

Playbook—food & flowers



For those concerned with the quality of perishables.

Playbook—food & flowers

About the Freshtime™ playbook

The **Freshtime™ playbook** is an idea book. Its purpose is to highlight different ways that you can use Freshtime tags and software together with your perishables. If you want more detail about Freshtime, please refer to the Infratab Freshtime White Paper: Perishable Condition Monitoring. *Note: this playbook focuses on produce, cut fruits, eggs, beef and cut flowers.*

As you read about the power of Freshtime, it is amazing that the data collected by Freshtime tags can be as comprehensive as it is. Actual use is quite simple—with Freshtime's power being the tag's ability to compress data and make it smart—giving you actionable data about a tagged perishable or about a group of perishables (for example a truckload) on the spot. The added benefit is that the data sent to a database to be analyzed further and aggregated is already smart—minimizing communications, data storage and analytics processing.

About Freshtime™

Freshtime solutions consist of RFID sensor tags and software (data capture dashboards, cloud databases and analytics)—each quite powerful in its own right. Together they combine to give you extremely powerful real-time business intelligence and analytics about the freshness of your perishables. You can gather information about how your perishables fare throughout each process in your organization from creation until sale. This data enables you to fine-tune your perishable handling processes as well as to provide timely data and historical comparisons to those planning, marketing, selling and using your perishables.

GS1 and EPCglobal Compatible. Freshtime is compliant with GS1 and EPCglobal tag and data standards. Freshtime tags are RFID tags, EPC Class 1 Gen 2 compatible and can be read by standard EPC RFID readers. Freshtime tag data is an extension of GS1 product data—providing the equivalent of a live “best-when-used-by” date, attached to a perishable's product ID. For large multinational companies with EPC middleware software, Freshtime is an add-in.

Because of Freshtime's compliance with GS1 standards, Freshtime provides full track and trace compliance by batchlot/production date for pallet, case or item. Freshtime also provides temperature monitoring records from birth through sale.

Non-GS1 members. Freshtime accommodates a company's private product and location numbering systems—with the added benefit of providing a simple transition to GS1.

Companies with no-RFID. It is Infratab's intent that small or large company, whether in the U.S., or in South America, Asia Africa, etc. can manage perishables by freshness. For companies with little or no RFID systems in place or with small IT staffs, Freshtime runs side-by-side with existing systems. The real time capability of Freshtime dashboards and the Freshtime cloud database provides a real-time front-end to existing batch-oriented supply chain systems.

Playbook—food & flowers

Visibility into Freshtime data. Using a Freshtime 2D barcode on-tag with a cell phone, those authorized can get visibility into freshness of the perishable as of the last reported data.

The paradigm shift that is freshtime

IBM has called Freshtime a paradigm shift in temperature monitoring. And it is.

As you become familiar with Freshtime tagging, you will find that you have enormous flexibility in setting up Freshtime tags. You will see throughout this playbook how we correlate Freshtime tags set up as loggers to monitor ambient temperature of spaces and locations with other Freshtime tags set up to monitor product temperature and the freshness used. Our objective is to enable you to characterize a space, whether it is a pre-cooler, a transport or a display case so as to know where best to place your product. As you gather data, you will be able to control the temperature or the time in the space to manage how much of your perishable's freshness is used. The Freshtime objective is to give you tools that let you "get the most out of the perishables you have".

Freshtime Points™: Freshtime is based upon a simple but elegant concept. A perishable's life starts at 100% and goes to 0%. Condition throughout a perishable's life can be expressed in Points Used and Points Left. No matter what the perishable, once you know the spoilage characteristics of your perishable, you can translate Points into hours/days at a particular temperature. For example, if you want your snapdragon buyer to have 8 vase days at room temperature, he or she will need to buy the flowers with 68 Freshtime Points.

Using Freshtime Points you soon find yourself thinking that one grower typically uses 4 points when harvesting and another uses 6 points or that a journey from California to New Jersey will use 20 points. Freshtime Points are that simple. And you begin to realize Freshtime is not about big data in a database, but is about giving you triggers that help you manage on the spot.

Important times in the life of a perishable.

