



WEBINAR

Preparing for the Next Era of Industry Standards with Barcode Verification



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Agenda

- 1 What is Sunrise 2027, and how will it affect traceability requirements?
- 2 What is a 2D code and why is it better?
- 3 Challenges in printing 2D barcodes
- 4 Why is verification important?
- 5 Future of Traceability





What is Sunrise 2027?

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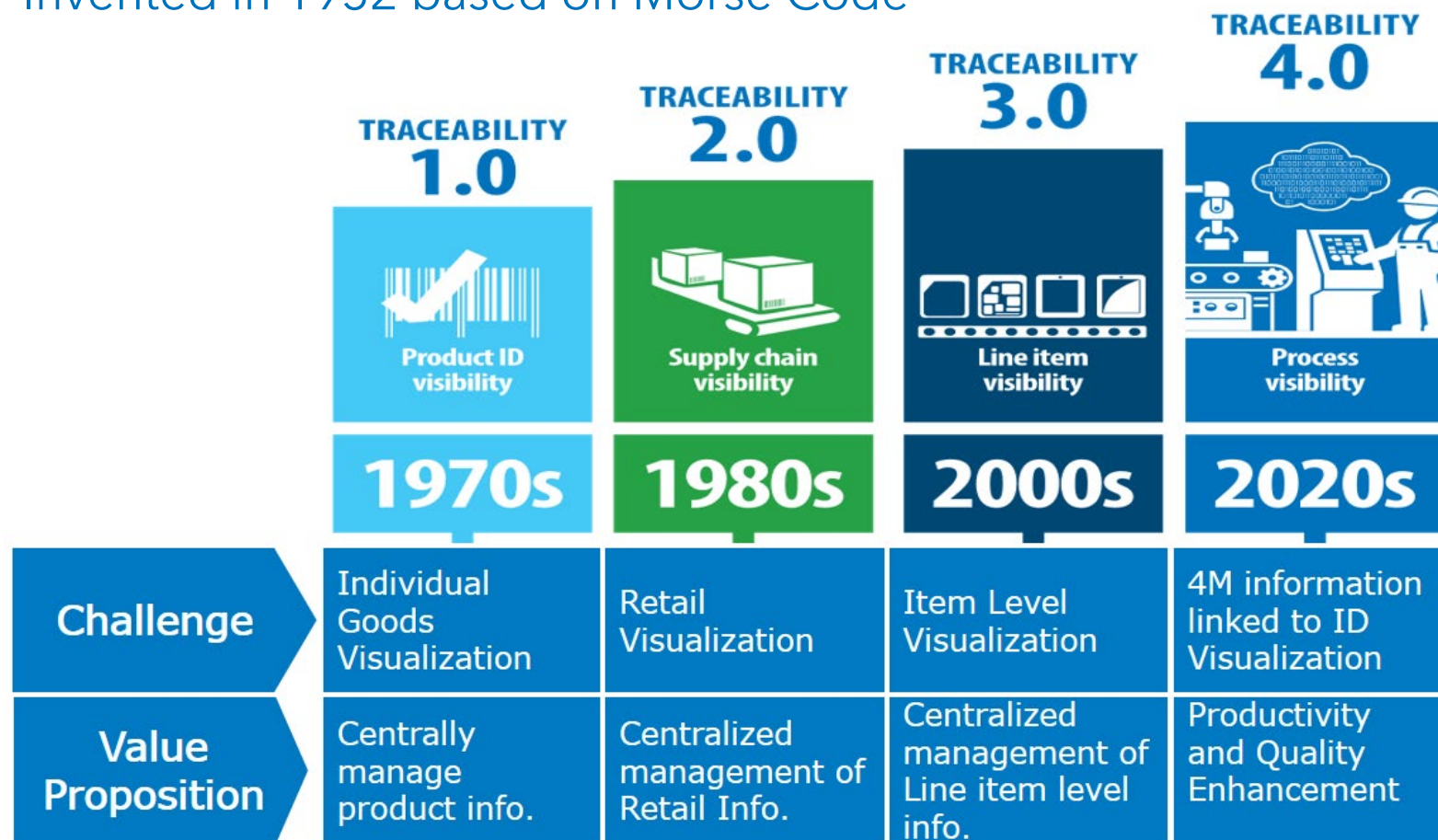
Sunrise 2027 is a GS1-led global initiative calling on retailers to upgrade point-of-sale systems so they can read GS1-compliant 2D barcodes—such as QR codes and DataMatrix—on consumer products by the year 2027.



