GS1 US — THE GLOBAL LANGUAGE OF BUSINESS

GS1 Standards are addressing Produce Traceability Initiative requirements and making whole chain traceability possible in the fresh foods industry.

TRACING GRAPES FROM CHILEAN FIELD TO U.S. GROCERY

Evaluating Whole Chain Traceability of Imported Table Grapes

BACKGROUND

Subsole S.A. is a company composed of prominent fruit growers based in Chile. It was founded in the early 1990s as a small Chilean grower cooperative with the purpose of exporting table grapes. The Subsole model was designed to be inclusive and progressive, giving growers, customers, and employees more active roles in the fruit growing enterprise.

Continuing in that innovative tradition, Subsole S.A. agreed to work with a pilot team in March 2012 to solve a pressing food traceability challenge—tracking imported fresh produce into the United States at each step along the supply chain.

The pilot team consisted of representatives from Bayer CropScience U.S. and Chile, C.H. Robinson Worldwide, Associated Grocers of Baton Rouge, Subsole S.A., FoodLogiQ®, GS1 US™ and GS1 Chile.

PILOT SPONSOR:

Bayer CropScience

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GOOD GROWING LINK
sponsored by Bayer CropScience

CHALLENGE

Implementing Produce Traceability Initiative labeling and communications standards with Chilean table grape growers, the Port of Valparaiso, the Port of Wilmington, through C.H. Robinson, to Associated Grocers of Baton Rouge, and to retail stores across the Southern United States.

SOLUTION

Bayer CropScience worked with FoodLogiQ to implement PTI labeling hardware and traceability software at the packing sheds in Chile, linked to the C.H. Robinson logistics network.

SCOPE

The pilot focused on case and pallet labeling of red and green seedless grapes packed in two-pound clamshells under the Welch's® brand. The labels were produced using the Produce Traceability Initiative (PTI) best practices.

This clamshell configuration is frequently ordered by Associated Grocers and is packaged at El Retorno, in the San Felipe region, north of Santiago, and Lainca, south of Santiago. Both packing sheds ship to C.H. Robinson through cold storage warehouses, owned and managed by Subsole at the Port of Valparaiso and then to the Port of Wilmington, Delaware.

While the grapes were at sea on the way to the United States, C.H. Robinson sent an Electronic Data Interchange (EDI) Advance Ship Notice (ASN) to Associated Grocers (AG) and arranged for transportation of the grapes from Wilmington to the AG Baton Rouge Distribution Center. At both ports, scanners were tested to ensure the ability to scan and store the pallet label barcode containing the 18-digit Serial Shipping Container Code (SSCC) plus the Application Identifier (AI00).

Associated Grocers tested the inbound ASN to ensure that their receiving dock scanners were populated with the case Global Trade Item Number® (GTIN®) and lot information related to the pallet SSCC. Associated Grocers also tested the outbound traceability of the GTIN to their stores using the voice pick code on the PTI label.

Upon completion of the pilot, the expectation was to have complete whole chain traceability records of a number of pallets of Chilean table grapes. This pilot study outlines how this goal was accomplished and the key findings that surfaced along the way.

GRAPE GROWING

Subsole identifies each field and block uniquely. As grapes are harvested, they are packed into plastic containers lined with plastic sheeting. The containers are loaded onto a truck and pulled into the packing shed for processing. The grapes are sorted and placed directly into clamshells and weighed.

CASE PACKING & LABELING

Once the clamshells are packed into cases, the cases are packed onto pallets and a case label is applied. Today, Subsole applies a label containing human readable information required by the Chilean Department of Agriculture (SAG).

During the pilot a FoodLogiQ Smart Printer was installed in each shed capable of producing the PTI required barcoded case label with a four-digit PTI voice pick code (e.g. 3580).

The PTI label with the GS1-128 barcode includes the C.H. Robinson case GTIN (e.g. 10095829210300) and Lot Number (e.g. 623003). One can look up the brand owner of

this GTIN at the GS1 website, www.GEPIR.org, and find more information on the grower at www.GoodGrowingLink.com.

The case-level barcode is used by resellers to scan inbound, outbound, or both. The PTI case label uses a GS1-128 barcode and includes Application Identifiers, such as (01) which indicates GTIN and (10) which indicates Lot Number. This enables scanners to read and parse a single barcode into multiple pieces of data. This increases the speed and accuracy of data capture throughout the supply chain.

