



Digital R&D Fund
for the Arts

Making Digital Work: *Mobile*

Sharing the learning
from the Digital R&D
Fund for the Arts



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Mobile

Mobile is essential. Audiences have moved there and supporting mobile devices cannot be optional if any organisation wants to survive the present and thrive in the future. Following their consumers, high-growth startups and established companies are bypassing desktop computing and prioritising phones and tablets because they are now the primary way in which digital services and experiences are accessed. The emergence of wearables, such as Apple Watch and Android Wear, only accelerates this trend. We live in a mobile-first world.

The phenomenal adoption of mobile technologies has led to an always-on, always-available society. Content, services and information have never been more abundant or readily accessible. The mobile-first world represents challenges and opportunities for the cultural sector. In a world where attention has never been so fiercely fought for, what can the arts do to engage audiences and grow their businesses?

Mobile is one of the major learning themes from the Digital R&D Fund for the Arts. If we ignore mobile then the public will leave us far behind. Whether it's marketing, selling tickets, providing specialized services, making content accessible, or presenting work, planning and optimising your mobile offer is one of the most important aspects not only of making digital work but making your organisation relevant and work for your audiences.

In this guide you will find five articles which each explore a key principle to making mobile work.

**Tom Grinsted, Group
Product Manager for
Mobile and Devices
at the Guardian.**

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Mobile 'First'

The meteoric rise of the smartphone is having a profound effect on any institution that produces content.


Written by Tom Grinsted,
Group Product Manager
for Mobile and Devices
at the Guardian.

If you don't respond to this, you risk becoming unused by your visitors, unseen by people who search for your subjects, and unheard in the conversations that deeply influence consumption. To not be mobile in the digital world is fast becoming simply to not *be*.

For something so tiny the mobile or smartphone is having seismic effects on the way that people interact with the world. While the net makes our sum knowledge available, smartphones make it accessible; omnipresent and ready to enhance, augment, distract or inform any content a person finds. Once a person gets, carries, and becomes habituated to their smartphone it becomes, in a very real way, a new sense: a way to perceive, parse and make sense of the world. But unlike our other senses, the smartphone gives us access to hidden worlds—the digital, the knowledge-based and the abstract. The smartphone has become the centre of our digital lives. What some call 'mobile first' is in truth already 'mobile majority'.

Like many content businesses, The Guardian has witnessed the consumer shift to mobile. We've seen a phenomenal growth of over 23 million unique monthly visitors over the past year. Virtually all of this growth has been from smartphones. This mirrors a market where mobile sales have pushed 80% of the UK adult population to own a smartphone. Consumers aren't going mobile, they are mobile.

The shift to mobile is driven by habit. As an example, in Guardian mobile apps, peak-consumption is now in the evening, between 9pm and midnight. This is when people are often at home surrounded by devices—desktops, laptops, smart-TVs—that are all objectively better for content consumption than mobiles. But people reach for their phones because they're habituated to them.



“To not be mobile in the digital world is fast becoming simply to not *be*.”

Consumers on smartphones are in many ways more demanding and less forgiving than those on other media. Phones are used in highly distracting environments, on connections with variable speeds and have unique interaction concerns. Digital content must work quickly and gracefully on mobile if it is to succeed. Users expect pages to load quickly. And they will desert sites that fail to deliver. When approaching the redevelopment of the Guardian mobile offerings—both web and apps—our teams prioritised mobiles first and built upwards to larger screens. We also prioritised speed.

Google has recently added mobile performance to its quality indicators, which influence where in search rankings a page sits. Google favours mobile-friendly pages. If your organisation relies in any way on search to drive traffic—like an object from your collection or selling a ticket to a new play—you need to ensure that your website works on mobile. If it doesn't, you'll find that you become progressively more invisible in search, eventually invisible on the web.

It's impossible to discuss the importance of mobile without mentioning social media. Social media has benefited greatly from the rise of smartphones. The fact that Facebook's usage is dominated by mobile—only 19% of users access it purely on desktop, while over 30% do so only on mobile, with the remainder using both—is critical when you also understand that it, along with other social networks (Twitter, Etsy, Tumblr, etc), is becoming the medium for discovery. These networks mediate conversations that result in discovery of new content, new things to do, new experiences. Much of this happens purely on social media. So if your content isn't mobile-friendly it neither inspires sharing, interactions or transactions.

