

School of Mobile Platinum Partner:



The School of Mobile:

Mobile Technology in Travel

Report

Vol. 2: The Detail



3.8 Mobile Ticketing and 2D Barcodes

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A potted history of 2D barcode technology

In terms of the history of 2D barcodes, we have to travel to Japan around 7 years ago. The Japanese were the pioneers in making the barcodes readable via the mobile phone. 2D barcodes are now very ubiquitous in Japan. Denso Wave was the company that started the whole revolution in developing the original 2D code.

Japan went with QR codes as they are able to hold more information than other competing 2D barcode standards but as such they are correspondingly bigger, 60% bigger than a Data matrix code. In Japan, the speed of development in 2D Barcodes was driven by the fact that the Japanese government in association with Japan's largest mobile operator (NTT Docomo) effectively monopolised the market by building QR code readers into every single phone they released.

They did this by including a magnifying lens into the phone so that the size of the QR could be shrunk and still read. This created a lot of traction for the rollout of 2D barcodes in Japan. So on the basis of this, around 75% - 80% of Asia are using this system which is built around decoding to URLs (Source: UpCode Solutions).

The success of the QR code in Japan was in many ways also its limitation. Due to the saturation of this type of 2D barcode system it has meant that in order to build in more sophisticated functionality, they really have to go back and reprogram all the phones again, which is not ideal.... QR codes are the most ubiquitous of the 2D barcode technologies but they are not necessarily the best option. It really depends on your individual needs and goals as a company. People still tend to call all the different types of 2D barcodes QR codes when in fact they are not.

The different types of 2D Barcodes

2D barcodes have a number of iterations and can be used for a number of uses.

In Japan, they use a particular type of 2D barcode known as the **QR code**, which looks like this, with three square identifiers:



QR Code

This however is only one type of 2D barcode.

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There are also **Aztec codes**, which are an open-source code technology that was originally driven by HP:



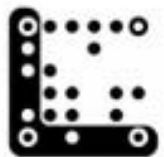
Aztec code

And **Data Matrix** 2D barcodes that as you can see do not have the 'Aztec' square in the middle. Data matrix codes have the advantage that they are much denser and can hold much more information and be shrunk to a much smaller size therefore allowing for both more sophisticated functionality and very importantly they can be secured:



Data Matrix

'**Jagtags**' are an example of an IP protected proprietary 2D barcode technology that is focused on being used in diverse and creative mobile marketing campaigns.



Jagtag

There are also other proprietary standards on the market although open source codes do allow more flexibility in application. Each type of 2D barcode has different properties in terms of the amount of information it can encode and so on.

Yes that is nice but how does the technology actually work??

The key is that in order for a customer to be able to interact with a 2D barcode using their phone, they have to download a piece of software that enables the phone to read the barcode and interpret the data contained within it. Along with the base technology it is important to actually have corresponding solutions that allow for actual functionality of the 2D barcodes. This is a necessary combination to get anything valuable out of the 2D barcodes. 2D barcodes are very versatile; once the software is loaded an individual can do many things with their mobile.

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Because the codes can be printed on any surface including a screen, the power of 2D barcodes is in the fact that they can be printed on any physical object and that the printed code could be doing something. The huge potential of 2D barcodes is related to the fact that they allow the mobile to interact with any other type of media. Clearly this has marketing, advertising, customer service, ticketing and other implications. Let's start with mobile ticketing solutions...

The Rapid advancement of mobile ticketing solutions

The use of mobile ticketing (which is gradually becoming more widespread) by airlines (and now in slightly different ways by rail and coach companies) has historically worked whereby people register the same way they would to get an eTicket and upon making that choice, they get a 2D barcode sent to their phone and on arrival at the airport they swipe the code on a fixed scanner to board the plane.

Mobile ticketing is beneficial to airlines from a customer service standpoint and it also allows them to pass cost savings on to their customers who no longer have to incur the monetary and time expense of printing a boarding pass. IATA have worked hard to develop an industry wide 2D barcode standard to be used for mobile phone check in using secured 2D barcodes as 'mobile boarding passes.'

For practical advice as to how airlines have been implementing mobile check-in using mobile boarding passes based on 2D barcode technology please link through to the following case studies for enlightenment:

[SAS Airline](#)
[Lufthansa](#)

For more information on IATA and BCBP (Bar Coded Boarding Passes please follow this Hyperlink: <http://www.iata.org/stb/bcbp>

A cautionary tale:

There is a problem where people have been excited about the potential of 2D barcode technology but then implementing them without very much knowledge. "There are a lot of 2D barcode preachers out there but they are not necessarily all preaching the same gospel." (Source: Mark Hendrickson, UpCode Solutions). Unfortunately people are not necessarily being advised as to what is perhaps the best, long-term solution.