The GTIN is a globally unique identifier for the product that enables whole chain communication and traceability. **Prior to the GTIN, there was no consistent way for Subsole, C.H. Robinson, and Associated Grocers to refer to a case of grapes.**

As part of the pilot, the team met with GS1 Chile to discuss the rollout of the PTI case label across Chile. There are several growers beginning to label cases per the PTI recommendation, but most have not implemented the PTI voice pick code due to software limitations.
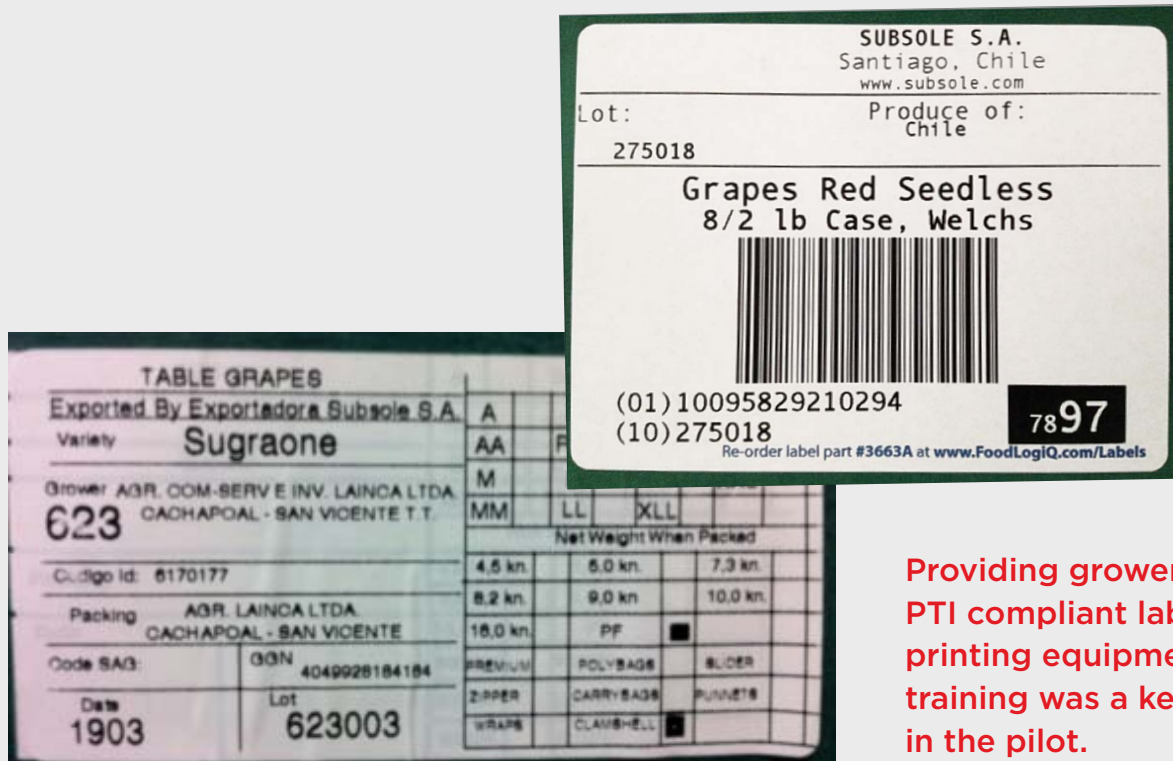
Providing growers with PTI compliant label printing equipment and training was a key step in the pilot.

The hardware, software and training provided during this pilot enabled Subsole to implement PTI-compliant labeling.

VALPARAISO SHIPPING PROCESS AND PALLET LABELING

Once the cases are packed onto pallets, a pallet tag is applied to each pallet. Currently, Subsole generates a 10-digit number that conforms to the SAG requirements for exported fresh produce. For the pilot, Subsole added a GS1 SSCC to the label. The SSCC is an 18-digit number with a two-digit Application Identifier (00) prefix that indicates that an SSCC follows.

The pallets were sent from the packing shed to a Subsole cold storage facility awaiting shipment to the United States. Once released, the pallet information is sent to the Port of Valparaiso. Currently, the port scans the 10-digit pallet tags and communicates the list to the Port of Wilmington. The pilot shows that it will be possible to use the SSCC in the future, but this will require the Chilean Department of Agriculture to modify its systems to handle the longer pallet number—and the port systems will need to be synchronized in their handling of the Application Identifiers when encoding the SSCC into a GS1-128 barcode.