From this brief overview, I hope that it's clear that being mobile-friendly, having content that is quick, usable, graceful and compelling on smartphones is not optional. The phone has become the standard way to interact with the web. Users, and the companies that influence them, will no longer use, recommend, or share content that does not work on their device.

On the plus-side, it's never been a better time to create content for the mobile world. So many things, from easy to implement platforms to tools and insight from Google, make it possible for any organisation to grasp the mobile challenge and reap the benefits of being embedded into the very centre of people's digital lives. ▴

When the Royal Opera House first developed their project to use mobile technology to offer digital programmes, their first aim was to create something sustainable.

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By Iain Aitch, a writer
who specialises in the
arts and technology.
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Working with technology partner POP and research partner King's College, London, the Royal Opera House (ROH) were keen to find something that added to the viewing experience for their remote audience. They also wanted to encourage mobile booking and donations, but they instinctively knew that a standalone smartphone app might be a restrictive and expensive way to go. Instead they opted to design in a responsive way that would allow them maximum flexibility for their money. "We wanted support for ios devices, Android and Windows," says Jamie Tetlow, head of digital development at ROH "but couldn't run a parallel app development. So we went with a responsive HTML5 approach."

There was no specific demographic aim for the project, although choosing HTML5 did mean that there was a self-selecting audience of those with the latest phones to hand. Sometimes it seems far better to look forward with technology, rather than struggle to create a legacy product. Drawing a line in the version sand means that users catch up with you, rather than you constantly having issues trying to support older devices. Building in HTML5 also allowed them to use offline storage, thus solving a problem that could cause difficulties in cinemas or the ROH itself. Now those who purchased a digital programme could store it in their phone and still view it with their smartphone in flight mode. So, no chance of phone ringing just as a performance begins.

Content Where the Audience Wants it

Rather than launching with a bang, ROH slowly released new functionality online, promoting it via mail-outs and casting information handouts. This soft approach was followed up with a short trailer for cinema audiences, which explained how using mobile might enhance their experience.

One unexpected finding from the project is that the take up was as much by a UK audience as by an international one. Whilst the digital programmes were designed with an international audience in mind, UK fans were equally keen to use them, if not more so. "I don't think we reached as many international audience members as we hoped," says Tetlow. "But we were surprised how much of our UK audience we reached. We focused so much on global reach, but this more local audience was just as interesting to explore and extend. We went straight from our venue to international, but we skipped that 'onion skin' around us. I would definitely encourage anyone doing something like this to think about all the audiences and the different scales of audience."

ROH overestimated on take-up when it came to KPIS, but this was more down to not knowing how to set the goals than poor performance for their mobile offering. Being over-ambitious meant that only about 50% of the target was achieved, but it was the why that was helpful from an R&D point of view. "We underestimated how difficult customers would find the mental model of a digital programme," says Tetlow. "They are used to buying the physical one, these beautifully bound red programmes. There was some struggle to distinguish between the two. We put additional messaging in the process of buying the digital programme, explaining how it could be stored and used offline."

This storage was one of the main technical challenges and it has certainly been one that stuck in the project team's minds. "It was quite a voyage of discovery," says Tetlow. "Just the differences between internet browsers such as Chrome, Firefox and Safari threw up a lot of issues. Web developers are used to dealing with those differences, but there are detailed implementation differences and discrepancies that weren't well-documented and that we only came across as we were trying to implement offline storage. It was down to the way different browsers use database formats. We were able to write up some of these findings, which could be useful for similar projects in future."

More than 700,000 people have used the ROH mobile site since it was launched in December 2013. Income from digital programmes has not been huge, but this is also something that will increase exponentially over the future of the web app, as people feel comfortable with something virtual over something paper. ▲

"We underestimated how difficult customers would find the mental model of a digital programme."

Making Public Space a Cultural Venue

Taking a park in Essex, blanketing it in wifi and turning it into a mobile outdoor digital arts and learning space has revealed a broad bandwidth of issues and opportunities for **Simon Poulter** and colleagues at Metal, the Arts Council England National Portfolio Organisation, and research partners at the University of Brighton.

