



Smartphone technology – the future of heritage interpretation

With mobile web browsing costs and payment plans becoming cheaper almost by the month, Smartphone ‘contactless’ technologies are likely to be the future of heritage interpretation.

Almost everyone (94%) now has a mobile phone and over half have a sophisticated smartphone or device, such as an iPhone, Android or Windows phone. Smartphones usually have a small built-in camera, they are able to browse the internet when the user is out and about, and they allow users to download applications from mobile ‘App’ websites.



The modern smartphone has evolved rapidly to become the mobile ‘hub’ from which users of all ages can run their busy work, social, leisure and family lives quickly and easily.

81% of smartphone owners keep them on all the time to browse the web, download applications, network with each other socially and use their smartphones to find out about almost anything and everything around them.

Compared to visitor site interpretation boards, QR codes and NFC Tags are cheap to encode and easy to site, such as on existing way-markers, and can be easily stored and replaced if damaged.

Many interesting UK heritage sites, such as castle ruins or National Parks, can’t always offer a visitor centre or access to a site expert. So, when visitors want more information about something they’ve discovered on their visit, they can use their mobile to download a free ‘App’ and then scan a nearby QR code or NFC Tag quickly and easily, to instantly obtain more details about a particular point of interest.

In fact, used cleverly, QR codes and NFC Tags act as a visitor’s personal tour guide, providing background details at key points all around a visitor site, in a quick self-service way. QR codes can also be added to existing interpretation or wayposts, so they’re easy to spot, but their relatively small size means there is also minor impact on a user’s visual enjoyment of a heritage location.

The beauty of using mobile website pages that each code links to is that the pages can also be changed or updated with each season, or improved over time so they won’t go out of date.

By using practical ITiC implementation guidelines, QR codes and newer mobile contactless technologies such as Near Field Communication (NFC) Tags and Augmented Reality (AR), offer significant benefit to heritage sites for additional, fast, low cost and effective site interpretation.

Use your mobile - please scan the QR code to find out more



Quick Response Codes

Quick Response (QR) codes, the most popular contactless technology, are two dimensional barcodes that can be scanned by a smartphone's built-in camera and QR reader application to access online or text based information.

With **94% of the UK public owning a mobile** and **50% having an advanced smartphone**, these devices have the capability to rapidly scan QR codes.



How QR codes work

A QR code is a 2D barcode that, when scanned, can link to text or anything accessed over the web such as web pages, pictures, audio, videos, map locations or interactive games. QR codes are free to create, easy to site, distinctive to spot and have relatively low printing costs.



To scan QR code users need just three things:

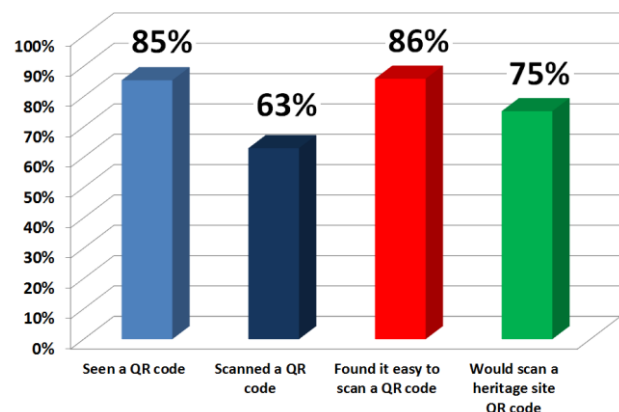
1. A mobile with a camera to point at the QR code
2. A small mobile 'App' installed to read the QR code
3. Web access to go to the page the QR code links to

Using QR codes at heritage visitor sites

It is rapidly being recognised in the heritage sector that there is great potential in the use of QR codes and other mobile contactless technologies, to help people of all ages visiting heritage sites.

QR codes were trialled in the South Downs National Park to prove their benefits. The results showed QR codes were liked by visitors of all ages, helping them to appreciate our unique heritage and understand our history and culture better. **85% of the public are aware of QR codes and 63% have scanned a QR code.** In connecting to text, website pages, video, audio and other online content, **86% of respondents also found it fast and easy to scan a QR code.**

QR Code Awareness and Interest



On the South Downs, each mobile page link was visited once a day from a QR code on average. Once people know what QR codes are, what they link to, and have scanned them for the first time, they respond favourably to them. As a result of this detailed research a second phase of research is under way which will add NFC Tags to all the QR code sites.

