

High Value Advances in Automatic Data Collection

Sponsored by:

SICK

Presented by:

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Abstract

A fully connected Supply Chain requires detailed real-time information on the past, present and future state of all inventory in the network. This class will update the student on the power of ADC today, including vision and laser based technologies and the new enabling software that drives them. **Well beyond tracking and ID, modern systems drive performance monitoring, analytics and compliance with diverse labeling requirements.**

Included will be some tangible DC applications to bring this foundation technology home.

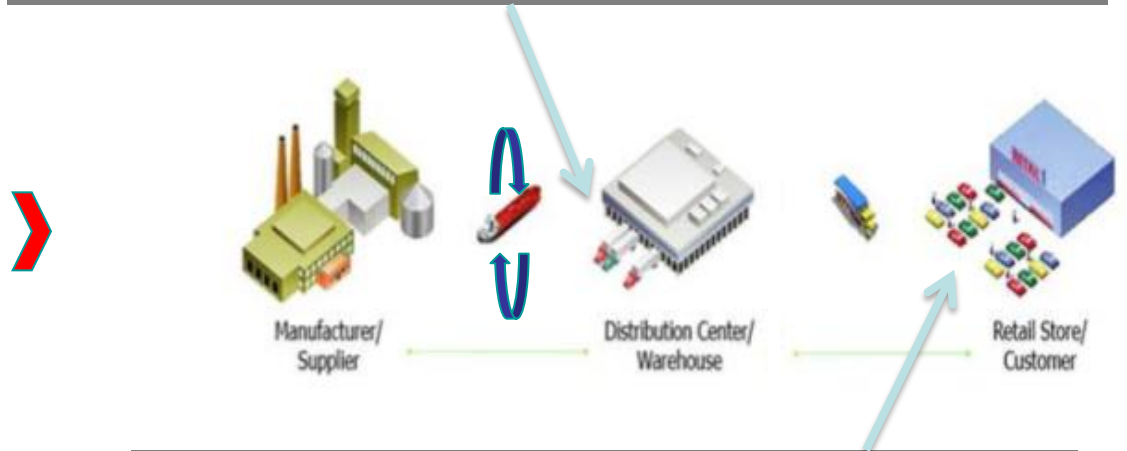
Agenda

- Consumer behavior drives retail supply chain efficiency enhancements
- Industry - automation adoption broadens
- Application trends- receiving, sortation, load efficiency
- Process analytics boost productivity
- Practical DC applications
 - Vendor compliance
 - Track and trace
 - Trailer load
- Summary and Q&A