- **Use-By.** This is the 0 or end of life used by Freshtime. It represents the "quality" expiration date of a perishable as determined by the brand owner. This date represents the percentage of customers the brand is willing to disappoint at this end of life. In food the Use-By date is determined by the look, feel, smell, taste, flavor and nutrient value of the perishable. In pharmaceuticals, industrials and cosmetics, it is the potency of the perishable.
- **Best-when-used-by.** This is also a quality indicator. It represents the number of days that the consumer expects to hold the perishable before use. .
- **Sell-by.** This is an indicator for a retailer to sell a perishable. It represents the quality that it wants its customers to experience because of its handling and care of the perishable. Quality retailers will typically have a Sell-by date that is earlier than the Best-when-used-by date.

Playbook—food & flowers

- **Receive-by.** This is an indicator represent when in a perishable’s life the retailer requires receipt of product at its receiving dock
- **Ship-by.** This is an indicator, based upon transport time and receiving criteria, when a perishable must be shipped.

Table 1 below shows how Freshtime best-when and sell-by times are used by a flower wholesaler and its florists. Here the objective of the Freshtime best-when is to give the flower buyer 7 days of vase life—with the florist offering a money-back guarantee. The Freshtime sell-by time adds a cushion of an extra day onto best-when time.

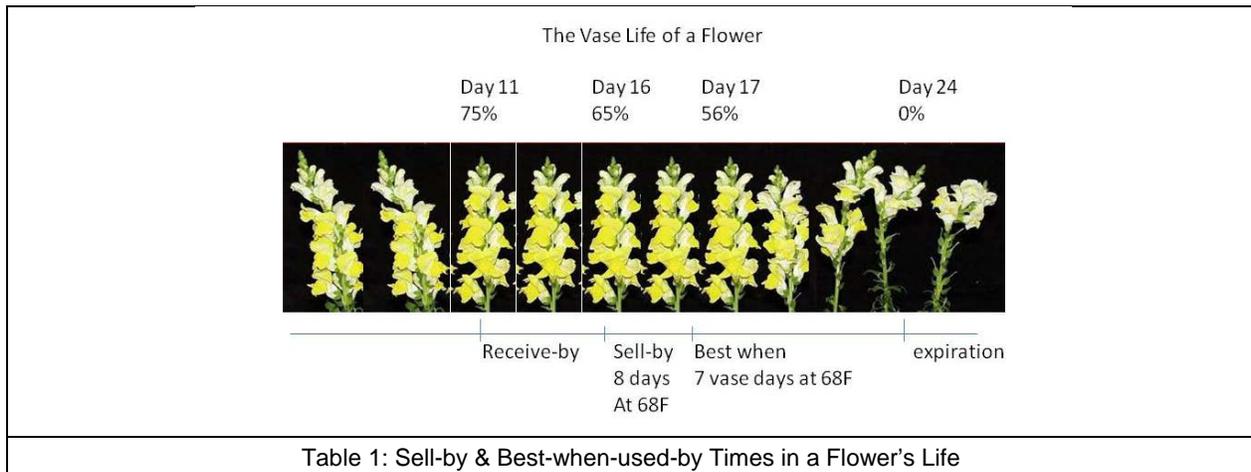


Table 2 below shows what Freshtime is doing “under-its-cover” at retail:

- Perishable arrives with 75% life (75 Points)—with transport having used 3.2 Points of the life.
- The flower was sold 5.7 days after it arrived at the retail distribution center. 11 Points were used from arrival through sale.
- The flower buyer has an expected 7.9 days of vase life at room temperature.

