to continue through processing and be associated with a new EPC tag applied to the finished product, say a case of bagged salad.

Once applied, the RFID tags can be read at key points in the supply chain and the network updated along the way during key observation events. In the V2 project, the tag applied by the fresh produce supplier was read when it was staged for shipment and again when product was shipped out. The next observation occurred when the tag was read again, automatically with readers on the dock doors, once it arrived at the retailer's distribution center.

The technology isn't perfect yet, there are still some issues with reading product with high water content or metal packaging, but progress is made every day due to the efforts of universities, research labs and private companies alike. Government can help move the technology forward, by sponsoring research efforts that are taking place and staying involved and supporting the standards bodies that are working diligently to provide an infrastructure to track product through the supply chain.

RFID Tags for Temperature Monitoring:

Monitoring the 'cool' supply chain with RFID temperature monitoring devices is another area where Franwell and the CFDR are actively engaged. Temperature is the characteristic of the distribution environment that has the greatest impact on the storage life and safety of fresh foods. Good temperature management is in fact, the most important, yet the simplest procedure for delaying product deterioration. Temperature is also the one factor that can be easily and promptly controlled. Preservation of fresh product quality and safety can only be achieved when the product is maintained under its optimum temperature as soon as possible after harvest or production. RFID can be combined with temperature monitoring devices to allow full visibility of a product's life cycle through the cold chain in real time. Although E.coli is not a result of poor temperature management, other health concerns are a direct result of temperature abuses. RFID temperature monitoring devices can be used to ensure that product reaching the end-consumer has not suffered such abuses, resulting in safer product.

Temperature monitoring devices are widely used today, but the ones in use are not as robust or easy to use as the RFID monitoring devices that are available and being improved. The goal of RFID-enabled monitoring is to reduce the reading time of temperature devices, giving the receiver in a warehouse an initial accept/reject indication real-time, without delay. Current practices might deploy one or two monitoring devices per trailer load of product, those devices will tell you what the temperature has been in that area of the trailer, but will not tell you the temperature of the individual cases or even certain pallets of product and they must be retrieved and read manually.

Our vision includes the use of more devices, at the pallet level and eventually even the case level and applying these labels earlier in the process, back to the cooler at the shipper location. RFID devices also have the advantage of offering standard interpretation of data, rather than leaving the interpretation up to the receiving dock personnel. Also, the read can be automated, hopefully with the same readers that are being used for tracking product, providing more reads and enabling more consistent quality procedures overall. This automatically captured data could be used by software systems to provide a higher-level of business intelligence that will provide for further interpretation of all temperature fluctuations and the effect on product quality and safety.

Information technologies can be used in many ways to make the supply chain more efficient and safer. But for these systems to be effective, they have to be interoperable. And to be interoperable, we need industry-wide standards. Without such standards, one company's readers won't read another company's tags, and so on. For example, if we're going to have an effective RFID track-and-trace system to facilitate product recalls, it has to be uniform from one company to the next and in today's global economy, it has to be uniform from one country to the next. This is a tremendous challenge that is being taken on by industry standards groups, such as EPCglobal.

In some cases, industry has done a very good job in producing widely-accepted standards. In other cases, it's important for the government to play a leadership role. It

isn't easy and can be a long difficult process, but standardization is critical to widespread implementation of any new technology and those standards must stretch beyond company and country borders.

Congress and the Administration can help by encouraging the FDA and USDA to work with standards groups. Federal government can also help by sponsoring research efforts, such as the work being done at the University of Florida and other universities and private technology companies focused on developing important new technologies. And finally, the Federal government needs to reinforce to private industry the importance of cooperating on standards, and that track and trace of product and ensuring a safe food supply should never be a reactive afterthought.

Thank you again for the opportunity to testify today. I'd be happy to answer any questions you may have.