

Masterclass “2D codes - market applications”



***Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie***

Maja Stanic, Sanne Tiekstra

1 April 2011

Technology/Design

- 2D codes technology
- Types of 2D codes
- Design of 2D codes and Integration in production/design
- Printing of 2D codes (+examples)
- Reading of 2D codes

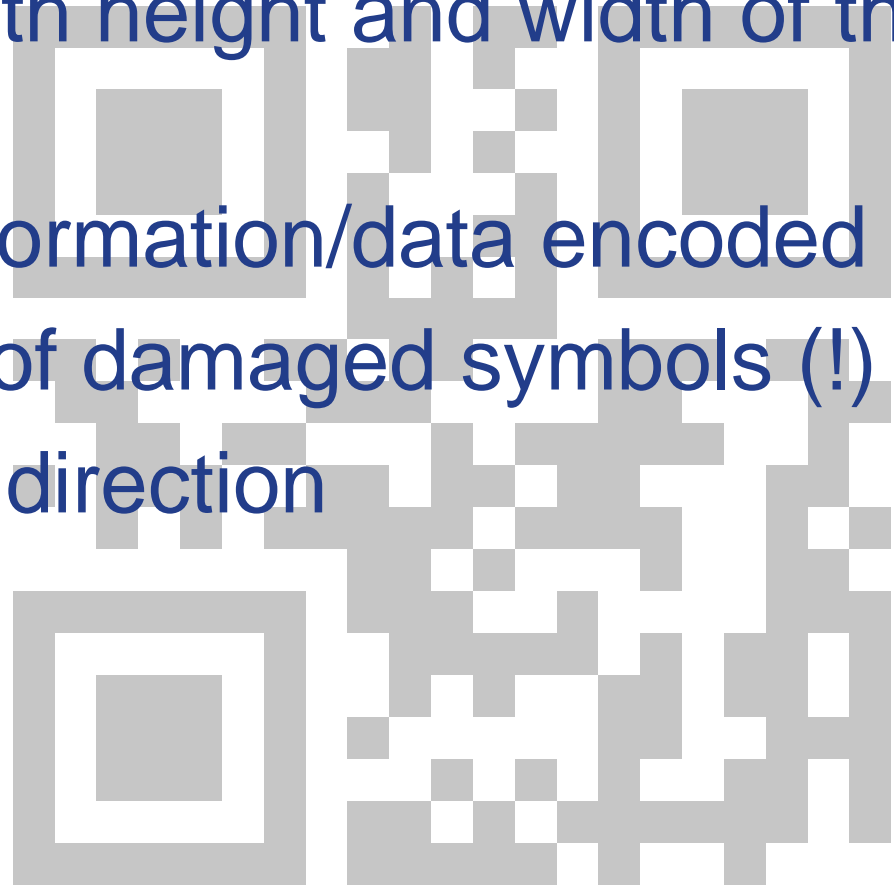




2D codes technology



- 2D codes – kind 2D matrix symbology
- Data encoded in both height and width of the symbol
- Large amount of information/data encoded
- Provide readability of damaged symbols (!)
- Can be read in any direction





Barcode (1D) vs 2D code

- Only read in one dimension – width
- Contain only limited amount of data – link to database
- Problems with the readability if damaged/obstructed

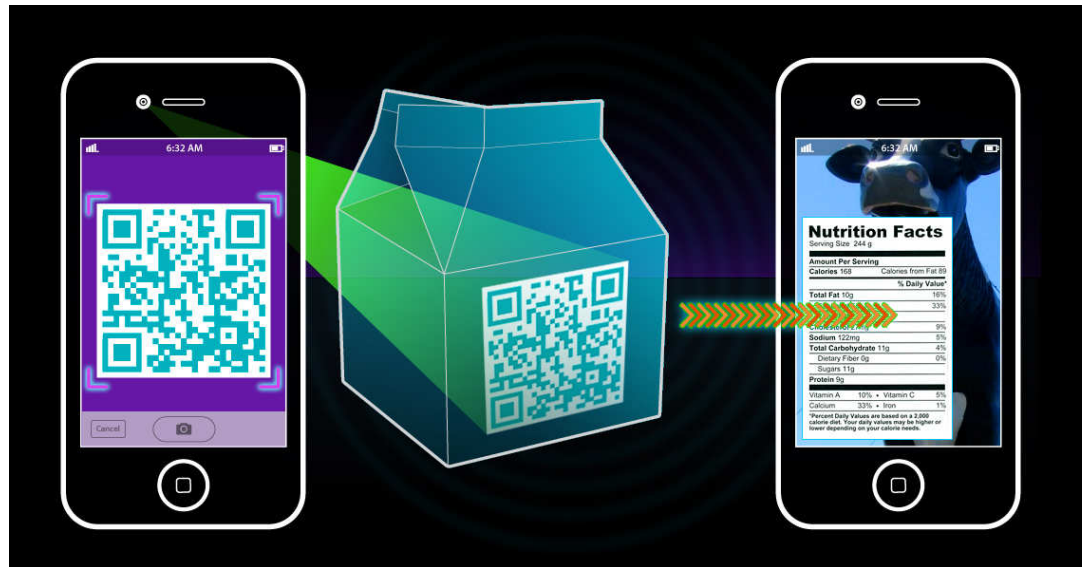
9 8 7 6 5 4 3 2 1 0 9 8

2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

Point – Scan/take picture – Decode (software) – Connect to web/get info



<http://ericaglasier.com/2011/02/25/voir-qr-the-history-use-abuse-of-qr-codes-slideshow/>

- A little bit of history... Do you know how old are barcodes?
- AAR – mid 1960's (1967)
- And 2D codes?
- 1994 – Denso Wave, initially used for manufacturing/part tracking





➤ Applications – Logistics, Part marking...