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More on demystifying 2D barcode technology:

There are various ways of thinking about how 2D barcodes link to monetisation. In the case of ticketing, the money comes from the fact that mobile boarding passes can drive efficiencies in terms of queuing and allow cost savings. **The key is not to look at 2D barcodes as a whiz-bang wow technology but rather as a solution that can be integrated across the travel and tourism industry in a much more effective way.**

There is the ability through these technologies to gain a lot of information when an individual phone interacts with a particular 2D barcode. For example, there is the ability to determine the language of the phone when they interact with the 2D barcode.

For example: There is a poster at an airport that has a 2D barcode relating to information about a local tourist attraction, people from different nationalities can interact with the 2D barcode by taking a picture of it with their phone and then receive the information as a result of that interaction in their own language.

This is just one example of how 2D barcodes is not just about linking to a URL, there is much more to it than that. Clearly this has powerful implications as a technology...

Interacting with a URL via a 2D barcode is not really an avenue that leads to monetisation. It is clear that customers do not pay to visit a URL on their computers so why would or should they do so via their mobiles. At the early stages, when considering how to incorporate 2D barcode technology into your business it is important to consider multi-functionality and interaction.

**Spotlight on 2D Barcodes and Tourism in Asia:**

Within Malaysia and other countries in Asia, more intelligent 2D barcode systems have been implemented. The Malaysian tourism board has installed 2D barcodes throughout the city and when you interact with them you receive information about where you are and what you can do. They also use it for passport control and identification along with a number of other intelligent applications. It is clear that Asia has led the way on these types of technologies but the implementation of intelligent solutions are fairly nascent within Europe and the US.

It is very important that when considering 2D barcodes, you think about your individual requirements and that you understand all the issues. Do not be seduced by sexy technology that will not meet expectations once implemented.

From a marketing perspective, 2D barcodes can be powerful tools through their ability to deliver mobile coupons, tailored, changeable promotional information and offers, adverts in offline media and so forth. 2D barcodes are quite adaptable and should be considered as a solution by travel companies from a ticketing/customer service perspective and/or a marketing perspective.

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For more info about 2D barcodes as part of a mobile marketing program: [Click here](#) to link to the mobile marketing section of the report.

(Source: Interview between EyeforTravel and UpCode Solutions, 2009)

In conclusion, there is always the ability to adapt the various technologies but it is important to work with a partner in this area that is able to provide you with the ability to have systems that are purposeful and will help you as a travel company to drive efficiencies, make you money and achieve results. There is no generic way to do this. Once again it comes down to being strategic and thinking about your particular requirements. Evidently, there are limitations in terms of the ability of phones to be compatible with these types of systems but there are workarounds. In the industry it is considered that once your 2D barcode can be read by 300 models, then you have reached the benchmark and it is likely the solution will work for the majority of customers in any given situation. In reality though, most good solutions will work on 800-900 models.

So that is the rundown on 2D barcodes. On this issue I would draw your thinking to considering how you can see 2D barcodes making an impact on your particular travel buying cycle.



Mobile is:
The right information,
in the right place,
at the right time, in the right context.

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SAS: Shifting to mobile

Key Highlights:

- SAS's mobile check in has seen great success with customers and they are hoping to leverage their mobile portal via their sms services.
- SAS are currently testing their mobile boarding passes using 2d barcodes and have had good acceptance thus far
- Due to a systems integration with Amadeus much of SAS's development will be focussed on this and mobile development will initially be targeted at SAS's key business traveller market

Shifting focus to mobile

SAS entered into the mobile space as early as 2000, launching a wap-service aimed at their corporate customers, and had a booking and re-booking functionality for business travel.

This was a bit before mobile's time, and usage of the wap-service was disappointingly low. However, those customers using the service were very happy with it.

Most of the SAS's development resources have been focussed elsewhere in the last few years, upgrading their online-presence and working to increase online migration. However they now see that we need to put focus on mobile again.