Consumer behavior influences retailer supply-chain efficiency efforts

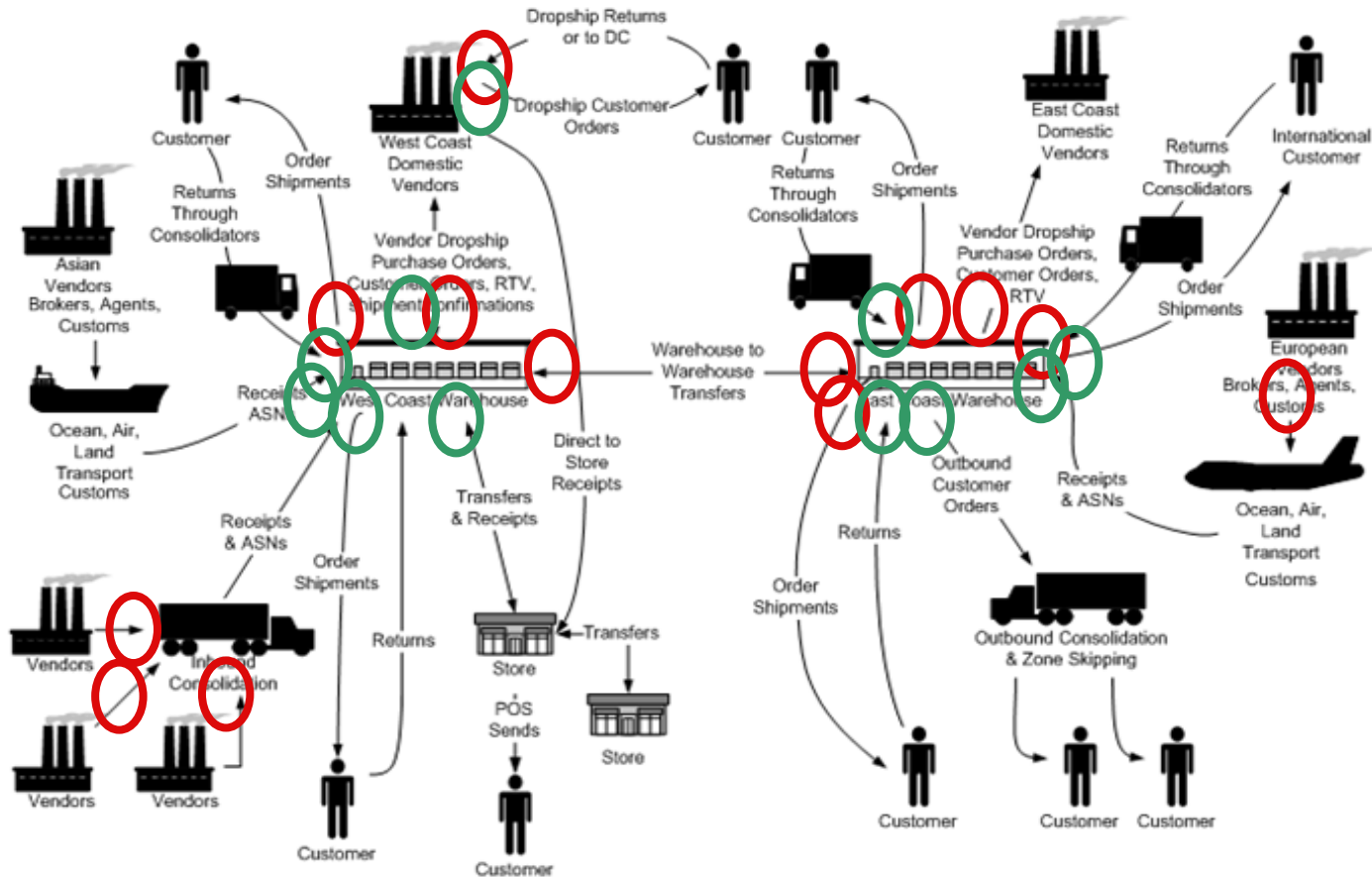


Retailers are improving processes here...



...to improve competitiveness here.

Multi-channel strategies increasingly adopted by retailers



Industry trends

- Companies across most markets have turned to automation as a means to growing their businesses, reducing costs and gaining a competitive edge
- One tool in the 'automation toolbox' is the use of Automated Data Collection (ADC) systems to gather, store and manage information making it easier to analyze data to make better fact based decisions. This is called Business Intelligence (BI) or Business Analytics (BA).

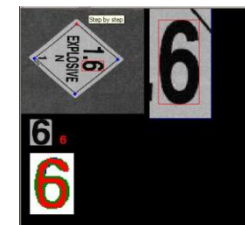
Application trends

- Receiving automation
- Print and apply re-label
- Vendor compliance
- Revenue Recovery
- Outbound verification
- Load optimization (FUEL COSTS!)
- Pallet dimensioning
- End-to-end visibility (ANALYTICS)
- Track & Traceability

Implications of poor and inefficient material flow through the supply chain

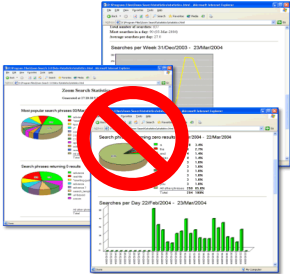
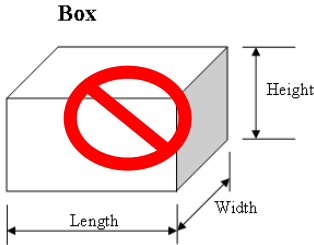
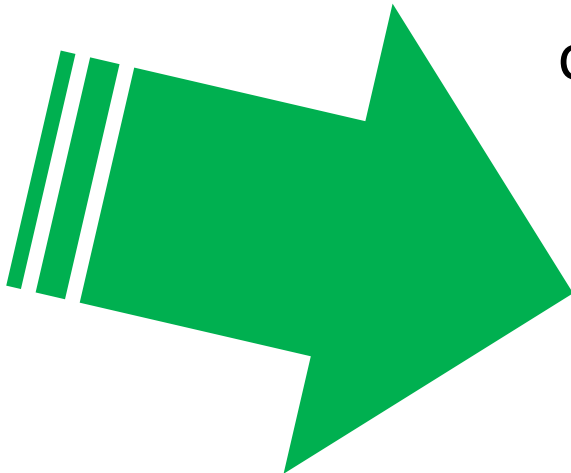
- Labeling attributes
 - Symbology / Print quality
 - Label placement
 - Media type / Color / Condition
 - Label application method
- Package attributes
 - Size (over/under) and side-by-side
 - Damage
 - Material type / Color / Reflectivity
 - Wrapping / Straps
- Other
 - Distinctive markings

Variables that can impede the smooth flow of goods



Missed opportunity-wasted ADC data

The data gathered by ADC systems is often underutilized or not used at all!