Small item tracking

Electronic component marking

Material Safety Data Sheet (MSDS)

Drivers licenses, ID, Passports

Libraries

Product identification

Patient record in hospitals

Industrial marking and tracking applications

Document tracing

Packaging (pharmaceutical)

Supply chain management and logistics

Track and trace

2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



<http://www.denso-wave.com/qrcode/>



➤ Applications – Media, Promotion, Added value...

Physical hyperlinking

Identification, Ticketing

Promotional landing pages and entry forms

E-marketing and E-info, E-commerce shopping sites

Product demos, videos and reviews

Reservation systems

Virtual business cards

Downloadable and scan-able coupons

Brand management and brand protection

Cross media campaigns

2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



<http://dhornbein.com/blog/?p=16>



<http://cardobserver.com/gallery/wanda-digital-biz-card>



<http://jandecoster.wordpress.com/2008/05/10/qr-codes/>



<http://www.somecard.nl/Webshop/>

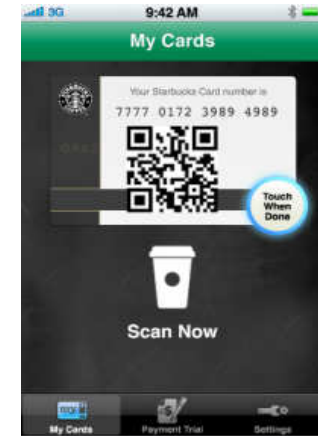
2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



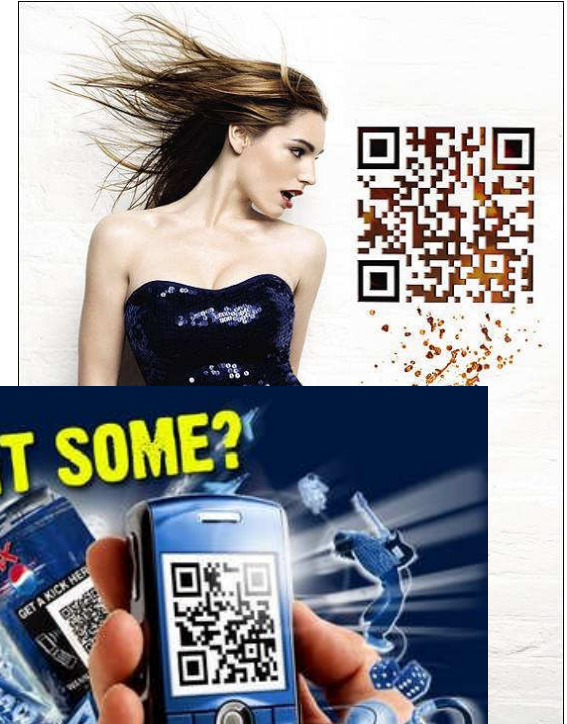
HELP
JAPAN
NOW.



2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



2D codes technology



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



YOUR M&S
Food to Go Menu

Did you know Food to Go has 250 different products?

Because all our stores are different sizes, you might not find everything in every store, but there is still loads to choose from!

- Sandwiches
- Wraps
- Rolls
- Sushi, salad cups and salad wraps
- Salads
- Snacks - sausage rolls, prawn dippers, houmous dippers, cocktail sausages, samosas
- Desserts - cake bars, jellies, banoffee pie pot
- Drinks - juices, smoothies, flavoured waters, fizzy drinks
- Fruit - ready to eat in great combinations!
- Crisps
- Chocolate bars
- Count on Us products
- Also look out for our new limited edition items in stores

Home



Farinpiù
più NATURALE
più CREATIVA
più VELOCE

200g e

farina istantanea di PISELLI

NOVITÀ

circuamente sul tuo cellulare
Inquadra il codice o vai su <http://mobi.farinpiu.it>





Types of 2D codes

Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

- Many different types – not all 2D codes are the same!



QR-Code



DataMatrix



Cool-Data-Matrix



Semacode



UPCODE™
000133



Tri-Code



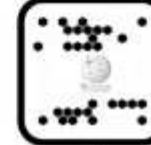
Quickmark



Shotcode



ccnexto



Beelag



CFCHESS
Code

Go for Standardization! Keep it Open Source!