What are barcodes used for?

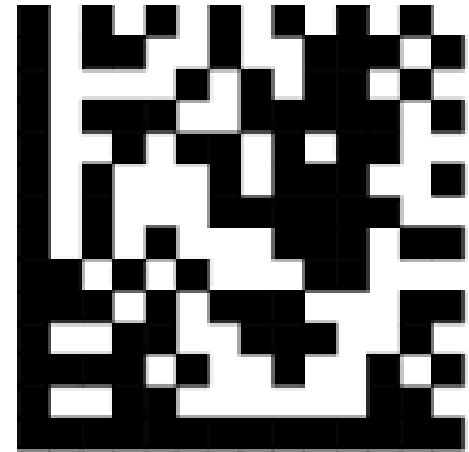
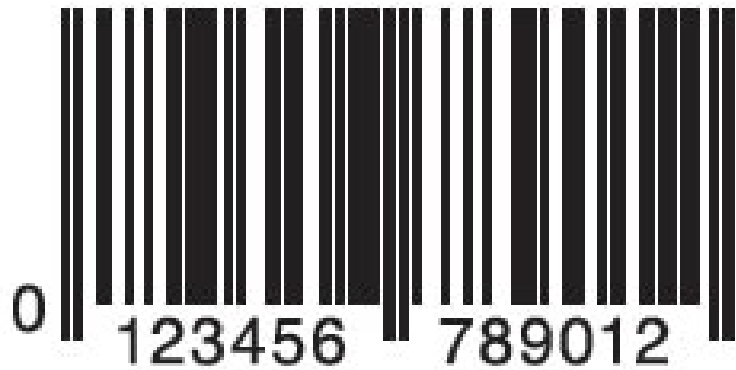
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Invented in 1952 based on Morse Code



What is a barcode?

A barcode is a method of representing data in a visual, machine-readable form.



What is a barcode?

Barcode types

1D Barcode encodes data in a series of parallel lines and spaces of varying widths, typically read horizontally.

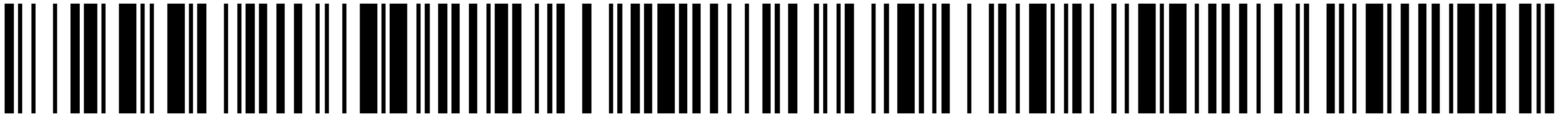


2D Barcode stores data in both horizontal and vertical dimensions, allowing it to hold more information than a traditional 1D barcode.



What is a barcode?

2D Barcode – Fit more data in the same area



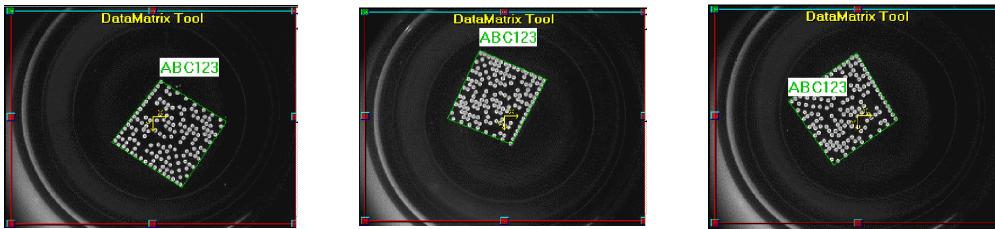
Look How Many Characters Fit!



What is a barcode?

Data matrix advantages and reading advantages

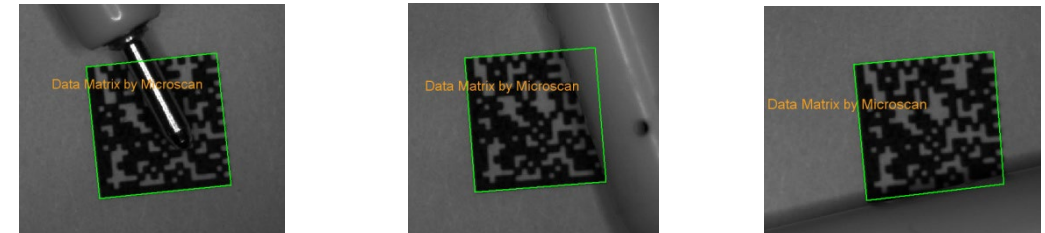
360° Reading



Low Contrast Reading



Error Correction



What are barcodes used for?