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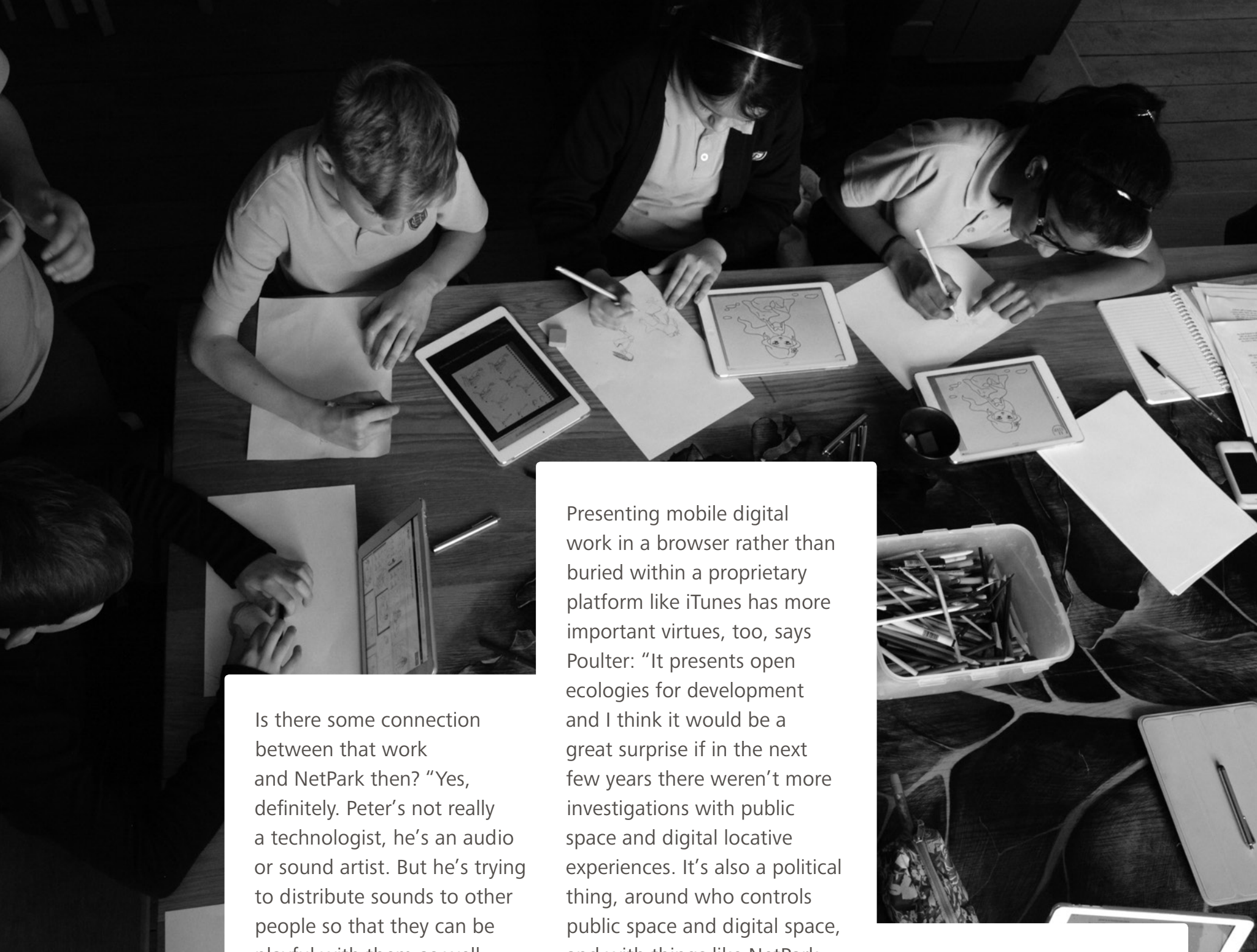
Written by Jon Pratty,
Creative Digital Producer.

After the Digital R&D Fund project in Southend kicked off in Autumn 2014, wifi contractors Ruckus installed powerful antenna in Chalkwell Park, which houses Metal's HQ, Chalkwell Hall. According to Poulter, the mobile wifi field across the park was strong enough that Ruckus conducted 'sniffing' tests to monitor its effect on residential users dotted round the perimeter.