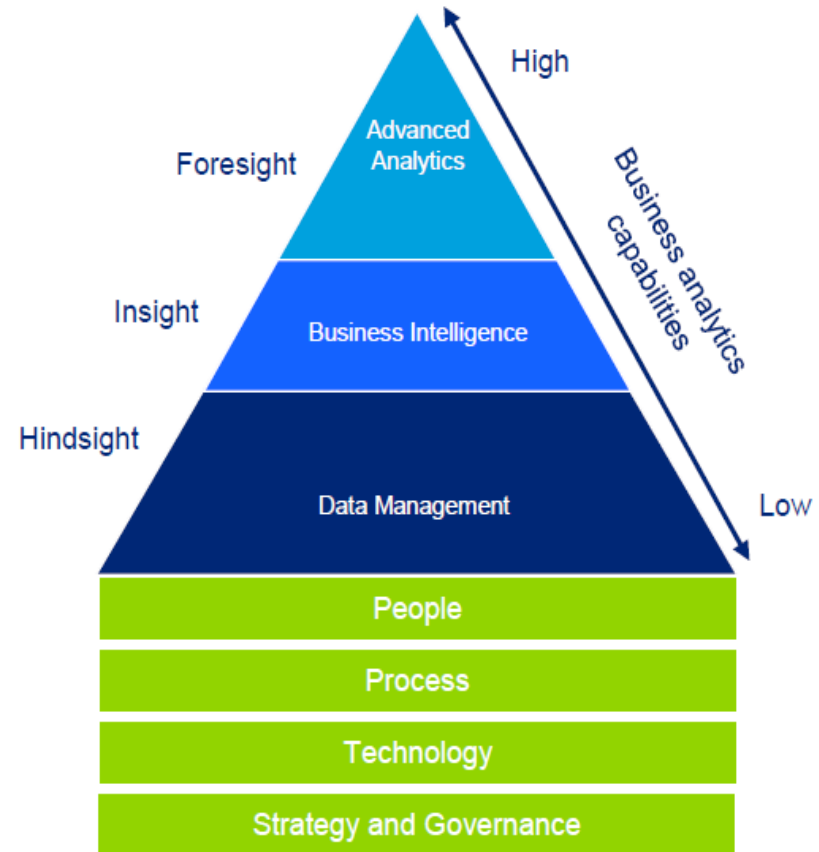
Business Intelligence/Analytics

Advanced Analytics is the use of modern data mining, pattern matching, data visualization, and predictive modeling tools to produce analyses and algorithms that help businesses make better decisions.

Business Intelligence is querying, reporting, online analytical processing (OLAP), and “alerts” that can help answer the questions: what happened; how many, how often, where; where is the problem; what actions are needed.

Data Management is the development and execution of architectures, policies, practices and procedures that are designed to properly manage the collection, quality, standardization, integration and aggregation of data across the enterprise.

Source: Deloitte

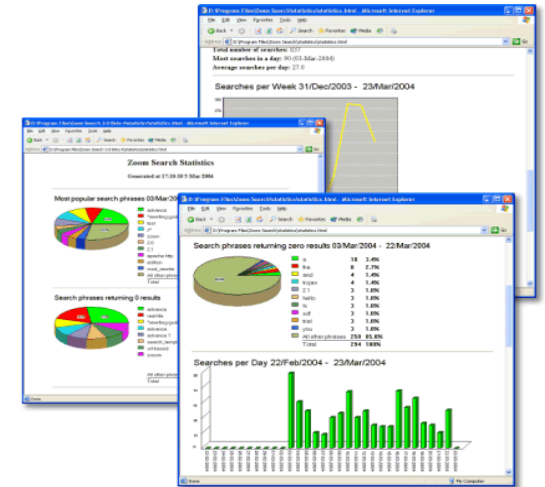


4 Challenges that drive need for BI/BA

- Supply chains are becoming **increasingly complex** as new consumer channels are emerging, globalization is expanding, and technology is rapidly evolving
- Supply chain **data is exponentially expanding** and companies need to harness this data to make more effective business decisions
- Logistics and transportation are among the most **data-driven** components of the supply chain and often the largest cost components of the supply chain for companies
- Managers often lack critical visibility into today's operations which can impact their ability to effectively **plan for the future**

Process analytics boost productivity

- Images and metrics that focus on specific violation areas
- Evidence of root cause of violation via images and data (not just speculation)



**Corrective actions & recommendations
for better process efficiency**

Visualization Platform

Client/Server Platform for ADC Operations

Network Visibility To Both Real-Time AND Archived Operational Data, Performance Statistics and Images