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PLANNING TAB												
HELP		Snapdragon	2,743	295.9	10	h	f	68	30	122	c	
PARTNERS, LOCATIONS & BIZ STEPS		Product	Q10	Ref Life (Hrs)	Sample Rate	Time UOM	Temp UOM	F Ref Temp	F Min Temp	F Max Temp	Temp UOMc	
WHAT IF TAB												
PARTNER VALUE	COLD CHAIN SITE-SUB-LOC VALUE (SSLT)	BIZ STEP	TIME HOURS	LEG ELAPSED HOURS	TOTAL ELAPSED HOURS	LEG ELAPSED DAYS	TOTAL ELAPSED DAYS	F TEMP	Shelf Life Used	Shelf Life Left	Shelf Life Left (Tag)	Hours Left at Consumer Temp
WHO			TIME				TEMP	INTEGRATION				
VOCABULARY HELP			INPUT					INPUT	0%	100%	100%	68.0
Shipper	Truck-long haul	in transit	48.0	265.0	273.0	11.0	11.4	39.0	3.2%	75.0%	75%	222.0
Retail DC	Receiving Area	receiving	0.2	0.2	273.2	0.0	11.4	40.0	0.0%	75.0%	75%	222.0
Retail DC	QA Area	inspecting	0.5	0.7	273.7	0.0	11.4	40.0	0.0%	75.0%	74%	221.9
Retail DC	Storage Area	storing	3.0	3.7	276.7	0.2	11.5	33.0	0.1%	74.8%	74%	221.5
Retail DC	Staging Area	staging_out	0.2	3.9	276.9	0.2	11.5	40.0	0.0%	74.8%	74%	221.4
Retail DC	Shipping Area	shipping	0.2	4.1	277.1	0.2	11.5	40.0	0.0%	74.8%	74%	221.4
Shipper	Truck-short haul	in transit	5.0	9.1	282.1	0.4	11.8	33.0	0.2%	74.6%	74%	220.7
Retailer	Receiving Area	receiving	0.2	9.3	282.3	0.4	11.8	40.0	0.0%	74.6%	74%	220.6
Retailer	Backroom	stocking	120.0	129.3	402.3	5.4	16.8	38.0	7.5%	67.0%	67%	198.3
Retailer	Sales Floor	selling	8.0	137.3	410.3	5.7	17.1	68.0	2.7%	64.3%	64%	190.3
Total Freshtime Budget				137.3	410.3	5.7	17.1	68.0	35.7%	64.3%	64%	
CONSUMER EXPERIENCE			190.3	190.3	190.3	7.9	7.9	68.0		64.3%	64%	
Total User Time				190.3	190.3	7.9	20.0					
Total Cold Chain					600.6		25.0					

Table 2: The Life of a Snap at Retail

Freshtime™ answers

If you find yourself asking “I wonder...”, Freshtime may just be able to give you insights and answers to your questions. Here are a few questions that Freshtime answers.

- I want my sales staff to focus on selling the best & freshest we have as well as to move the least fresh. Can I get visibility into inventory to do this?
- I have sales orders from the same customer to five geographic areas. Can I ship the least fresh product in inventory to the closest area and the most fresh to the area farthest away?
- How consistent is the temperature throughout my storerooms? If there are inconsistencies, how do they affect shelf life?
- Where are the hot spots in this truck? Is the truck packing with hot product that can affect my perishable? What is the effect on my product?
- How does temperature vary in different parts of my fields? Can I correlate field location

Playbook—food & flowers

temperature to field inspections? What about to brix levels?
<ul style="list-style-type: none"> • How much do temperature and shelf life vary within a pallet? What is the difference in temperature inside a clamshell from the outside temperature? How does this affect shelf life?
<ul style="list-style-type: none"> • How much shelf life variation are we getting at pick from pallet to pallet?
<ul style="list-style-type: none"> • How consistent, in terms of shelf life, are my ingredients from my supplier? Is my shipment to my customer?
<ul style="list-style-type: none"> • How well does my insulated packaging perform?
<ul style="list-style-type: none"> • How much shelf life does my perishable lose in 7 days of storage if, when entering storage, its temperature is 46°F versus 33°F?
<ul style="list-style-type: none"> • How can I use shelf life tagging to prevent entire shipments from rejection at customer receiving?

Freshtime™ key features

New data. Compressed data. Actionable Data. Freshtime tags give you data that you have not been able to collect easily in the past. Because of the 100-point orientation, redundant data gets compressed into meaningful data. In-tag alerts rules enable this data to be actionable—either via button push or via RFID reader.

Reusable. Freshtime tags are reusable—today a tag can be monitoring the inside of a truck and tomorrow it can be watching the shelf life of a banana.

No Need to Be Connected. Each tag can provide all who handle the perishable with actionable data without requiring connection to a remote database. When history data is harvested from the tag, tag data is intelligible and can be saved, printed or emailed without needing database connection.