Developing a mobile analytics regime also present challenges, with a range of different platforms on site tracking activity, according to Poulter: "A fundamental part of the research will be looking across the analytics data. The University needed to be sure we had systems in place to track usage without being able to identify mobile users by name. They have gone through an ethics committee for obvious reasons."

Connected to these needs for balanced approaches, Poulter found the artist's research role important: "Some of what we've done arises from the fact that I'm not just somebody who works for Metal, it comes from the fact that I'm an artist who has a live practice making work with network and locative technology and I've been able to roll some of that current experience into this project and that's a key thing. There's a real role for artists to play inside projects like this."

NetPark's mobile arts environment has roots in Poulter's work with sound and audio artist, Peter Cusack. "Peter's work *Favourite Sounds of London* was an online sound engine, an amazing collection of beautiful recordings of different locations. When I did my show for MAC in Birmingham (in 2010) I commissioned Peter to make sounds from Birmingham. As we built that as a piece of software, it became quite clear to me there was real potential to link physical space and online."



Is there some connection between that work and NetPark then? "Yes, definitely. Peter's not really a technologist, he's an audio or sound artist. But he's trying to distribute sounds to other people so that they can be playful with them as well. And I think that is quite an informative thing as well. Thinking about distribution, partly with digital media."

According to Poulter, an important departure from the original NetPark plan was to house commissioned artist apps on a mobile-enabled web page as downloads. "That proved to be one of the best decisions we've made, otherwise everything would have been sitting in app stores in a very clunky way. Obviously you can do it that way round, but if you do it this way round, you give the artist much more scope, more control over what their software is looking like."

Presenting mobile digital work in a browser rather than buried within a proprietary platform like iTunes has more important virtues, too, says Poulter: "It presents open ecologies for development and I think it would be a great surprise if in the next few years there weren't more investigations with public space and digital locative experiences. It's also a political thing, around who controls public space and digital space, and with things like NetPark you're making a point about public space and the benefit of that in both of those domains, both physical and digital."

Echoing that point, a recent key realisation about the project resulted from consideration of the digital lifecycle of artist commissions within NetPark. The team at Metal have been considering whether work like this should have a long life, reflecting gallery or archive preservation attitudes, or a short life, being packed up on completion and leaving no traces. It might be about digital ecology, thinks Poulter.

"That's where software platforms let uncomfortable random effects come in," he says. "If you think about the Peter Cusack project, where you've got the sound of elderly people doing Tai Chi in a park in Beijing in 2005; that's never going to go away as being an important artefact, whereas the software shell that surrounds it immediately goes in to decay as soon as it goes online. I think that's something I'm very conscious of; working with artists, you get a real understanding of how you need to break out the essential aspects of the project from the software that surrounds it." ▲

When you make work in a minority language that deserves a much larger audience you are in something of a bind. Do you stick to your guns and your smaller audience? Or will you switch tack to a language that more people will know and understand and increase your reach?

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Written by Iain Aitch,
a writer who specialises
in the arts and technology.
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For the team that created Sibrwd the answer was very much “none of the above”. With Sibrwd, Theatr Genedlaethol Cymru, research partner Re-Draw and technology partner Galactig came together to create a solution to this problem that would do away with the need for compromise, language subtitling or turning away audiences that did not speak or understand Welsh.

The Digital R&D Fund for the Arts in Wales was the ideal backing for this team exploring the possibilities, as technology-based innovation was the obvious answer to the problem. However, no one had yet dealt satisfactorily with challenges of execution. Bringing the concept to life could also generate IP for the team, which in turn could be exploited to create funding for further innovation.

“The idea was primarily to grow audiences,” says Galactig’s creative director Derick Murdoch. “The theatre obviously have a big Welsh audience, but they want to reach audiences that are not necessarily Welsh speaking, as well as Welsh learners.”

“When the audience come in, they connect to a Sibrwd wifi network, which we have created. The content then comes from a MacBook Pro running a web server that contains the Sibrwd content management system.” This content management system connects the user’s smartphone or a borrowed iPod Touch to Sibrwd’s multi-lingual platform. The initial stages of the project have seen translations to English, German and Sorbian (a minority East German language). More languages are planned, including a simplified Welsh for learners.