What can we do with all of this extra data?



Regulation
Compliance



Anti-counterfeit



Recall & Return
Risks



Extended Customer
Information



Supply Chain
Visibility



Direct Marketing

How do we implement this new technology?

What can we do with all of this extra data?

Data Element	Static 2D	Variable 2D
GTIN	✓	✓
Digital Link (URL)	✓	✓
Batch / Lot	✗	✓
Expiration Date	✗	✓
Serial Number	✗	✓
Production Date	✗	✓
Weight / Measure	✗	✓
Dynamic Consumer Content	✓	✓

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If we want to
take advantage
of this....

How do we print
variable codes?



Types of printing

Static code vs. Variable code

Static code	Variable code
Flexographic Press	Inline inkjet
Digital Press	Laser marking
	Thermal transfer
	Digital presses with VDP support

What do I need to look out for when printing variable data?

Data accuracy & source of truth

GTIN, lot, expiry, serial **must come from authoritative systems**

- ERP / MES / WMS – not manual entry

One wrong field = unreadable or non-compliant code

Format must be correct

- Wrong date format
- Missing FNC1 separators
- Variable-length fields not properly terminated

What do I need to look out for when printing variable data?

Code quality

Print Quality

- Ink spread or feathering
- Incomplete modules
- Low contrast
- Smearing at high speeds

Code Size and Data Density

- More data = Denser Symbol = Harder to Print & Harder to Scan

Quiet zone and Code Placement

- 2D codes need clear space around them

Why is barcode verification important?

Do you know what's wrong?

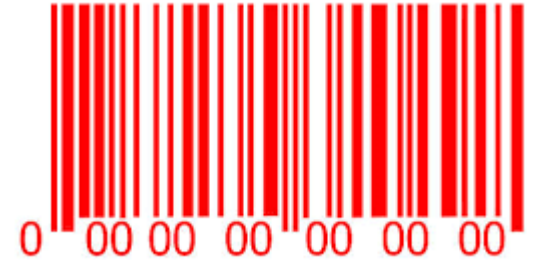
1



2



3



4



5



6



Verification technologies

Off-Line Barcode Verifiers:

- Measure the print quality of a single barcode at a time , [to the barcode standard](#)
- Are typically offline in a quality control environment



In-Line Verification:

- Measures the [print](#) quality of a label as it is produced
- Verifies both Barcodes and Printed Text
- Are directly [integrated](#) to the production printer



Off-line barcode verifiers

- Off-line verifiers can be used to measure the quality of a single barcode at a time
- Off-line verifiers can be used to find bad codes as well as validate and set up printing systems
 - Contrast
 - Modulation
 - Quiet zone
 - Data Structure
- Easy to use and don't interrupt production



Inline barcode verifiers

- 100% verification of codes
- Audit Trail
- Secure Reporting layer with permanent record retention