Feedback from the Port of Valparaiso indicated that their scanners were capable of handling the SSCC but it is read and stored as a 20-character text field. During the transfer of the SSCC to the Port of Wilmington or during scanning in Wilmington, there is the opportunity to drop the leading two zeros.

PORT OF WILMINGTON RECEIVING PROCESS

In advance of arrival, the Port of Valparaiso communicates the manifest to the Port of Wilmington. The pallet ID is a 10-digit SAG number that varies in structure by grower.

GS1 US personnel were on-site at the Port of Wilmington as the grapes arrived to review how port staff scans pallets and handles inbound communication. It was not readily apparent that their systems are fully compatible with the SSCC.

Our conclusion is that GS1 Global will need to coordinate with all ports globally to ensure consistent reading and storing of the SSCC.

When the product is received at the port, the dock support crew unloads each pallet of grapes and provides confirmation of received products to the Port of Wilmington. The temperature of the grapes is taken by United States Department of Agriculture (USDA) mandate. The product is then transported to the fumigation warehouse, where the temperature is taken again. If the product is too cold for fumigation, it is held by the USDA until the next day. The fumigation process is performed once nightly.

Product is then transported to the cold storage warehouse, from which, C.H. Robinson arranges shipment. Some product is fast moving and some is slow moving, but there is an absolute holding time before spoilage. Oldest product is always shipped first (first-in, first-out). The cold storage warehouse identifies products using proprietary, company specific systems and labeling. In the future, there is an opportunity for the SSCC, GTIN, and Lot Number to be included by the port in this confirmation.

PRODUCE TRACEABILITY INITIATIVE (PTI)

GS1 US, the Produce Marketing Association (PMA), the United Fresh Produce Association (UFPA), and the Canadian Produce Marketing Association (CPMA) recommend supply chain-wide adoption of electronic traceability for every case of produce by the end of 2012 in this voluntary, wide-reaching industry initiative.
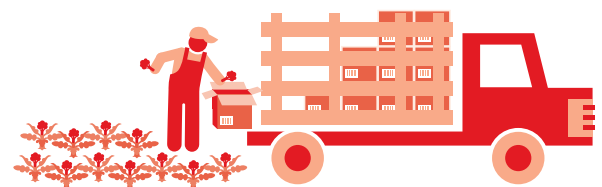
ASSOCIATED GROCERS

During this pilot, we tracked **450 cases** linked to **275 shipments** and **270 unique stores**. Over the course of one week, virtually every store that Associated Grocers serves received a case of grapes from Subsole of the same lot.

```
CODE_COLD_STORAGE          268
COLD_STORAGE               PLANTA SUBSOLE EL OLIVAR
FDA_REGISTER               17983425796
VESSEL_CODE                8776
VOYAGE                     USEC-11
VESSEL_NAME                ATLANTIC ACANTHUS
CIA_NAVIERA                PACIFIC SEAWAYS
CONSIGNEE                  C.H. Robinson Company
LOADING_PORT               VALPARAISO
ETD                        20-01-2012
DESTINATION                WILMINGTON - DE
COUNTRY                    USA - EAST COAST
ETA                        03-02-2012
VARIETY                    SUGRAONE
CATEGORY                   Cat 1
PALLET_NUMBER              2683148486
GROWER_CODE                623
GROWER_NAME                Agr. Com-Serv E Inv. Lainca Ltda.
FDA_REGISTRATION_NUMBER    11935179366
BOXES                      75
PACKAGING                  CLAMSHELL 8X2Lb WELCHS
LABEL                      VERDE
MATERIAL                   CT462
NET_WEIGHT                 7.3
PACKING_DATE               19-01-2012
CONDITION                  No Insp
HATCH                      1-B
GUIDE_NUMBER               140475
SSCC                       00178001260031484865
GTIN                       100095829210300
LOT_NUMBER                 623003
```

Electronic manifest from Subsole provides grower, cold storage, shipping information, packing date, pallet SSCC, GTIN, and Lot Number.

```
TR2223                      SSCC18 REPORT                03/01/12 16:31    1
FAC 01                      WHSE PALLET WITH GTIN/LOT#


PALLET#   ITEM#   DESCRPTION        SSCC18#            GTIN#          LOT#

2805334 00980692 WHITE GRAPE CLAMSHEL 178001260031484872 10095829210300 623003
                                      178001260031484872 10095829210300 623003
2805343 00980692 WHITE GRAPE CLAMSHEL 178001260031484872 10095829210300 623003
                                      178001260031484872 10095829210300 623003
2805352 00980692 WHITE GRAPE CLAMSHEL 178001260031484872 10095829210300 623003
                                      178001260031484872 10095829210300 623003
2805361 00980692 WHITE GRAPE CLAMSHEL 178001260031484872 10095829210300 623003
                                      178001260031484872 10095829210300 623003


TOTAL CASES       480      PALLETS        4
============= END ==============
```