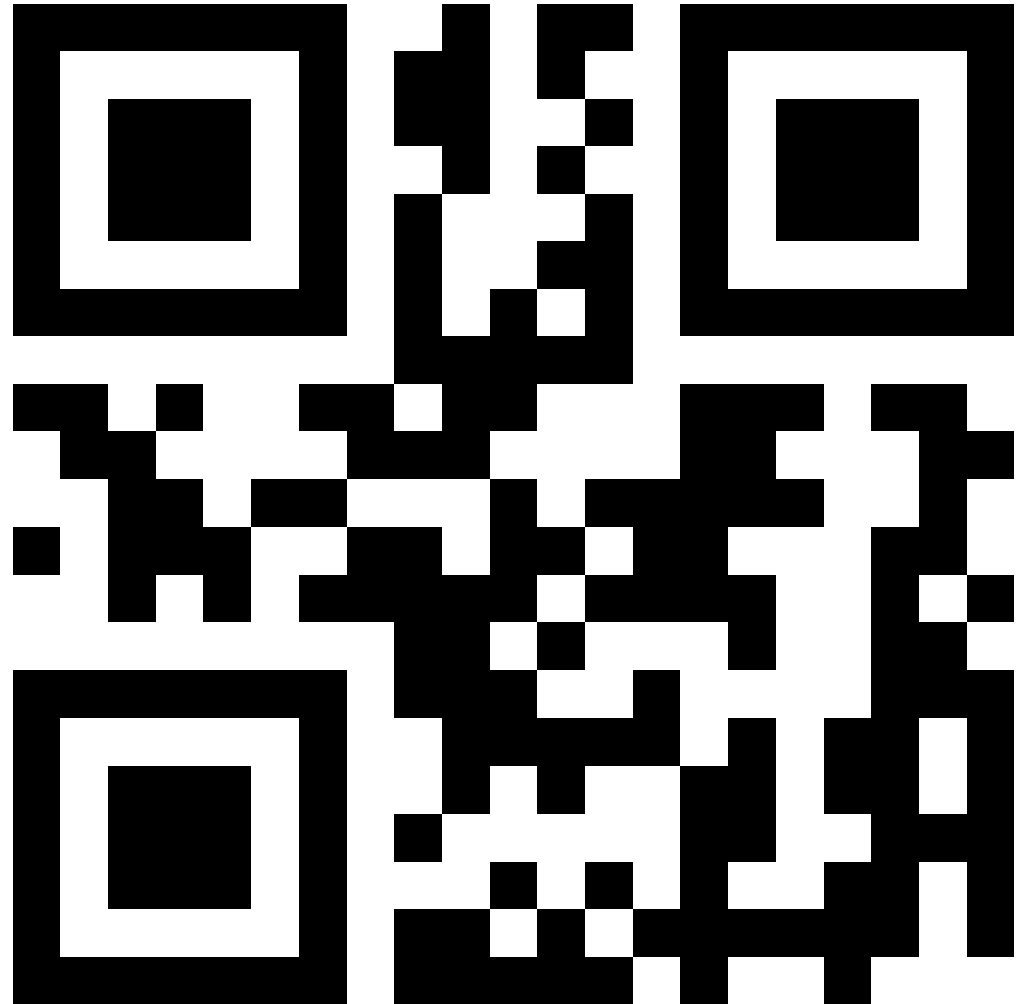
Pieter Ardinis, QRCodeur.eu

Types of 2D codes



*Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie*

➤ QR



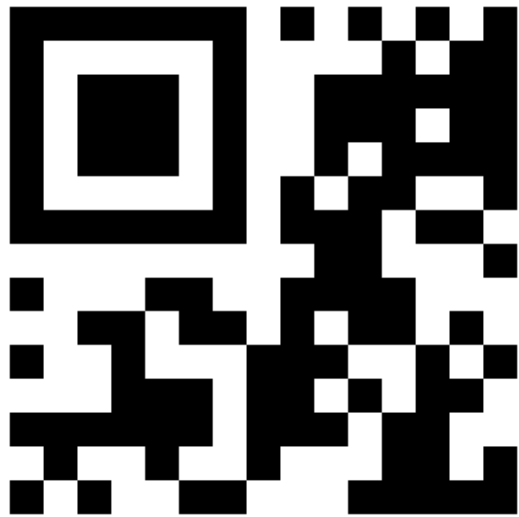
Types of 2D codes



*Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie*

- Patented by Denso-Wave in 1994.
- QR stands for “Quick Response”.
- JIS and ISO standards.
- Square shaped, smaller squares (patterns) in corners.
- Print to web, media, promotions, added value...