Hybrid Systems



Bar Code Readers



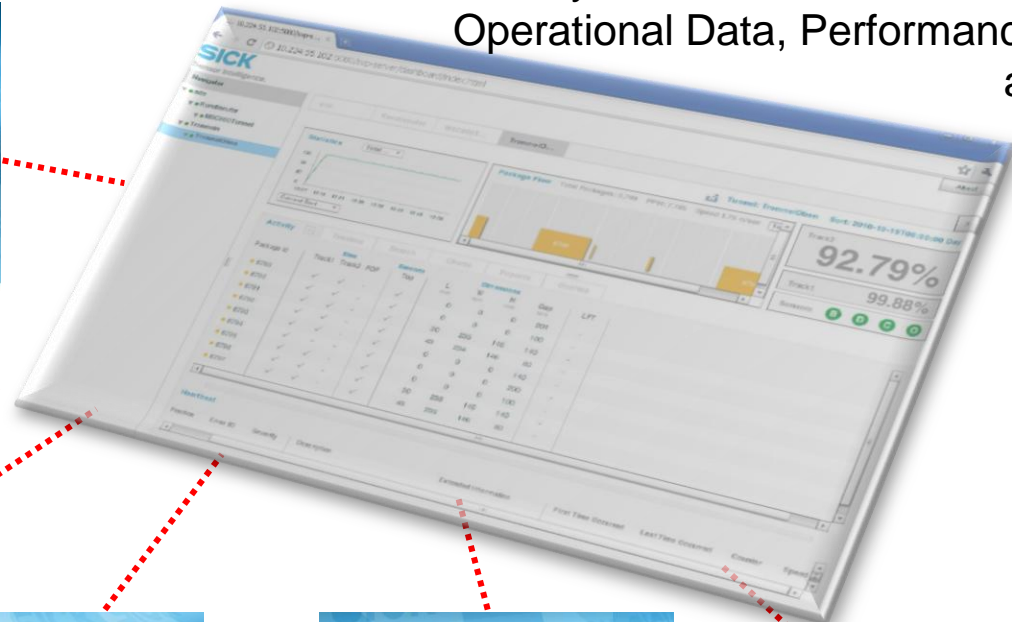
Handheld Readers



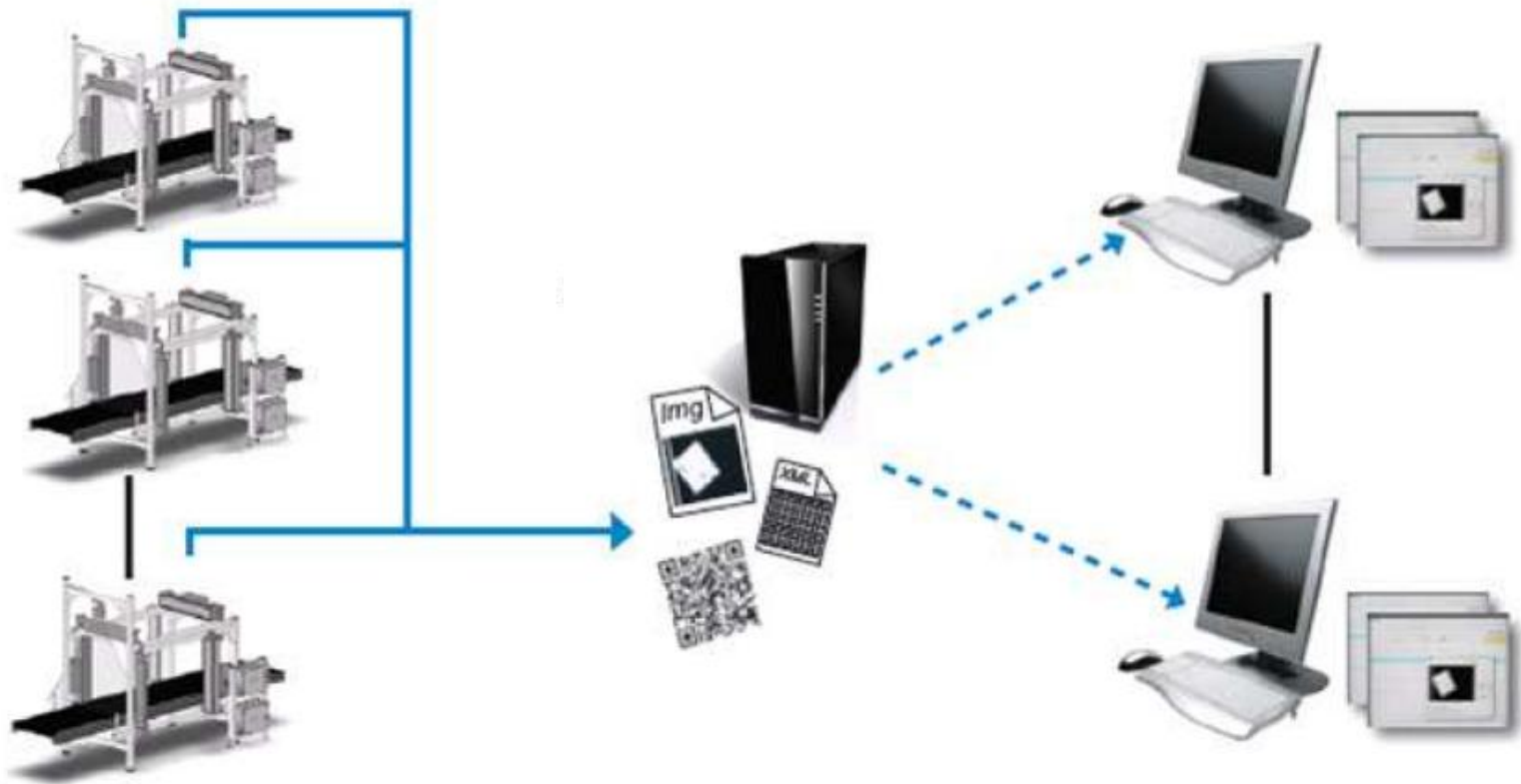
Image Code Readers



RFID



Centralized information access and visibility to critical processes



Layers of Information

- **Information capture and business analytics platform for Sensor Intelligence.**
 - **Dashboard** – *What is happening right now with your barcode scanning system?*
 - Provides real-time feedback about system activity and performance
 - **Information capture & analysis solution** – *What more can the system data tell me?*
 - All system data is stored in a searchable database.
 - Provides simple yet powerful access to key system information.
 - **Image Archive Management solution** - *What more can the system data show me?*
 - All camera images right at your fingertip.
 - Simply click on package information and the image pops up.
 - **Powerful Client/Server platform** – *Where can I get access to this data?*
 - System access from anywhere on the network

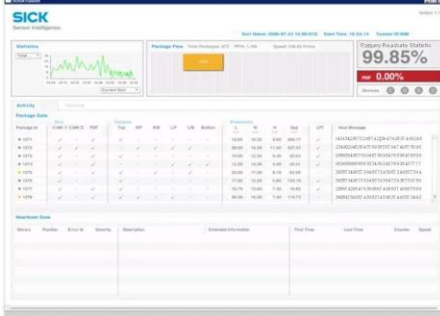


Enhanced Visibility Across Your Network



A screenshot of the SICK Sensor Intelligence dashboard showing a table of facility data. The table has columns for Name, Start, Status, Speed, TVTY, PGP, Total Packages, and PPM. The Status column shows green circles, indicating good performance.

Name	Start	Status	Speed	TVTY	PGP	Total Packages	PPM
SSB0CT14871	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8
SSB0CT14872	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8
SSB0CT14873	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8
SSB0CT14874	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8
SSB0CT14875	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8
SSB0CT14876	Start 11 2009 20:00:00	●●●●●	100.00%	99.80%	99	8	8



1. Enterprise - Corporate View

Network wide analytics/ Vendor Label Compliance/Customer Service /Network wide operation improvements, reporting and comparisons

Network wide analytics

2. Facility View

Facility wide operational improvements/Reporting/System to system comparisons

Facility Systems and Processes

3. System View

System performance, health and statistics/No read analysis/system operational improvement

System Level Processes

Three available platform levels provide increasing visibility into your ADC operations.

- Better internal process control
- Vendor process influence
- Higher overall efficiency
- Unprecedented information access
- Comprehensive system analytics and reporting
- Expediting problem resolution
- Competitive advantage
- Cost reduction

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User & Supplier benefits of process analytics in the ADC environment

- User benefits
 - Greater control of internal and external processes
 - Quantifiable metrics to improve process efficiencies
 - Enhance communication with internal functions as well as vendors
- Supplier benefits
 - Faster service response
 - Commissioning efficiency
 - Diagnostics power
 - Remote convenience