Tag Key Features.

- **On-tag button and display** starts, stops, checks status and marks changes of custody.
- **In-tag database (BizData)** identifies tag owner, product, batchlot, production date, inspection results and more.

Playbook—food & flowers

- **In-tag history** includes temperature histograms and shelf life and temperature logs by custody owner.
- **Inheritance** enables shelf life and temperature data to follow split pallets or the transfer of perishables from large bins or containers to smaller containers (beer, wine).
- **NFC chip or 2D barcode on the tag** enables those authorized to get additional information, including freshness left at the time last handled, batchlot number as well as access to a designated web site.

Freshtime Dashboards and Association. Freshtime dashboards read and write Freshtime tags. They can read barcodes and RFID identity tags. And they associate Freshtime tags to other tags or documents, such as waybills, invoices, field pick lists or advanced shipping notices.

Freshtime Controls. Freshtime controls are based upon a publish/subscribe model in which you the user can set what data is wanted and what should be done with it. This enables you to get actionable data, refined the way you want it at any or all times.

Dashboards that Act as Master Dispatchers. Freshtime dashboards are multi-tasking and designed so that they can control multiple readers and signal devices. They can be configured to act as master dispatchers or collectors of real-time data from other Freshtime dashboards while simultaneously extracting data out of the Freshtime database via reports, queries and alerts.

Playbook—food & flowers

Use of Quick Data in EPC RFID readers requires a program running in the reader that identifies the EPC number in the tag as a Freshtime tag. The Freshtime EPC is a GRAI (reusable asset) with company prefix, Infratab and product code, Freshtime/version #. Infratab makes available the API for extended memory so that Quick Data can be interpreted.

Below are three examples of how Quick Data is used in retail—at distribution center receiving, at distribution staging to retail stores and at retail store receiving.

In these examples, the tag's alerts have been set up so that Life Alert 1 and Temperature Alert 1 in the tag are used by DC receiving, Life Alert 2 and Temperature Alert 2 are used by DC staging to retail stores and Life Alert 3 and Temperature Alert 3 are used by retail store receiving. It is assumed that the acceptance criteria had been agreed upon between brand owner and the buyer's purchasing—and had been set in the tag. This enables a quick go/no-go decision to be made by the RFID reader—with no need for downloading temperature/time data from the tag or for downloading shelf life and acceptance criteria from a database.

This ability to make on-the-spot decisions, with minimum data, is the power of Freshtime.

Biz Location Name		Westlake Distribution Center				
BizStep	receiving	Readpoint	3421.3298	Date	2010.04.30	
BizLocation ID	3421.3298	SSLT	receiving area	SSLTA	dock door	
DOC ID	EPC.SGTIN	EPC.INFRA.FT.GRAI	FT %	FT ALERT 1	TEMP ALERT 1	ACTION
9876	1111.2222.1234	0188421.0001.1111	65%	1	1	9876 CHECK
9876	1111.2222.1235	0188421.0001.1112	64%	1	1	9876 CHECK
9876	1111.2222.1236	0188421.0001.1113	67%	1	1	9876 CHECK
9876	1111.2222.1237	0188421.0001.1114	58%	1	1	9876 CHECK
9876	1111.2222.1238	0188421.0001.1115	61%	1	1	9876 CHECK
9876	1111.3333.4333	0188421.0001.1116	78%	1	1	9876 CHECK
9876	1111.3333.4334	0188421.0001.1117	72%	1	1	9876 CHECK
9876	1111.3333.4335	0188421.0001.1118	76%	1	1	9876 CHECK
9876	1111.3333.4336	0188421.0001.1119	71%	1	1	9876 CHECK
4582	2476.6666.8797	0188421.0001.2334	42%	1	1	4582 CHECK
4582	2476.6666.8799	0188421.0001.2335	44%	1	1	4582 CHECK
6523	2476.7777.1298	0188421.0001.2336	55%	1	1	
6523	2476.7777.1295	0188421.0001.2337	57%	1	1	
1295	2476.6666.4502	0188421.0001.2338	50%	1	1	
1295	2476.6666.4503	0188421.0001.2339	51%	1	1	

Freshtime Tags At DC Receiving

In the example above, the challenged shipment was rejected.