➤ MicroQR/iQR



Denso

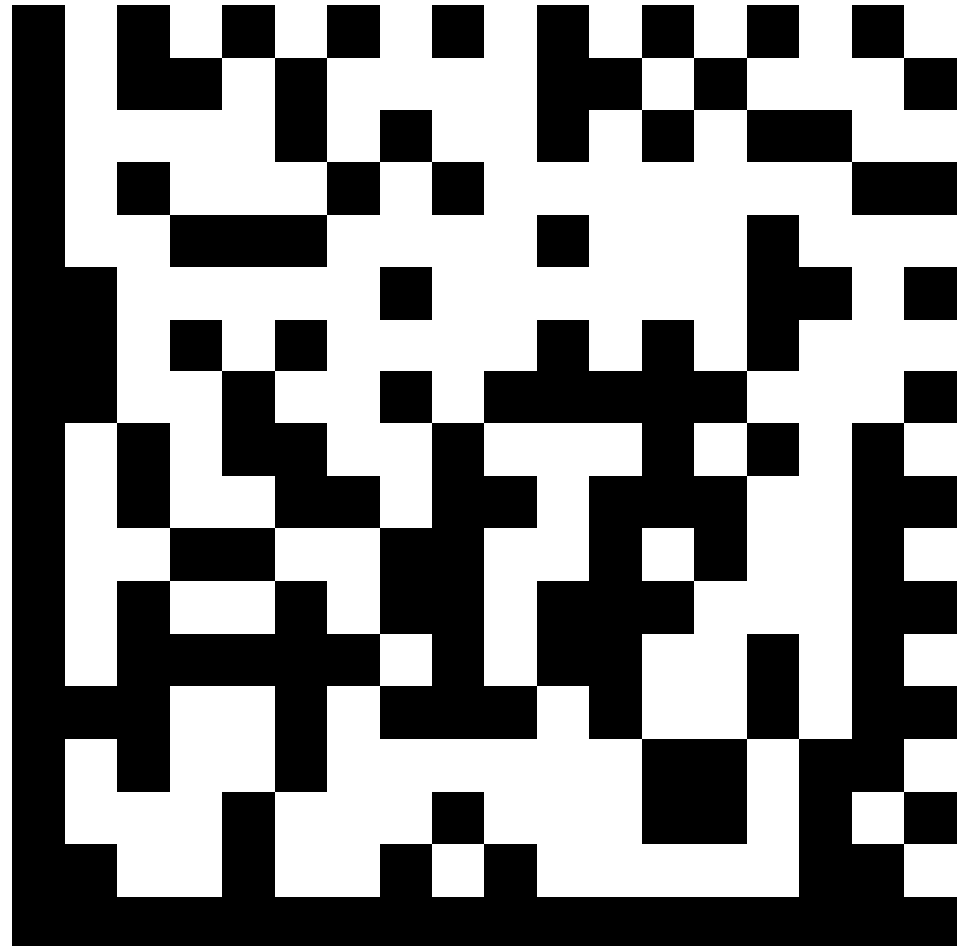


iQR Code





➤ Datamatrix





- Patented by RVSI Acuity CiMatrix (Siemens)
 - Microscan Systems, late 80's.
- ISO, ANSI/AIM standard.
- L-shaped patterns.
- Logistics, part marking, consumer products, postal...

Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

- GS1 DataMatrix is only "2D Matrix" symbol specified for use by GS1, becoming symbol of choice in healthcare.
- GS1 DataMatrix requires camera based scanners, currently specified for healthcare items not crossing POS and direct part marking.








Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



ISO/IEC Standardized 2D Symbols (As of Feb. 2007)

	PDF417	DATA MATRIX	MAXI CODE	QR Code	Aztec Code
					
Developer (Country)	Symbol (USA)	CI Matrix (USA)	UPS (USA)	DENSO (Japan)	Hand Held Products (USA)
Code type	Multi-low	Matrix	Matrix	Matrix	Matrix
Data size (Alphanumeric)	1,850	2,355	93	4,296	3,067
Characteristics	High capacity	High capacity Small space	Fast reading	High capacity Small space Fast reading	High capacity
Main market	OA	FA, Medical	Logistics	All industries	Air Line, Railroad
Standard	AIMI ISO	AIMI ISO	AIMI ISO	AIMI ISO JIS	AIMI

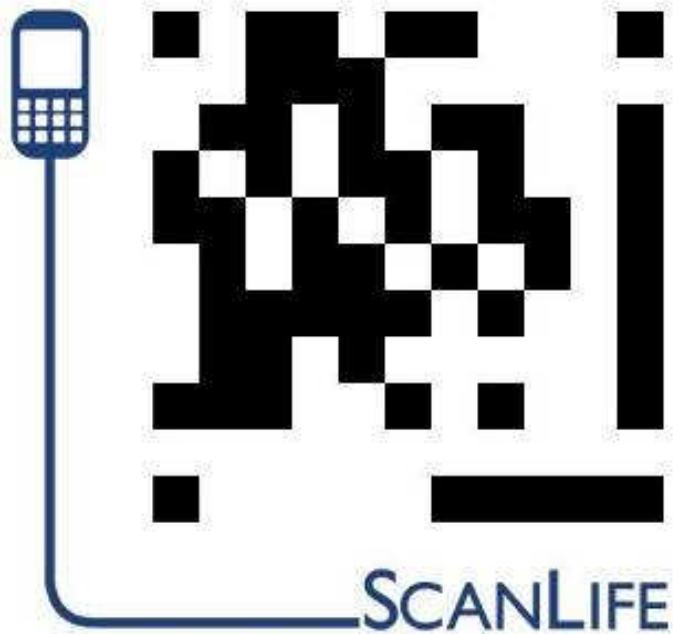
QR Code Overview & Progress of QR Code Applications
<http://www.gs1jp.org/pdf/001.pdf>

Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

➤ EZ Code (ScanLife)



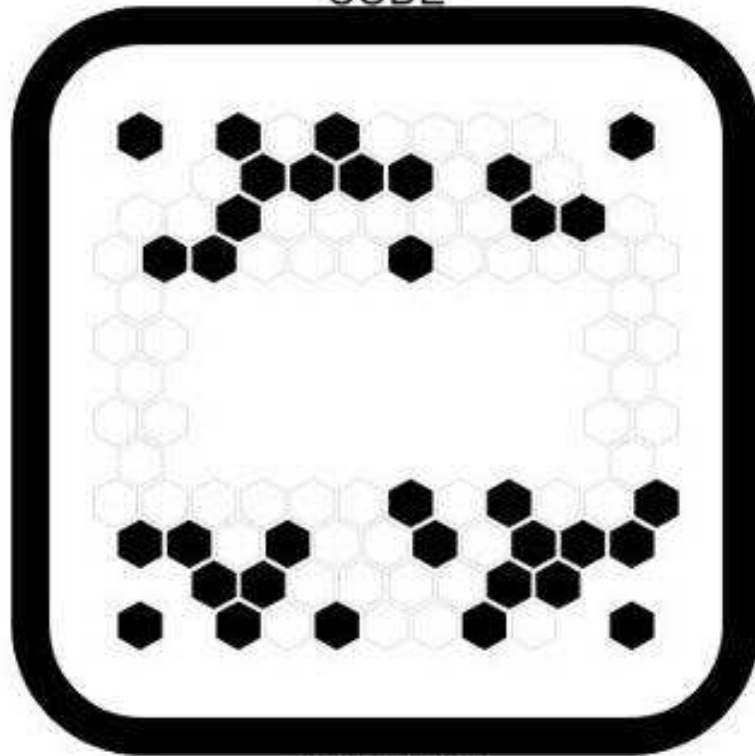
Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

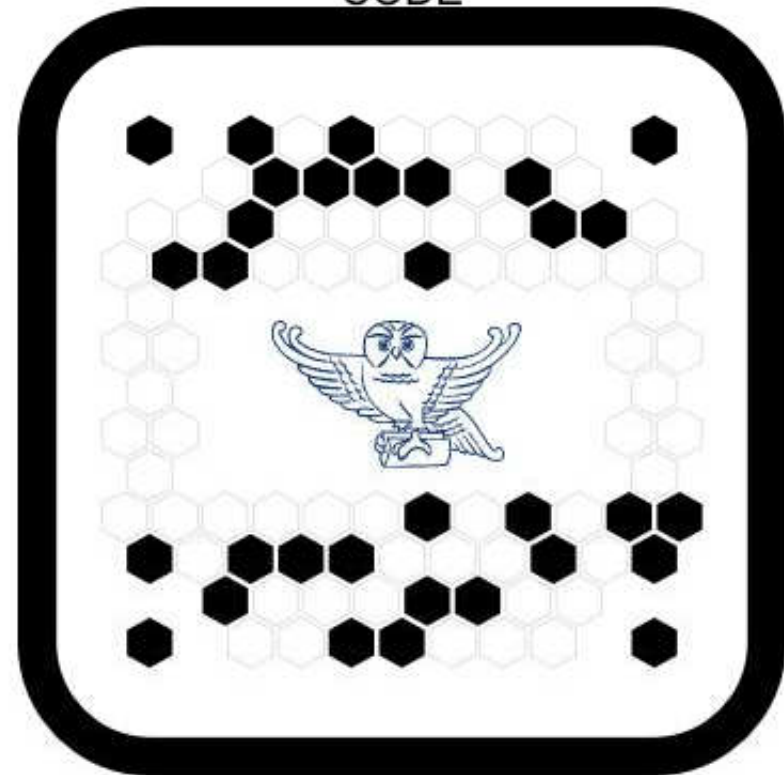
➤ BeeTagg

CODE



13704802

CODE



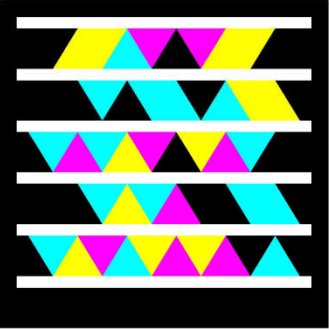
14326592

Types of 2D codes

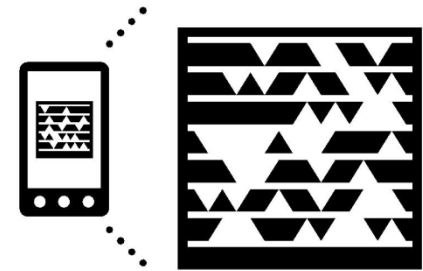


Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

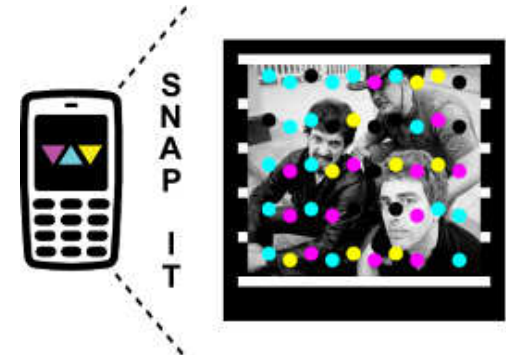
➤ Microsoft Tag (High Capacity Colour Barcode)