Practical DC applications

- Track and trace
- Vendor compliance
- Trailer load

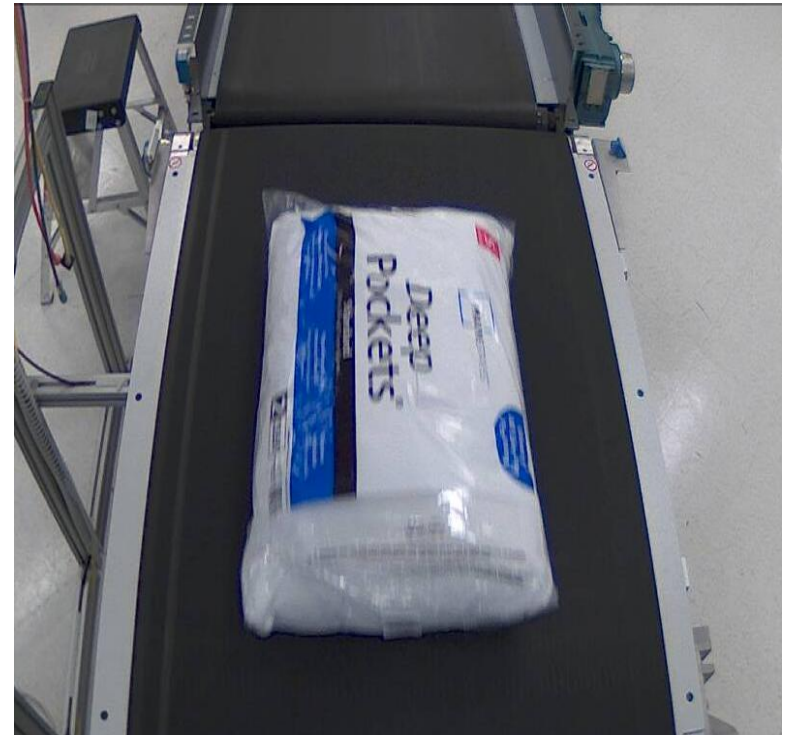
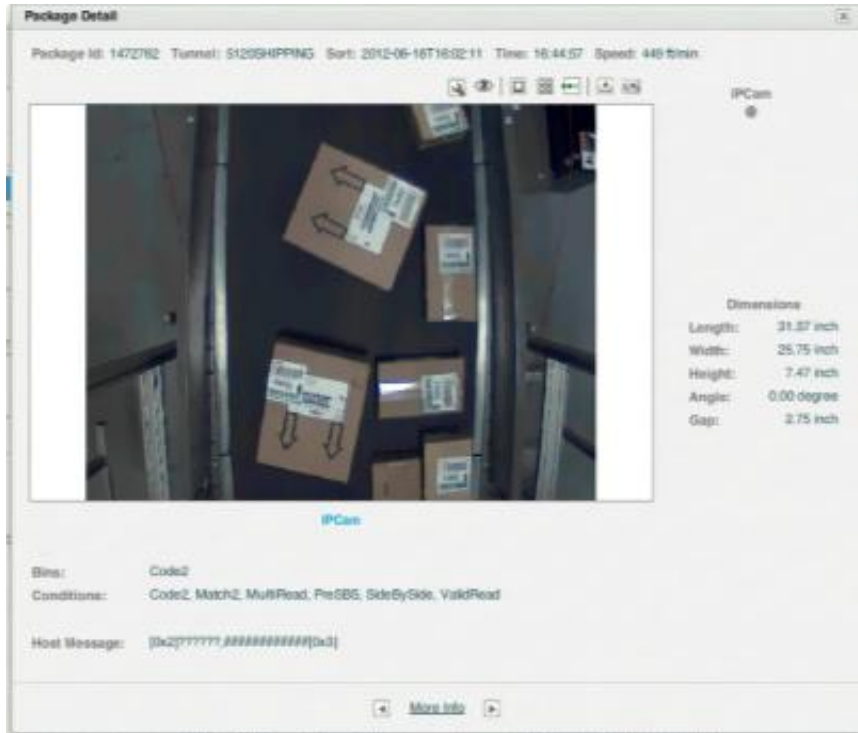
Track and trace- ADC camera image

The screenshot displays a 'Package Detail' window with the following information:

- Package Id: 5151 Sort Name: Sep 11 2009 23:59:03 Time: 14:39:27 Speed: 344 ft/min
- Image path: D:\Images\Top\Top_MSC800_32_2009-03-18T104724_1.jpg
- Shipping label details:
 - Invoice Date: 09/01/2009
 - Customer: TEST
 - Phone #: 602709864
 - Dest: NY
 - Ship Date: 01/06/06
 - Serial: 171230
 - Weight: 3.0
 - Handling: 0.00
 - Total: 0.00
 - From: HODGE SICK, INC, 800 TECHNOLOGY CENTER DR, STOUTSINGTON, IL 62072
 - To: RTTN: EXCHANGE UNIT, FEDEX GROUND, 3418 SOUTH 51TH AVENUE, PHOENIX, AZ 85043 (US)
 - Service: GND PPD D/S, TRACK: 883544563001119
 - Ship Date: 01/06/06
 - Serial: 171230
 - Weight: 3.0
 - Handling: 0.00
 - Total: 0.00
 - System: 171230
 - Account: 325822168
 - Barcode: (9612019) 8835445 63001119
 - Label: GND Prepaid
- Dimensions:
 - Length: 10.20 inch
 - Width: 11.80 inch
 - Height: 6.20 inch
 - Angle: 89.10 degree
 - Gap: 18.74 inch
- Scale Data:
 - Scale Status: 99
 - Weight: 0.00
- Bins: PDF, T1
- Conditions: FXG9612, FXGpdf417, FXGtrack11, PDF, PDFw9612, Shape, T1, T1T2
- Host Message: SSB3CT1;5151;9612019388919510069078;?2181;10038;01020;01180;00620;00;00001000;LB;02;????????????;??