Playbook—food & flowers

Biz Location Name		Westlake Distribution Center				
BizStep	staging_out	Readpoint	3421.3245	Date	2010.04.30	
BizLocation ID	3421.3245	SSLT	staging area	SSLTA	staging	
DOC ID	EPC.SGTIN	EPC.INFRA.FT.GRAI	FT %	FT ALERT 2	TEMP ALERT 2	ACTION
1234	1111.2222.1234	0188421.0001.1111	62%	2	2	
1234	1111.2222.1235	0188421.0001.1112	61%	2	2	
1234	1111.2222.1236	0188421.0001.1113	64%	2	2	
1234	1111.2222.1237	0188421.0001.1114	51%	2	2	use local
1234	1111.2222.1238	0188421.0001.1115	58%	2	2	
1234	1111.3333.4333	0188421.0001.1116	75%	2	2	
1234	1111.3333.4334	0188421.0001.1117	69%	2	2	
1234	1111.3333.4335	0188421.0001.1118	73%	2	2	
1234	1111.3333.4336	0188421.0001.1119	68%	2	2	
1234	2476.7777.1298	0188421.0001.2336	39%	2	2	use local
1234	2476.7777.1295	0188421.0001.2337	41%	2	2	
1234	2476.6666.4502	0188421.0001.2338	52%	2	2	
1234	2476.6666.4503	0188421.0001.2339	54%	2	2	

Freshtime Tags At DC Shipping

In the example above 2 pallets were pulled to be shipped to a store closer to the distribution center.