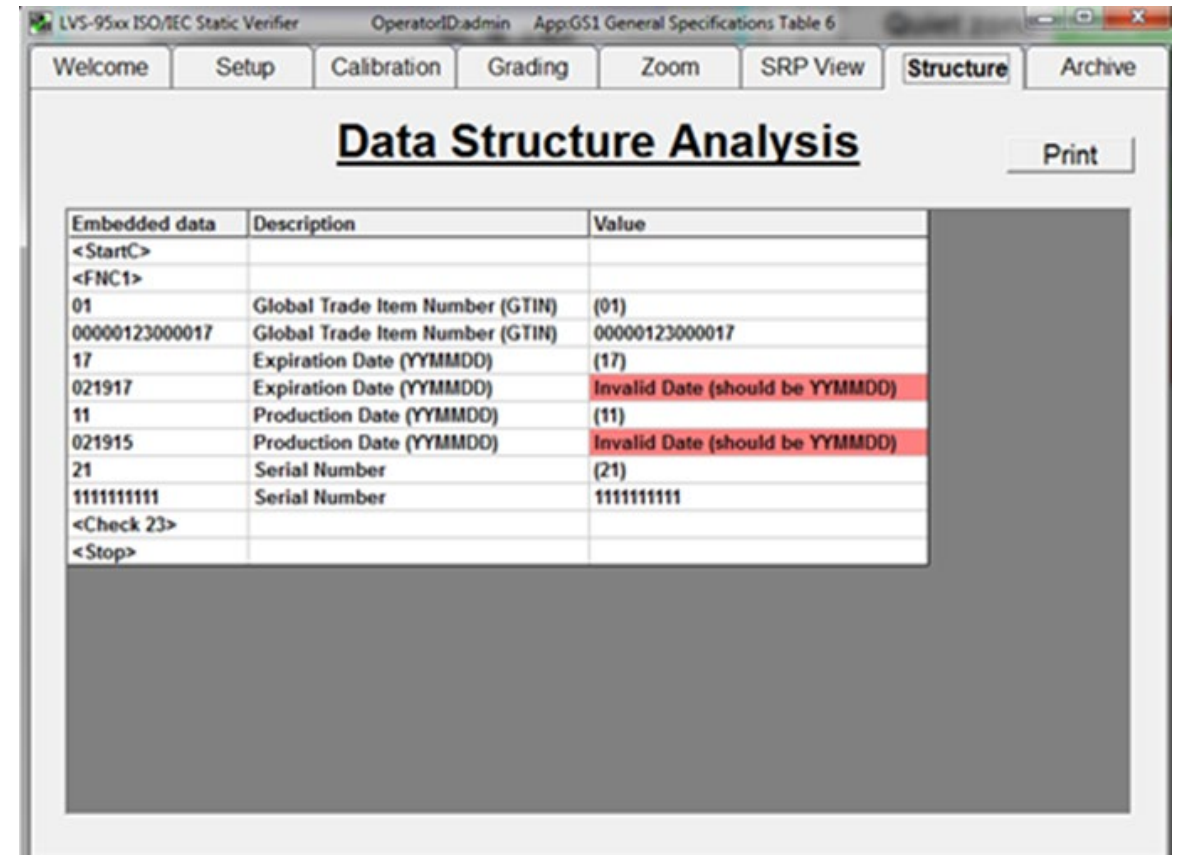


How to avoid problems setting up a new label

Check to make sure your Data is correct

- Utilize a Label Management System
- Offline verifiers can help check Data Structure
- Chose the correct printer
- Maintain Aspect ratio of your barcode after creation
- Remember to encode non-printed characters

Offline verifiers can help check Data Structure and Standard compatibility before printing commences



The screenshot shows the 'Data Structure Analysis' window of the LVS-95xx ISO/IEC Static Verifier. The window has a menu bar with 'Welcome', 'Setup', 'Calibration', 'Grading', 'Zoom', 'SRP View', 'Structure', and 'Archive'. The 'Structure' menu is active. The main title is 'Data Structure Analysis' with a 'Print' button. Below the title is a table with three columns: 'Embedded data', 'Description', and 'Value'.

Embedded data	Description	Value
<StartC>		
<FNC1>		
01	Global Trade Item Number (GTIN)	(01)
00000123000017	Global Trade Item Number (GTIN)	00000123000017
17	Expiration Date (YYMMDD)	(17)
021917	Expiration Date (YYMMDD)	Invalid Date (should be YYMMDD)
11	Production Date (YYMMDD)	(11)
021915	Production Date (YYMMDD)	Invalid Date (should be YYMMDD)
21	Serial Number	(21)
1111111111	Serial Number	1111111111
<Check 23>		
<Stop>		