Camera based ADC system - Data gathered includes image and associated package attributes- can be archived and is searchable

Track and trace- IP image/laser system




Laser based ADC system - Data gathered includes image from IP camera and associated package attributes.
Can be archived and is searchable

Track and trace- side-by-side detection

Package Detail Sort Name: Oct 16 2009 00:00:52 Time Reported: 10:12:51 Speed: 357 ft/min

Package Id: 7001 Token Id: 012009-10-16T10:12:517001



Bins
CODE128

Top

Dimensions
Length: 16.59 inch
Width: 22.41 inch
Height: 12.96 inch
Angle: -64.70 degree
Gap: 20.47 inch

TOP

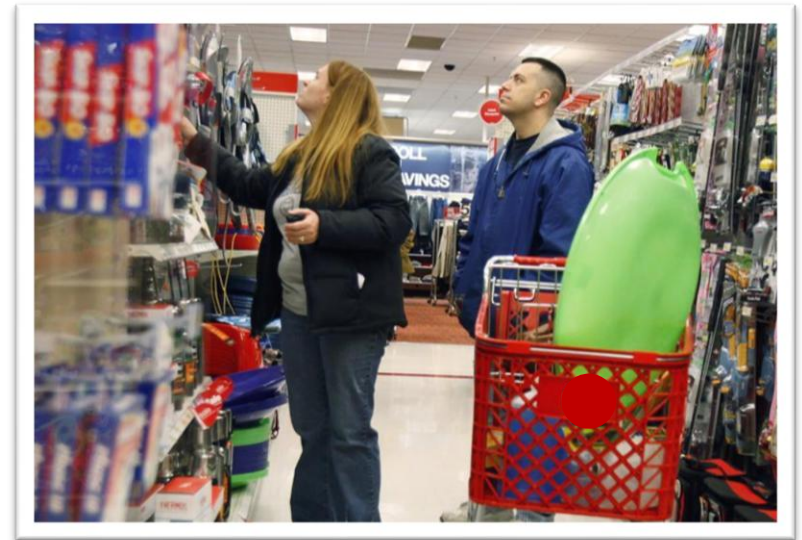
Condition: Multi, SBS, Package, BF7010, SBSon, OMS3
Host Message: 9998888888888888[0xD][0xD]

[more info](#)

Camera based ADC system- Data gathered includes image and associated package attributes plus isolates S-B-S conditions.
Can be archived and is searchable

Vendor compliance

- **Retailers are implementing VC programs for:**
 - Increased control over logistics processes
 - Competitive advantage
- **Enforced VC measures lead to high consumer satisfaction:**
 - Increased availability
 - Speed to store/customer
 - Accuracy



Vendor compliance



13	?	14
9.84%	0.00%	0.69%
183	0	145

#2 Code 128: □96126557139314042292

Decode Value	105	102	96	12	65	57	13	?	14	4	22	92	102	107
Char Len Rate	0.00%	0.00%	0.71%	1.40%	24.34%	14.55%	9.84%	0.00%	0.69%	0.00%	0.69%	0.00%	0.69%	27.08%
Current Char Len	142	142	141	143	189	165	183	0	145	144	144	145	145	144
Last Char Len	142	142	142	141	143	189	165	0	144	144	145	145	144	183
Ele Diff Rate	8.33%	7.69%	27.27%	7.69%	75.00%	40.74%	47.17%	0.00%	12.50%	11.11%	8.33%	5.66%	2.56%	8.33%
Bar Diff Rate	7.69%	2.63%	25.00%	7.69%	75.00%	40.74%	47.17%	0.00%	12.50%	11.11%	5.00%	5.66%	2.56%	5.00%
Spa Diff Rate	8.33%	7.69%	27.27%	4.00%	35.42%	21.43%	4.00%	0.00%	8.33%	1.33%	8.33%	2.63%	0.00%	8.33%
Energy Rate	19.67%	16.11%	12.78%	20.87%	27.17%	8.50%	24.53%	0.00%	22.62%	25.06%	22.15%	14.74%	14.68%	19.35%
Max Char Energy	7600	9282	10608	7600	5152	4002	7632	0	8680	8436	9040	12614	12667	9920
Min Char Energy	1495	1495	1356	1586	1400	340	1872	0	1963	2114	2002	1859	1859	1920
Spa/Bar Ration	0.93%	1.05%	0.94%	0.94%	0.68%	0.95%	0.63%	0.00%	0.90%	0.90%	0.91%	0.95%	0.98%	0.65%
Average Bar XD	13.33	12.75	13.17	13.33	21.50	15.33	20.00	0.00	13.83	14.00	13.67	13.50	13.25	16.20
Average Spa XD	12.40	13.33	12.40	12.60	14.71	14.60	12.60	0.00	12.40	12.57	12.40	12.80	13.00	10.50