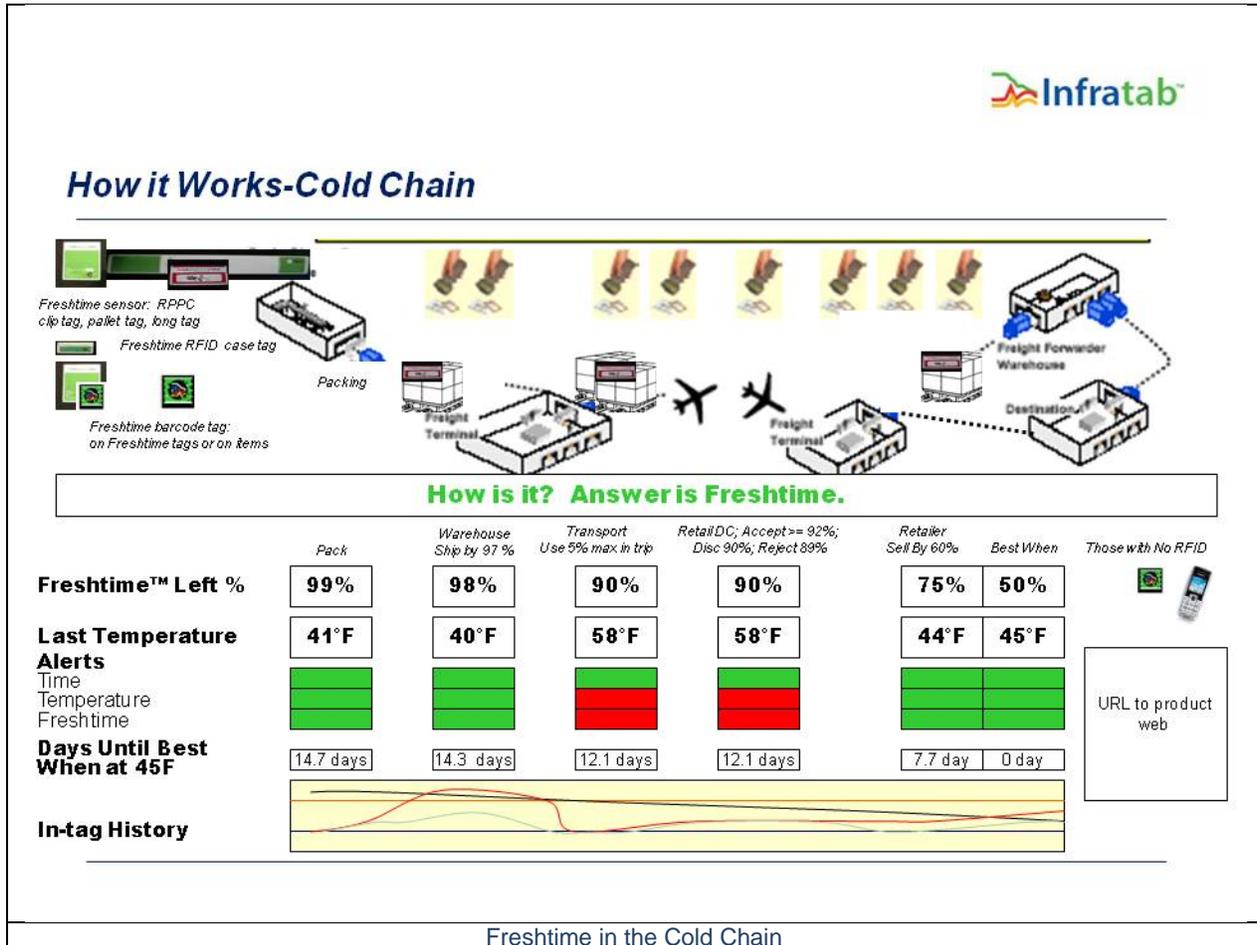
Biz Location Name		Palmdale Store		Carrier ID		3455
BizStep	receiving	Readpoint	4766.5555	Date	2010.04.30	
BizLocation ID	4766.5555	SSLT	receiving area	SSLTA	dock door	
DOC ID	EPC.SGTIN	EPC.INFRA.FT.GRAI	FT %	FT ALERT 3	TEMP ALERT 3	ACTION
1234	1111.2222.1234	0188421.0001.1111	58%	3	3	
1234	1111.2222.1235	0188421.0001.1112	57%	3	3	
1234	1111.2222.1236	0188421.0001.1113	60%	3	3	
1234	1111.2222.1237	0188421.0001.1114	47%	3	3	short
1234	1111.2222.1238	0188421.0001.1115	54%	3	3	
1234	1111.3333.4333	0188421.0001.1116	71%	3	3	
1234	1111.3333.4334	0188421.0001.1117	65%	3	3	
1234	1111.3333.4335	0188421.0001.1118	64%	3	3	transport
1234	1111.3333.4336	0188421.0001.1119	58%	3	3	transport
1234	2476.7777.1298	0188421.0001.2336	35%	3	3	short
1234	2476.7777.1295	0188421.0001.2337	37%	3	3	
1234	2476.6666.4502	0188421.0001.2338	48%	3	3	
1234	2476.6666.4503	0188421.0001.2339	50%	3	3	

Freshtime Tags At Store Receiving

In the example above temperature thresholds in the short haul transport were exceeded. The increased temperature caused one of the pallets to fall below acceptable receiving criteria.

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Below is a snapshot of Freshtime tagging in an international cold chain. When the tag is read by an RFID reader, when the NFC chip on the front of the tag is read by a cell phone or when the on-tag button is pushed, changes of custody are captured.



Playbook—food & flowers

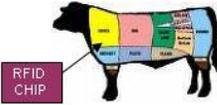
Two additional Freshtime features are used in the beef use case below.

- Inheritance: transfers the shelf life and temperature status of a “mother” tag to a daughter tag—enabling continuity in tracking the shelf life of different sections of the beef.
- Association: correlates documents used in the process with the Freshtime tag as well as any barcodes or RFID tags attached to the beef.



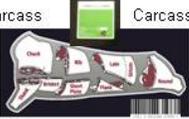
Use Case for Beef

PROCESS



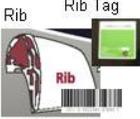
RFID CHIP

Carcass



Carcass Tag

Rib



Rib Tag

20 lb. Daughter



Rib Eye
20 oz



Shipping Tag

DETAILS

A Freshtime tag is added to carcass at slaughter and associated with the ID tag attached to the carcass.

Carcass is cut. New Freshtime tags are attached to batches of retail cuts & associated with ID tags of retail cuts and carcass tag. When part of a batch is needed, Freshtime daughter tag is started. The Freshtime % of the mother tag is the starting point for the daughter tag.