Associated Grocers Pallet Receiving Report, show SSCC, GTIN and Lot Number associated with internal AG Pallet Number. This is PTI Milestone #6.

```
TR1587                    INVENTORY CONTROL SYSTEM          03/01/12 16:42:24
ITEM/SLOT/PALLET INQUIRY                                FW0108 DEVL MARK ROHAL

        ITEM #:                                MASTER UPC #:
                                                 SHIP UPC #:
         UPC #:                                RETAIL UPC #:
        SLOT #: 22        SLOT IS RESERVE        PICK SLOT #:
      PALLET #:                                 ITEM STATUS:
 CASE LABEL#:                             SPECIAL ORDER FLAG:

S PALLET    SLOT    ITEM                             RECPT     PUTAWAY   PALLET
  NUMBER   NUMBER   NUMBER DESCRIPTION               DATE      DATE      QTY
P 2805361  22              00980692 WHITE GRAPE CLAMSHELL  03/01/12 03/01/12    60
P 2805352  22              00980692 WHITE GRAPE CLAMSHELL  03/01/12 03/01/12    60
P 2805343  22              00980692 WHITE GRAPE CLAMSHELL  03/01/12 03/01/12    60
P 2805334  22              00980692 WHITE GRAPE CLAMSHELL  03/01/12 03/01/12    60
  ------- -------- -------- ----------------------- -------------------------
  ------- -------- -------- ----------------------- -------------------------
  ------- -------- -------- ----------------------- -------------------------
```

Associated Grocers Inventory Control Report showing Slot Number and Internal AG Pallet Number. The Pallet and Slot provide links from inbound order to outbound shipment.

INVOICE_NUMBER	INVOICE_DATE	CUSTOMER	SHIP_QTY	ITEM_DESCRIPTION	GTIN	LOAD_DATE
167277	2/24/12	594	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167223	2/24/12	407	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167389	2/24/12	414	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167337	2/24/12	129	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167343	2/24/12	194	3	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167356	2/24/12	303	5	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167206	2/24/12	356	2	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167164	2/24/12	230	2	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167264	2/24/12	515	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167127	2/24/12	160	6	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167178	2/24/12	247	2	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167015	2/24/12	385	1	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167020	2/24/12	390	4	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01
167045	2/24/12	596	3	WHITE GRAPE CLAMSHELL	9582921030	2/24/12 1:01

Associated Grocers Shipping Report showing cases linked to Store, Invoice Number, and Invoice Date. This is PTI Milestone #7.

Subsole Pallet label with SAG compliant 10-digit pallet number and 18-digit GS1 SSCC

This pilot enabled Associated Grocers and C.H. Robinson to move a step closer to full electronic traceability record management for fresh produce.

This integration will provide whole chain visibility into what is at the port, when it was received, and how long it waits until transport. This is useful information for both safety and quality purposes.

ADVANCE SHIP NOTICE

Prior to arrival of the shipment at Associated Grocers, an EDI 856 Advance Ship Notice (ASN) is created and sent by C.H. Robinson based on the information provided by Subsole during ocean transit. Generally, the ASN provides confirmation of the product and quantity shipped and when it will arrive. The new information added to the ASN includes the pallet number (SSCC), the case GTIN, Lot Number, and Pack Date (optional per PTI best practices).

RECEIVING AT ASSOCIATED GROCERS DISTRIBUTION CENTER

Once the product is received at Associated Grocers' dock, the PTI requirement (Milestone #6) is to read and store the GTIN and Lot Number associated with the inbound shipment and relate it to the receiver's purchase order. This may either be accomplished by direct data entry into a purchasing system, scanning with a mobile computer, or through the ASN.


Associated Grocers worked with its software provider to incorporate inbound ASN into the receiving process. As part of the pilot, ASNs were sent to Associated Grocers to test their receiving handheld computers/scanners to verify that the system was able to read the SSCC from the Subsole pallet; match it with the data sent from C.H. Robinson to determine the GTIN and Lot Number; then store the information against the Associated Grocers purchase order and put-away location.