Near Field Communication (NFC) Tags

NFC technology was used successfully at the London 2012 Olympic Games.

Tags are already in passports and Oyster cards and NFC scanning is available on latest Android, Blackberry Windows 8 and Nokia mobiles.

NFC Tag data is stored on a pinhead sized chip linked to an antenna built into a paper-thin NFC Tag.



- More than a million NFC-enabled Android devices are now being sold every week
- NFC Tags can link to text, mobile web links or be used for NFC contactless payment
- Scanning works by 'tapping' an NFC enabled phone near an NFC Tag (within 1 to 3 cm)
- Google launched 'Google wallet' in 2011 so NFC can be used for instant mobile payments
- Android Beam lets users tap phones together to share contacts, apps, maps, sites etc
- The heritage sector is now starting to use NFC Tags, usually in combination with QR codes

Augmented Reality

Mobile augmented reality is a new medium through which mobile users can interact with Augmented Reality or AR content. The mobile AR world consists largely of two different types of experiences: geolocation and vision-based augmented reality.

Geolocation - based AR uses GPS, compass and other sensors in the user's mobile phone to provide a 'heads-up' display of various geolocated points-of-interest.

Vision-based AR uses many of these same sensors to virtually display digital content in context with real-world objects such as visual features, buildings, large objects, magazines, posters or packaging, all by tracking the visual features of these objects.



Augmented Reality is designed to add a 'virtual' overlay to real objects such as posters, maps, magazines, buildings and scenery, with the AR images 'triggered' based on mobile camera images or GPS.

It can also add a historical context, overlay video, audio commentary or a virtual 'what it might have looked like in the past' aspect to heritage sites and buildings, which is especially useful where the current visitor site is just a featureless field, for example.

About IT's in Conservation

IT's in Conservation (ITiC) provides specialist advice on the effective use of mobile technologies in the heritage and conservation sectors to aid visitor education and onsite interpretation. Our aim is to help conservation and heritage bodies throughout the UK to make the most of their heritage assets and get knowledge and information about the assets they manage across in a practical way to the wider public.

Our mobile technology solutions help visitors to UK heritage locations by creating online and text information for mobile and smartphone devices, helping people of all ages to develop a better understanding of important local buildings and history, and an improved appreciation of their outdoor environment, heritage and culture.

ITiC offers a full consulting and technology development service including:

- Heritage site consulting to improve interpretation, visitor satisfaction and online information access
- Advice and implementation of mobile technologies such as QR codes, NFC Tags and Augmented Reality
- Technology development including mobile website and content creation and application development
- Managing multiple technology, mobile app and interpretation vendors to deliver projects successfully

Current ITiC heritage site projects

ITiC is currently working with National Parks, Councils, heritage and conservation organisations to explore the effective use of smartphone technologies including mobile websites, apps, QR codes, Near Field Communication (NFC) and Augmented Reality (AR). These mobile technologies are only a few of a range of new, cost effective and practical online and offline solutions ITiC is researching and implementing.

Detailed research has just been completed along the South Downs National Trail that proved the value and benefit of QR codes to highlight visitor points of interest at key waypoints, gateways and visitor sites. The South Downs will also be adding NFC Tags in a second phase of development starting autumn 2012.

ITiC Partners

ITiC works with local technology and business partners to deliver a range of visitor interpretation services:

- Mobile application development for Android, Apple iPhone, Windows, Nokia and Blackberry phones
- GPS, QR code, NFC Tag and Augmented Reality applications and optimised mobile website content
- Onsite printed visitor interpretation signage developed using aluminium, PVC, polycarbonate or GRP
- QR code, Augmented Reality and NFC Tag design, creation and mobile website content management

Other ITiC technology and consulting services

Our technology services include communications, website and intranet development, web application development and content migration, cloud solutions, accessibility and usability requirements, user training and mentoring, multiplatform mobile technology, branding, interpretation development, editing and copywriting, agency management, customer surveys and online statistical analysis and reporting.

To find out more visit www.itsinconservation.co.uk or see our YouTube channel at <http://bit.ly/QRITIC>

To run a mobile trial project call **Andrew Kerry-Bedell** at ITiC on **07899 741939** or email **a.kb@live.co.uk**