Infratab Freshtime (iF) tags work in conjunction with barcodes and RFID tags currently used to identify products and batches. This Freshtime feature is called association.

In-tag data and database

Product ID (serialized)	7665.123	Product ID (serialized)	8665.144	Product ID (serialized)	9665.602	Product ID (serialized)	9999.233
Batchlot	8888	Batchlot	8888	Batchlot	8888	Batchlot	8888
If tag EPC	A688	Associated tag	A688	If tag EPC mother	B600	If tag EPC mother	c899
Profile Name	carcass	If tag EPC	B600	If tag EPC	c899	If tag EPC	d4444
Start Date	8/1/2009 8:34	Profile Name	rib	Start Date	8/5/2009 8:56	Profile Name	rib 20 oz .
Initial Freshtime	100%	Start Date	8/4/2009 8:34	Initial Freshtime	98%	Start Date	8/8/2009 8:34
		Initial Freshtime	100%	Temp Alerts	from B600*	Initial Freshtime	97%
At 8/4/09				Temp Histogram	from B600*	Temp Alerts	from c899*
Freshtime %	97%	At 8/5/09		* added into tag at user option		Temp Histogram	from c899*
Temp History	in tag & db	Freshtime %	98%			* added into tag at user option	
		Temp History	in tag & db	At 8/8/09			
				Freshtime %	97%	At 8/9/09	
				Temp History	in tag & db	Freshtime %	96%
						Temp Alerts	in tag & db

Use Case-Beef

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The use case for eggs addresses the association of either a case or an item tag (RFID or barcode) with Freshtime pallet tag to provide full track/trace and temperature monitoring down to the item level.



Use Case--Eggs

Like today's temperature loggers, Freshtime sensor tags are reusable and need to be collected from retailer. Infratab facilitates this service so that minimal processing is required from the retailer.

PROCESS



BatchLot

Egg Production

IF EPC	A688
Product ID (GTIN)	8551.101
Product Desc	eggAA case-batchlot
batchlot	8888
Profile name	eggsAA
Initial Freshtime	100%
If start date	8/1/2009 8:34
If Tag read	8/3/2009 7:33
Freshtime %	98%
Temp Alerts	none
Temp History	in tag & db

Egg Production
Inventory management: least shelf life out



BatchLot

Egg storage



PalletTag

Egg order

IF EPC	B660
Product ID (SGTIN)	8551.201
Product Desc	eggAA pallet-20 cases
batchlot	8888
Associated IF tag	A688
Profile name	eggsAA
associated case	8551.201.331
associated case	8551.201.332
associated case	8551.201.333
Initial Freshtime	100%
If start date	8/3/2009 7:34
If Tag read-ship	8/3/2009 10:15
Freshtime %	99%
Temp Alerts	none
Temp History	in tag & db

Egg Producer Shipping



Egg transport



Egg DC receiving

If Tag read-DCRec	8/6/2009 8:00
Freshtime %	96%
Temp Alert1 > 45 for 30 min	on
Temp Alert2 > 45 for 10 min	ok
Temp History	in tag & db
DC accept rules IF% >	95%
Temp Alert2	ok
DC check shipment IF% >	94%
DC reject rules IF% >	85%

DC Receiving



PalletTag

Egg retail store backroom

- Read SGTIN case tag
- Read IF pallet tag & put checkpoint into history log

If Tag read-store backrm	8/8/2009 11:00
Freshtime %	75%
Hours until Best-When	47.6
Sales Floor rules Sell-by IF%	60%
Dis count-Sell-by IF%	55%
Toss IF%	45%

Store Backroom

Use Case—Eggs

Playbook—food & flowers

freshtime™ produce field kit

Uses

- Pre-harvest: micro-climate monitor at different locations in the field
 - Harvest: Baseline
 - Harvest & field pack: monitor shelf life used in the field.
 - Add inspection data into tag = track by best-quality and fresh.
 - Use real-time data for truck pick-up logistics management for hot days.
-

Why Tag in the Field

Pre-harvest. FreshTime tags give you a way to inexpensively collect data to supplement NOA climate data. Use the tags to test your theories ad hoc. Add field inspection results in the field into the tag to correlate data with temperature.