Get the free mobile app for your phone
<http://gettag.mobi>



Get the free mobile app at
<http://gettag.mobi>



Get the free app for your phone at
<http://gettag.mobi>

Types of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

➤ Microsoft Tag (High Capacity Colour Barcode)



Yum-Yum's
FOOD, FUN, YUM!

**FREE
ICE CREAM
CONE**
with SPRINKLES!

Just snap it with your mobile phone to get the **SECRET WORD** as well as the location of the Yum-Yum's nearest you.

Get the free app for your mobile phone at
<http://gettag.mobi>

*Free cone limited to one per customer per sandwich order. One-in customers only. See store for details. No sprinkles were harmed during the making of this ad.



Design of 2D codes and Integration in production/design

Design of 2D codes and Integration in production/design



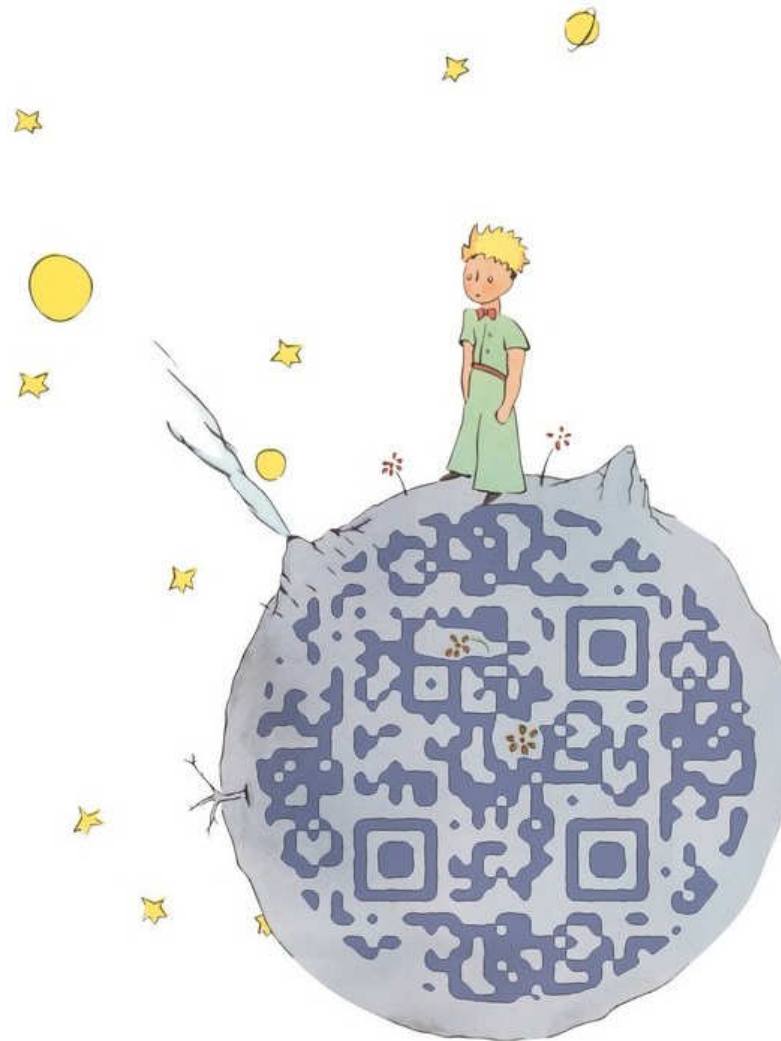
Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