The bottom line for Associated Grocers is that if all inbound shipments had an ASN and an SSCC, the receiving process and PTI Milestone #6 compliance could be accomplished with one scan rather than multiple, manual data entry tasks. **This pilot enabled Associated Grocers and C.H. Robinson to move a step closer to full electronic traceability record management for fresh produce.**

```
N1*BY*Associated Grocers - (Baton Rouge)~
N3*8600 Anselmo Lane~
N4*Baton Rouge*LA*70810~
N1*VN*C.H. Robinson*92*00079~
N3*14701 Charlson Road~
N4*Eden Prairie*MN*55347~
  HL*3*2*T~
  MAN*GM*00178001260031484865~                    {SSCC}
    HL*4*3*P~
    LIN**UK*10095829210300*LT*623003~             {GTIN and Lot}
    SN1**75*CA~                                   {Case Quantity}
    MAN*AI*0110095829210300010623003~             {GS1-128 Barcode}
      HL*5*4*I~
      LIN*1*VP*x980692*UP*095829210303*PI*x980692~ {Item UPC}
      SN1*1*600*EA~
      PO4*8~
      PID*F****Welch's Green Seedless Grapes, 8/2 lb~  {Item Description}
HL*6*2*T~
MAN*GM*00178001260031484872~
```

Example of an EDI 856 ASN
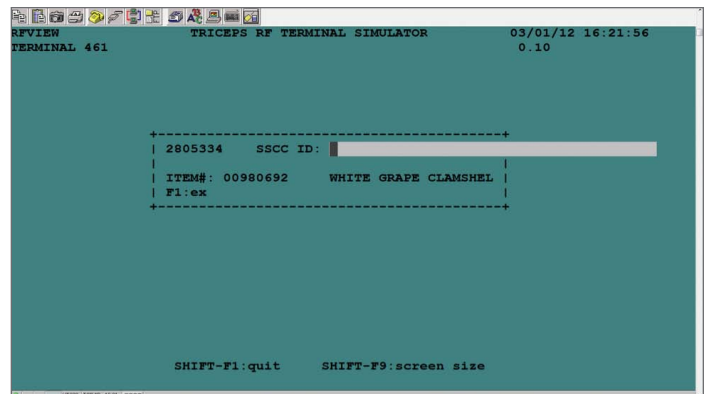
Example of the Handheld Receiving Screen used in the warehouse to link the AG Purchase Order and internal AG Pallet Number to the inbound SSCC, GTIN, and Lot Number
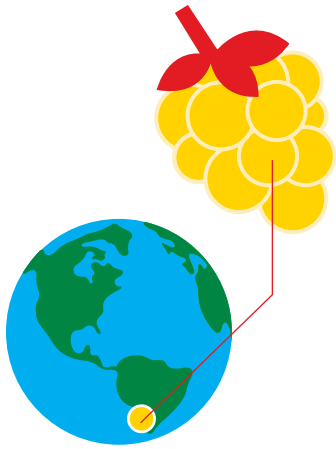
FAST FACTS

Subsole ships 10 million fresh fruit cases per year.
61% of those cases are table grapes.

SOURCE: Subsole, www.subsole.cl

37% of fresh fruit exported to the United States comes from Chile.

SOURCE: Chilean Fresh Fruit Association, www.chileanfreshfruit.com

PUT-AWAY

The received pallet is put into a numbered slot in the warehouse. This location is linked to Associated Grocers' pallet number (SSCC) the case GTIN, and Lot Number. This location is key to the next step in traceability.

VOICE PICKING

Associated Grocers processes thousands of orders from their 280 retail locations on a daily basis. In order to handle this volume, the warehouse uses a voice picking system. When an order is received, a pick "ticket" is created. This information is fed into the voice picking system in the warehouse.

The "picker" vocalizes into a microphone the order that they are working on and that they are ready for instruction. The voice pick system tells the picker the first warehouse location to go to. Once there, the picker is told how many cases to pick.

For products flagged as PTI traceable, the pick is told by the voice system not only how many cases to pick, but also to vocalize the four digit inverse number in the lower right corner of the PTI case label, or PTI voice pick code. The PTI voice pick code is linked to the SSCC GTIN, and Lot Number of the pallet. This gives the warehouse system a way to link the GTIN and Lot Number to the outbound order.

SHIPPING TO RETAIL STORES

The PTI requirement (Milestone #7) is to link an outbound shipment to the GTIN and Lot Number of the case of fresh produce. At Associated Grocers, this was achieved using the PTI voice pick code linked to the receiving data stored per Milestone #7.