Harvest: Fact find about what is happening in the field with your perishable's shelf life to incorporate into product business decision-making.

- In California in summer, produce can vary as much as 3°F within a pallet.
- In California in summer, a pallet of grapes picked at 8am versus a pallet picked at 11am, both picked-up at noon can have a variation in shelf life by as much as 25 Points

Grape:

1 hour at 90°F = 2.5 Points user; for consumer, a loss of 14.9 refrigerator hours

1 hour at 95°F = 3.3 Points; for consumer, a loss of 19.7 refrigerator hours

75% life = 18.8 refrigerator days; 65 Points = 16.3 days; 50 Points = 12.5 days

Blueberry:

1 hour at 90°F = 5.7 Points; for consumer, a loss of 12.5 refrigerator hours

1 hour at 95°F = 7.5 Points; for consumer, a loss of 15.7 refrigerator hours

50 Points = 4.4 refrigerator days; 40 Points = 3.5 days; 20 Points = 1.8 days

The Benefit to the Brand

- Ability to focus on best and the challenged—to maximize margins.
- Extended shelf life of all products
- Consistency in freshness per product shipment.
- Sales/marketing segmentation. Sell freshest, highest quality product to quality-driven customers. Promotions based upon fresh. Add freshness into pricing calculation.
- Nutrient level—A band spanning a group of FreshTime Points.

Playbook—food & flowers

freshtime[™] business cases

Business cases vary from company to company. Below are two business cases—one for brand owner and one for retail. Their purpose is to give you a starting point for your models.

Brand owner

Business Case-Brand Owner		
Internal Operations, Sales, Marketing		
# Tags/Pallet	1 Tag per Pallet	1
# Pallets	# in Batch Lot	24
Tagging Duration--days	Pack to Ship	15
Tag Cost per Month	\$0.60	
Tag Cost per Use	\$0.30	\$7.20
Wholesale Value of Pallet	\$1,000	\$24,000
Tag as % of Perishable Value	0.03%	0.03%
Benefits to the Brand		
Product pricing: freshness factor based upon # of days until best-when (Freshtime %)	Sales, Marketing	increased sales; promotions based on freshness
Higher customer satisfaction when freshness consistency can be trusted	Sales	repeat business
Track/trace/temperature monitoring compliances	Internal Operations	no additional systems needed
Higher value products/lower discount rate for challenged products resulting from inventory mgt based upon least life first out	Internal Operations, Sales	longer shelf life, managed shelf life
Customer receiving agreement where days until best-when become part of acceptance criteria	Sales	increased sales; promotions based on freshness
Brand Owner		

Playbook—food & flowers

Retailer

Business Case-Retailer

Internal Operations, Merchandising, Store Sales

ASSUMPTION: Acceptance criteria includes Freshtime %/Consumer Days as one of factors

Either trusted as part of brand/retailer verification process or RFID read automatically/with acceptance criteria at dock.

Alternatives	Brand Tag At Ship	Retailer Tags At Receiving
Tag Time-days (1)	12	7
# Tags/Pallet	1	1
Tag Cost/Day	\$0.02	\$0.02
Pooling Charge per trip	\$0.60	0
Freshtime tagging cost/pallet	\$0.84	\$0.14
# Pallets/Shipment	24	24
Cost/Shipment	\$20.16	\$3.36
Wholesale cost per shipment	\$24,000	\$24,000
Freshtime tagging/% of shipment wholesale value	0.08%	0.01%

Benefits	Brand	Retailer
Promotions based upon trusted freshness	sales, promotions	merchandizing
Monitoring of transport to pallet level	logistics	
Stock rotation based upon fresh; demographics for fresh		perishable manager
Sell-by strategies based upon trusted freshness		perishable manager
Track/trace/temperature monitoring compliances	internal ops-thru shipping	operations: with temperature monitoring tracked to item

- 1) Tag time for brand: ship-receive-sale-service pickup/repackage from Infratab
 Tag time for retail-receive to sale. Assumption: retailer handles own recycling of tags.

Retailer