Design of 2D codes and Integration in production/design



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



<http://2d-code.co.uk/images/le-petit-prince-qr-code.jpg>

Design of 2D codes and Integration in production/design



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie



MARC BY MARC JACOBS



Design of 2D codes and Integration in production/design



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

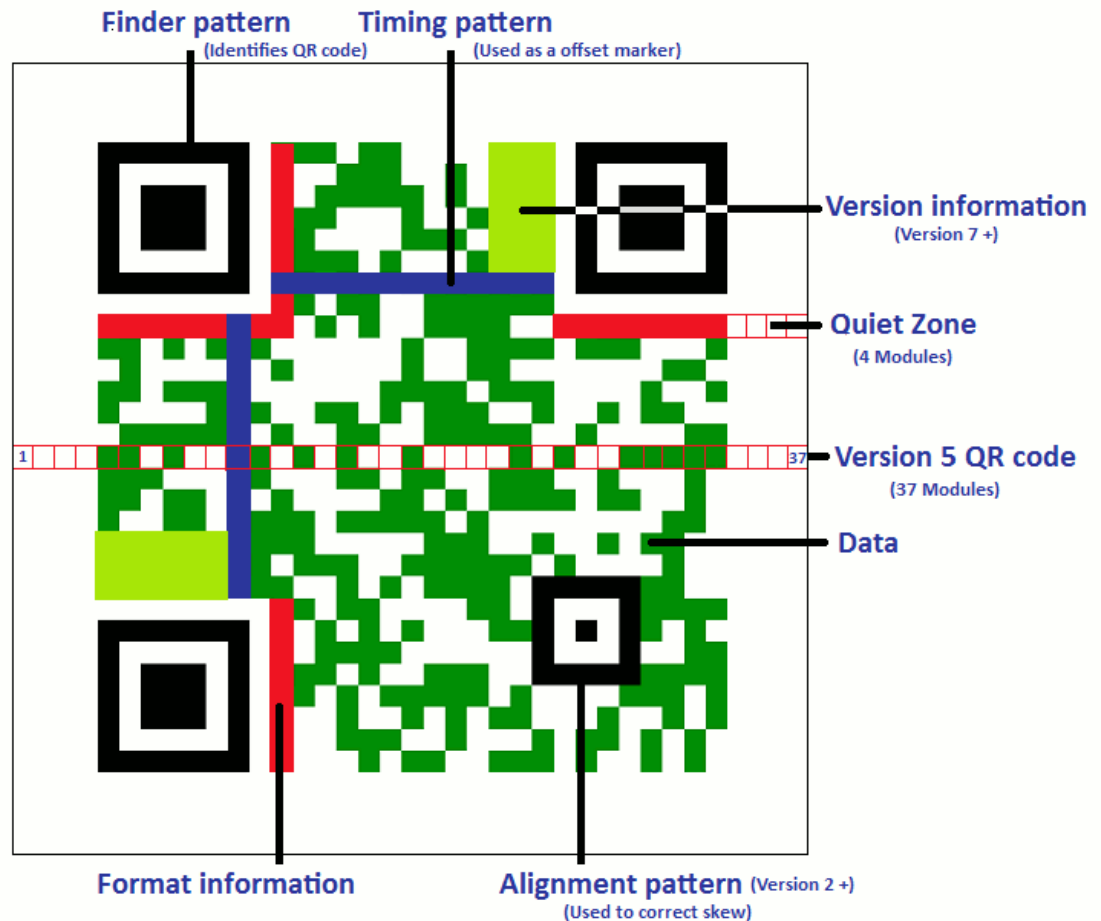
- 2D code anatomy – specific areas, quiet zone
- ERL
- Density (size/amount of information, including ERL parts!)
- Amount of data/information (as short if possible)
- Type of data
- Colours, negative
- Placement of logo/design element
- Printing
- Application/use - conditions

Design of 2D codes and Integration in production/design



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

➤ QR code structure



<http://www.qrnow.net/faq/>



The Three Rules of QR Codes

- Mobilize the landing page
- Keep the url short
- Make the content valuable

Some of first rules!

<http://2d-code.co.uk/three-rules-of-qr-codes/>



Content is not adapted to mobile use.

A QR code is scanned by a mobile device.

Displaying irrelevant content.

Scanning QR code of object = showing info of that object.

Use of QR codes is not measured.

How many scans? Location? When?

Pieter Ardinois, QRCodeur.eu



Time for some more rules... 😊

- Help the user understand and use the code
- Landing page has to be optimized for specific target use
- Place ads/billboards/products in areas which has network coverage (some failed...)



- There has to be (added) value, information, use for consumer/user – next time they will not scan(!)
- If code is used for marketing purposes/user information – track the traffic
- Be inventive and innovative in applications!



➤ Test test test! Ensure proper size and usage conditions – readability!

Colour/Contrast

Lighting

Phone readers/decoder types and models

Shorten URL!

Size/Density

Printing resolution

Some adapted from:

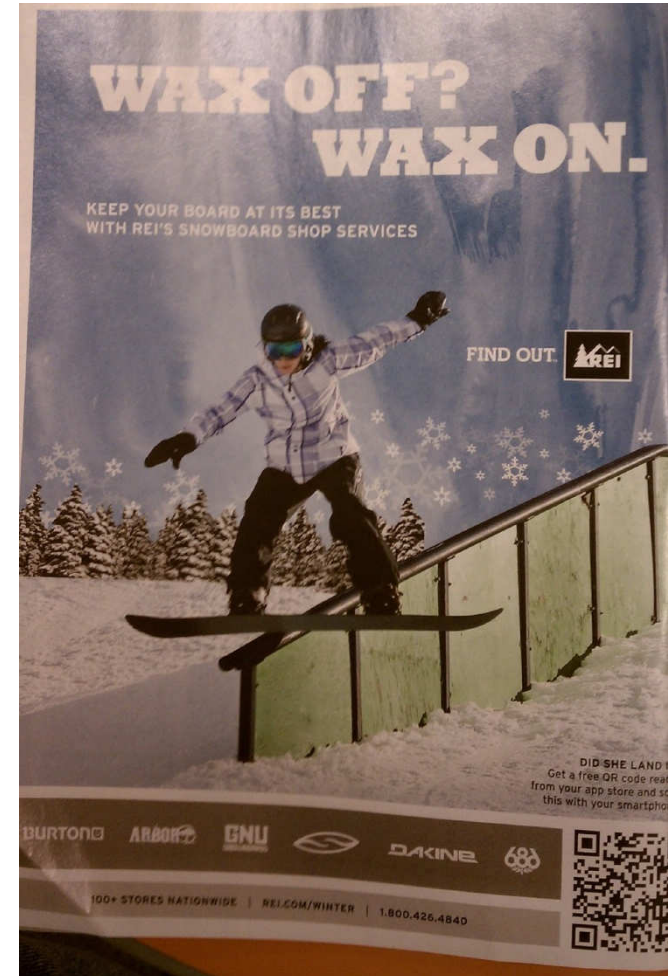
<http://mashable.com/2011/01/28/qr-code-business-tips/>