How to combat common Issues while printing your labels

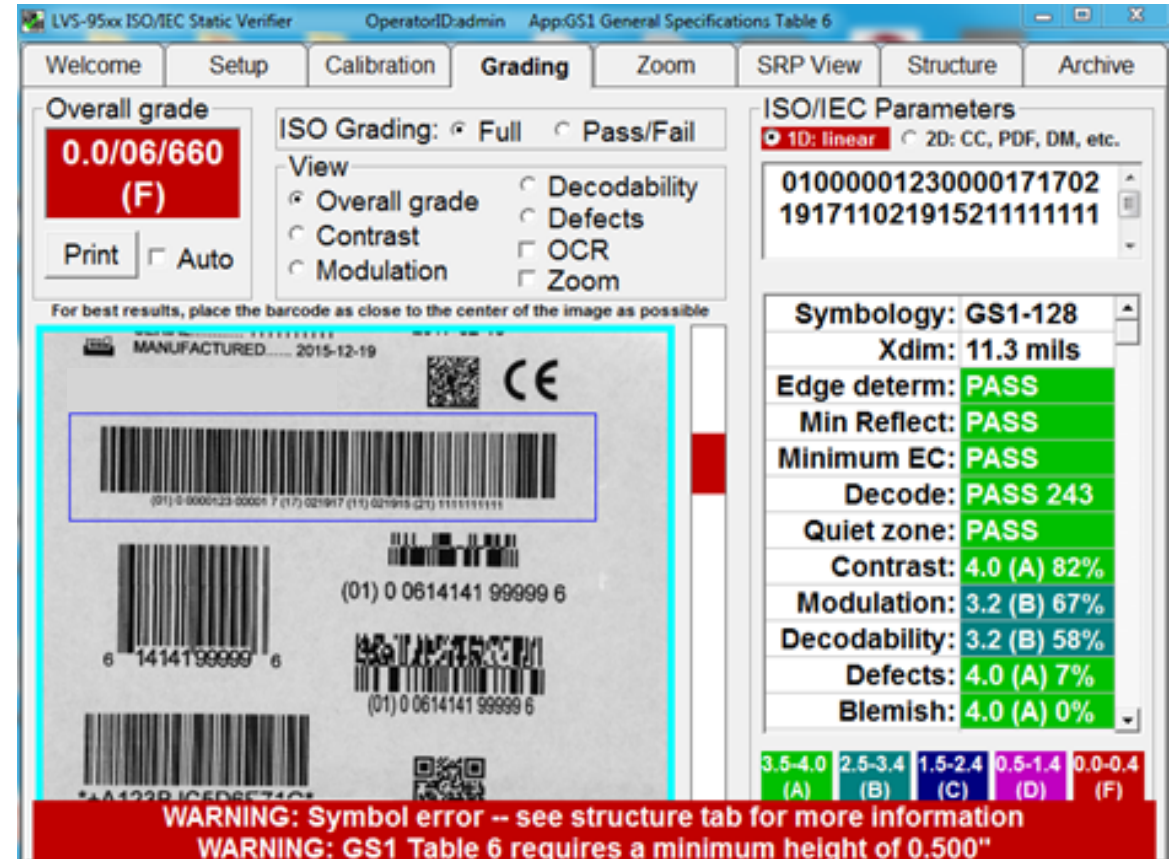
Poor Print Quality

- Wrong type of ribbon and paper
- Folds in Ribbon
- Damaged Print head
- Incorrect Settings

Skipping Labels

- Incorrect Settings Saved

*Use verifier to make sure the print quality meets ISO Standards
Compare every label against a Gold Standard*



VHV5 In-Line Verifier System Technology

OMRON has a long track record of verification technology. **V1.2** leverages our best verification technology and the powerful new V5 platform create a highly competitive **ISO In-line Verification System**.

Full Print Inspection



Web Inspection - V275 s/w+ and new cameras (imagers, line scan, CIS)



LVS Verification Algorithms- The Gold Standard

Print & Apply using V275 components & software



Label Print Inspection: x275

Code Verification



Offline ISO Label Verification



Offline ISO Label Verification



Offline ISO DPM Verification

In-line Label and DPM Validation and Verification



OCR In-Line Experience

Code Reading and Machine Vision Cameras with Verification



Verification Kits

Code Verification with Label and DPM Application Specific Lighting

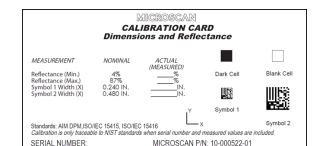
VHVx Product Line



Code Reading and Validation



In-Line Label/ DPM Verifier





Future of traceability?

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Traceability 1.0 – 4.0

	TRACEABILITY 1.0  Product ID visibility 1970s	TRACEABILITY 2.0  Supply chain visibility 1980s	TRACEABILITY 3.0  Line item visibility 2000s	TRACEABILITY 4.0  Process visibility 2020s
Challenge	Individual Goods Visualization	Retail Visualization	Item Level Visualization	4M information linked to ID Visualization
Value Proposition	Centrally manage product info.	Centralized management of Retail Info.	Centralized management of Line item level info.	Productivity and Quality Enhancement

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Questions?

We're here to optimize traceability.



Schedule a free
onsite evaluation