Exit

Performance grading based on data collected from ADC systems can be used to enforce vendor compliance measures/improve product flow

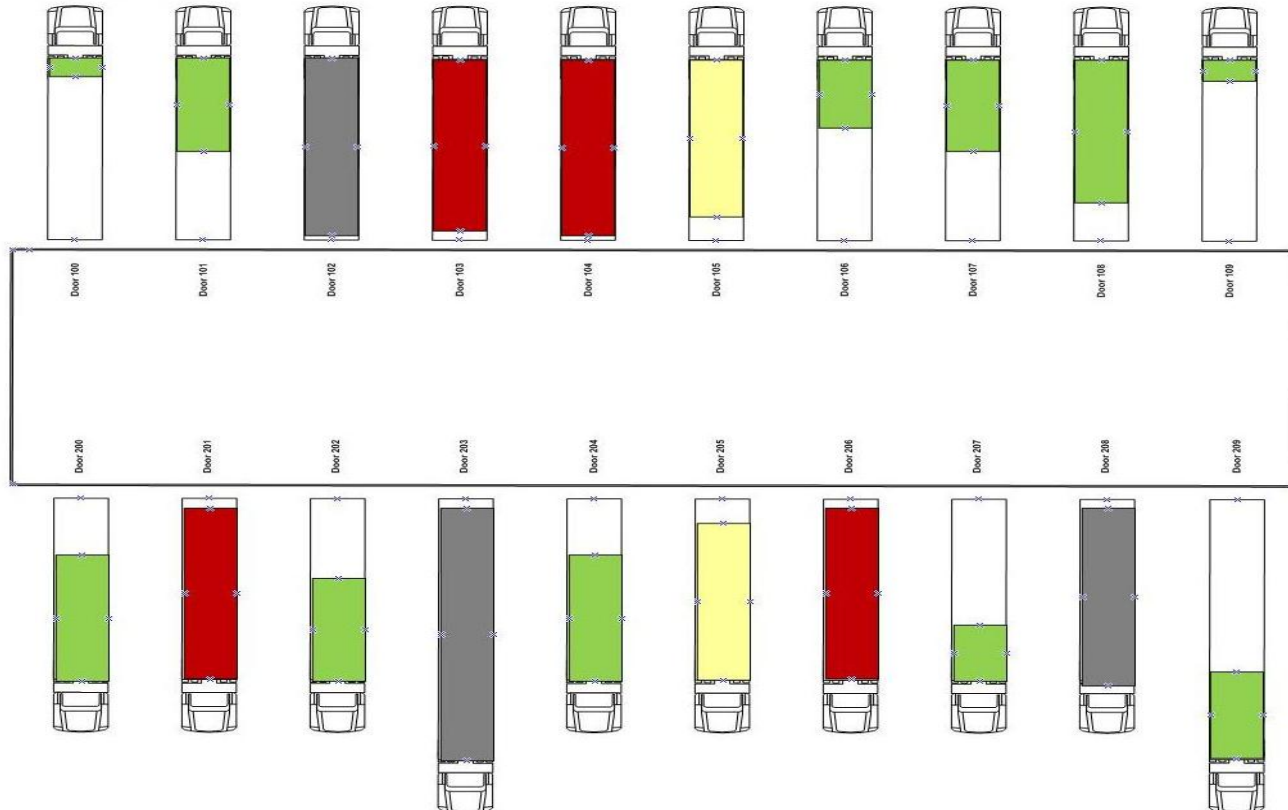
Trailer load- current state



Trailer load- desired state



Trailer load- total solution tied to process data and analytics



Requirements?

- Clear supply chain strategy and objectives
- Proper technology selection
- Sound supplier/integrator relationship
- Cooperative implementation planning
- Execution excellence
- Support services

Thank you for your time!

For More Information:

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