Design of 2D codes and Integration in production/design



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

- REI, magazine advertisements
- Does not explain – interaction with the user
- Position of 2D code



<http://www.2dbarcodestrategy.com/2010/10/does-she-or-doesnt-she.html>



- NY City Department of Sanitation
- Placement, size
- Readability – in motion(!)
- Value to user, content



<http://www.2dbarcodestrategy.com/2010/08/whats-missing-from-qr-code.html>



- The Cats Pajama, advertisement in New York magazine.
- Size, density(!)



<http://www.2dbarcodestrategy.com/2011/03/qr-code-dos-and-donts.html>

Design of 2D codes and Integration in production/design



*Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie*

- QR Code and 2D Code Generator (Kerem Erkan)
QR Code, Micro QR Code, Datamatrix and Aztec Code generator, many interesting features, URL shortening
<http://keremerkan.net/qr-code-and-2d-code-generator/>
- QR Generator – <http://qrcode.good-survey.com/>
- i-nigma – <http://www.i-nigma.com/CreateBarcodes.html>
- Jaxo – http://www.jaxo-systems.com/barshow/?lang=en_US
- Kaywa – <http://qrcode.kaywa.com/>
- Goqr.me – <http://goqr.me/>
- Nokia – <http://mobilecodes.nokia.com/create.jsp?terms=accepted>
- QR Stuff – <http://www.qrstuff.com/>
- SnapMaze – <http://www.snapmaze.com/>
- Zxing – <http://zxing.appspot.com/generator/>

The only known online Micro QR Code Generators are Kerem Erkan's and TEC-IT.

More on <http://2d-code.co.uk/qr-code-generators>



Printing of 2D codes

Reading of 2D codes



- Bar code symbols may be produced in a variety of ways: by direct marking, or by imaging or printing the bar code symbol directly onto e.g. package or on separate label.

Printing applications fall into two categories:

- ON-SITE user-controlled, variable
- OFF-SITE label supplier, “static”



Print technologies for on-site use are:

- Ink Jet
- Laser (Xerographic)
- Direct Thermal
- Thermal Transfer
- Dot Matrix Impact



Print technologies for off-site use are:

- Offset
- Flexography
- Rotogravure
- Digital processes

- Hot stamping
- Laser etching



- 2D Code Readers/Decoders (mobile, others)
- Applications smart-phone+camera/PC
Capture and utilize the 2D Code

2D Code Readers are:

1. BeeTagg - <http://www.beetagg.com/downloadreader/>
2. i-nigma - <http://www.i-nigma.com/Downloadi-nigmaReader.html>



Reading of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

3. Kaywa - <http://reader.kaywa.com/>



4. Microsoft Tag - <http://tag.microsoft.com/consumer/index.aspx>



5. Mobiletag - <http://www.mobiletag.com/download-en.html>



6. NeoReader - <http://www.neoreader.com/download.html>





7. QuickMark -

<http://www.quickmark.com.tw/En/memlogin/login.asp>

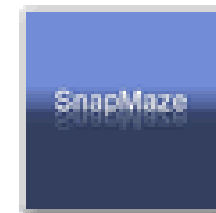


8. ScanLife - <http://app.scanlife.com/appdownload/dl>



9. SnapMaze -

<http://www.snapmaze.com/?q=node/7>



10. UpCode -

<http://www.upc.fi/en/upcode/download/>





- 2D Code Scanners are either handheld or fixed-mount.
- Handheld scanners offer different technology choices: CCD, laser, and area imagers.
- Fixed-mount scanners use either moving-beam laser or CCD technology.

Reading of 2D codes



Kenniscentrum Papier en Karton
Bumaga BV - Kennis in Productie

2D Codes on Metallic Parts



2D Codes on Printed Circuit Boards



2D Codes on LCD Glass Panels



2D Codes on Electronic Components (Crystal oscillators, ICs)





More info and questions?

Maja Stanic, m.stanic@kcpk.nl

Sanne Tiekstra, s.tiekstra@bumaga.nl

www.kcpk.nl