PILOT STUDY FINDINGS

- This project provided valuable input to GS1 Global, the Produce Traceability Initiative, and the Food and Drug Administration as they develop the Food Safety Modernization Act.

- There is significant value for U.S. importers and retailers in having a standardized, automated way of identifying and tracking imported fresh produce.

- Subsole implemented PTI case and pallet labeling at two facilities in less than one week.

- The Chilean Department of Agriculture is working to expand its system to handle SSCCs and GTINs.

- Several Chilean growers are implementing PTI labeling, but none (that we are aware of) had the voice pick code.

- The ports of Valparaiso and Wilmington were capable of scanning the SSCC, but do not parse the Application Identifier from the SSCC-18. This may cause an issue during information transfer between ports.

- GS1 Chile is now working with large organizations in numerous industries on implementing GS1-128 barcodes on case labels.

- An opportunity exists across Latin America for sharing the information gleaned from this pilot with growers, shippers, exporters, ports, and departments of agriculture.

ABOUT BAYER CROPSCIENCE

Bayer is a global enterprise with core competencies in the fields of healthcare, nutrition, and high-tech materials. Bayer CropScience, a subgroup of Bayer AG with annual sales of EUR 7.255 billion (2011), is one of the world's leading innovative crop science companies in the areas of crop protection, non-agricultural pest control, seeds and traits. The company offers an outstanding range of products and extensive service backup for modern, sustainable agriculture and for non-agricultural applications. Bayer CropScience has a global workforce of 21,000 and is represented in more than 120 countries. For more information, visit www.bayercropscience.com.

ABOUT ASSOCIATED GROCERS

Associated Grocers, Inc. is committed to being the best in the field of grocery suppliers providing retailers with the tools, products, and services necessary to efficiently and effectively operate their stores and truly stand out as the alternative choice for today's consumer. With the mission "Dedicated to the support and success of the independent retail grocer," Associated Grocers is on the leading edge of technology, offering its retailers a full line of services including accounting, advertising, equipment & design services, marketing, retail technology, and procurement & merchandising. For more information, visit www.agbr.com.

ABOUT C.H. ROBINSON WORLDWIDE

Founded in 1905, C.H. Robinson Worldwide, Inc. is a global provider of multimodal logistics services, fresh produce sourcing, and information services to 37,000 customers through a network of more than 230 offices and over 8,300 employees around the world. The company works with 53,000 transportation providers worldwide. C.H. Robinson is a Fortune 500 company and had annual revenues of $10.3 billion in 2011. For more information, visit www.chrobinson.com.

ABOUT FOODLOGIQ

FoodLogiQ provides traceability and food safety software to the food industry. The company offers its customers a software platform to demonstrate to their suppliers and customers, local and foreign regulatory agencies and consumers that they are producing safe, high-quality food. FoodLogiQ's software platform combines Traceability, Quality Management, Food Safety Compliance and Consumer Mobile applications in a single integrated community collaborative application. For more information, visit www.foodlogiq.com.

ABOUT SUBSOLE

Subsole S.A. was founded at the beginning of the 1990s with the purpose of exporting table grapes. Subsole is composed of prominent fruit growers in Chile. At different plants across the country, Subsole manages the packing, refrigeration and port dispatching processes of the fruit it sells. For more information, visit www.subsole.com.

ABOUT GS1 CHILE

GS1 Chile is a world body whose objective is the development and implementation of standards through collaborative efforts between the different participants in the supply chain. These efforts focus on producing benefits for improvements in costs associated with the introduction of technologies, automation processes, and especially the use of global standards in identification of products, locations, and services. The GS1 System of Standards includes bar codes, standards for electronic commerce, data synchronization, Radio Frequency Identification (RFID) and various standards for traceability applications. GS1 Chile belongs to GS1 Global and works with the National Chamber of Commerce in Chile and the Services and Tourism of Chile to offer a varied range of solutions to domestic industries through consultancies. www.gs1chile.org

ABOUT GS1 US

is a not-for-profit organization that brings industry communities together to solve GS1 US is a not-for-profit organization that brings industry communities together to solve supply-chain problems through the adoption and implementation of GS1 standards. More than 200,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration and for maximizing the cost effectiveness, speed, visibility, security and sustainability of their business processes. They achieve these benefits through GS1 US solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code-based RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®). www.gs1us.org

GS1 US

THE GLOBAL LANGUAGE OF BUSINESS

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