The aim is for their mobile services to be used by their frequent business travellers in Scandinavia. However, with the high mobile penetration in Scandinavia – in all segments (there are now more mobile phone subscriptions in Norway than there are Norwegians!), mobile will be an important marketing- and sales channel in the future. SAS project that use of smart-phones, like the iPhone, use of mobile internet and mobile functions will increase in Scandinavia. With this in mind, there is now a high priority on continuing to develop the SAS mobile portal. Eventually it will be like the SAS website, with the ability to access full content and services.

While SAS's main focus is on their Scandinavian customers, they are also looking closely at developments in Asia and USA. This year they launched a Japanese-language mobile portal (sas-mobile.jp). However the focus is still primarily on short-haul, high-frequency markets.

What does the wap-portal do?

SAS's original wap-portal has recently been updated. While booking and re-booking was removed, check-in and flight-status information were added. Via the Mobile Portal, members of the EuroBonus frequent-flier program can access their account and see their point-status. The portal also includes information-sources such as hotel, car-hire and ground-transportation information, city-guides and links to news and weather-information. Development has been done both in-house and by third-party-providers, as the company been shopping around for the best solutions. Currently the plan is to re-introduce booking functionality by use of third-party-providers. The mobile portal is an integrated part of SAS's customer-communication platform, currently it is being marketed as an information channel via their online channel. As more functionality is built into it, SAS will begin to market it as a stand-alone channel.

"Having a well-functioning mobile portal has become just as much a commodity as having a functional website."

-Christian Kamhaug, SAS

Checking out SAS's mobile check-in

A major focus of SAS's strategy has been "Service And Simplicity" with an aim to increase the number of passengers arriving at the airport, having already checked-in. In February 2009 about a quarter of all passengers had already checked in, either via sms, mobile or internet. The mobile check-in function was updated in March 2009, giving passengers the opportunity to choose their seat on the mobile phone as well, a functionality that previously was only available on the web. Every month almost 100 000 passengers subscribe to SAS' s SMS-notifications of check-in, which is sent to passengers when check-in-opens. Passengers can check-in simply by texting "YES" back. However, this does not give passengers the possibility of choosing their seat.

SAS are upgrading the SMS-message with wap-link to the mobile check-in (pre-populated with the passenger details) to the notification SMS. We're hoping that this will increase the use of the SAS Mobile Portal as well.



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SAS: Shifting to mobile

On optimising mobile space

Uptake on SAS's mobile portal has initially been lower than they had hoped for. The major issue that SAS have identified is the use of different URLs. Currently a number of URLs are used to access the portal such as sas.mobi, wap.sas.no. The plan going forward is to use only one URL regardless of the customer's device.

Going forward with 2D Barcodes

SAS have started internal testing of 2D barcode boarding passes, using their own staff (both on private and business travel) in April in Scandinavia, as well as Helsinki and London-Heathrow. The aim is to launch it in the near future for all passengers in as many markets as possible. One main issue with introducing mobile boarding passes is airport-security. While most airports have bar-code readers (as the bar-codes being used are the same as on SAS's kiosk- and home-printed boarding passes) there has been some opposition from airports to allowing mobile boarding-passes. However, as more and more carriers are now launching this service, airports are becoming more forthcoming. Of course it is critical that airport staff understands and accepts this new tool.

A decision also has to be made about how to deliver the boarding-passes, via SMS (wap-link), MMS (image) or e-mail. The current solution involves sending passengers an sms with a URL to the boarding pass however this requires that the customer's phone has internet-access.

Through SAS's current live testing they hope to track how effective the service would be and identify any issues early on. As it stands SAS have not seen any show-stoppers.



SMS notification service taking off

"More than 130,000 passengers are now subscribing to our SMS notification service every month, a 20% increase since last year, and in February we sent out more than half a million SMS-messages to our subscribers. I personally enjoy knowing what gate I'm leaving from (so that already on the airport-train I know if I need to do the 500 meter dash to the gate or not...)"

- Christian Kamhaug, Project Manager SAS Mobile Portal, SAS Scandinavian Airlines



Limits/constraints on mobile

SAS have just signed a long term agreement with Amadeus, and are going to be replacing their in-house legacy systems with Amadeus systems over the next two years. Obviously this will take up a lot of development resources. SAS are in the process of developing a mobile booking-functionality with a third-party provider to be launched soon. However, as the legacy as well as online booking engines are changing, the focus has moved slightly from this. Thus, there will be limitations in the functionality, and the application will be tailor-made to SAS's main focus-areas: short-haul, high-frequency routes with a high proportion of business travellers.



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