Create Services for Specialist Needs

Audiences are encouraged to use the system on their own phone and headphones, downloading before they arrive and operating in flight mode so that they don't have their performance interrupted. But Sibrwd does not simply deliver translated audio of the play that the audience are watching. They instead get a cued translation that can be reactive. This shows that allowing for change is vital when providing technological solutions that enhance live performances. The unexpected will always happen. "The current production has 234 separate audio cues," says Murdoch. "Each one is triggered by a member of the crew at specific points. Things change on the night, don't they? Actors miss lines. This gives us the ability to be flexible and jump around with the cues."

Getting the tone of the translations right was more of a struggle than the technological side for the project. The length of the audio and when it appears is as important as the message it contains. "One of the issues we had was with humorous content," says Murdoch. "Translating humour from Welsh to English is difficult in a setting where one audience may laugh at a certain point and another audience may not laugh at all. That can be one of the points where you may lose an audience with translation. You will always get that slight disassociation with the rest of the audience when you are using headphones, but we really noticed that with jokes."

Initial experience of the Sibrwd software showed the team that audiences took a while to get comfortable with having their phone out in the theatre when they were used to putting it away. This obviously found some synergy with dance group TaikaBox, who produced *Please Switch On Your Mobile Phones* as part of an R&D project and have now been granted a license to use Sibrwd for a dance project. Murdoch believes that it is this kind of wider thinking that will make Sibrwd a success in commercial terms and which will allow it to be marketed widely.

The whole team on Sibrwd were thinking ahead with their project, although the only regret that Murdoch has is perhaps not looking back a little too. "We didn't realise it at the time, but we should have integrated it with [lights and effects cue system] QLab at the time of designing. We are looking at that now, though." Looking forward, Sibrwd is set up as something that can become a go-to for mobile users in need of translation tools, as well as theatres or arts organisations that need to provide them. ▲

“Getting the tone of the translations right was more of a struggle than the technological side for the project.”

The Future of Mobile

The World Bank predicts that by 2020 a majority of the world's adult population will own a smartphone. This will have a far reaching impact on content consumption, commerce, social interaction and ultimately, society.


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It's not possible to overestimate this impact, yet any predictions we make now will quickly be outdated. That makes the job of writing about the future of mobile a daunting one. But on the plus-side no one can say anything written here is actually wrong—that's for future technologists reading Wiki articles about 'the top 10 worst predictions of all time'.

So, if we can't predict the future with a high degree of accuracy, what can we do? We can look at trends and recent technical innovations. We can get inside the heads of users who ultimately decide what technology lives or dies. We should not forget that it is people who are the final arbiters of consumer-level success—a lesson learned the hard way by the likes of Kodak and Blackberry.

A trend that we already see—people preferring their mobiles over other digital technologies—will continue. Critically, as well dominating online interactions like buying tickets or researching a landmark before visiting it, mobile will extend further into the real world. People will be much more likely to reach for their phones to facilitate physical / digital interactions to enhance or extend experiences through mobile. We see the beginning of this already. I use an app for my boarding pass at the airport and NFC (Near field communication) at London bus stops for travel information. In galleries I quickly search for the subject of portraits and take photos in museums to share my emotional response to objects with friends and family.

Written by Tom Grinsted, Group Product Manager for Mobile and Devices at the Guardian.



“We should not forget that it is people who are the final arbiters of consumer-level success.”

Mobile may be the automatic choice when interacting with digital content, but it is not always the best. Small screens mean less immersive video, constant interruptions make for less social people. In response, we're now seeing entire classes of devices created specifically to enhance the capabilities of mobiles. The mobile will be at the centre of your digital life but you won't always be looking at it. The Apple Watch and Android Wear are essentially small second screens for your phone. They stop you having to take your mobile out of your pocket for every small action like dismissing an email or skipping a song. Google describe these as 'microinteractions' that 'help you stay more involved in real life'. Sounds great—but at its heart this is about the phone becoming less intrusive and more useful by enhancing it with a small screen on your wrist. Similarly, the likes of Chromecast, Apple TV, and Fire TV from Amazon, essentially turn your TV into a very large second screen for your phone.

A constellation of devices is evolving that all enhance the capabilities of the mobile—these already allow you to control your house (Nest), track your fitness (Fitbit), tweak the lights to make a more cosy atmosphere (wifi-enabled bulbs) even to monitor your dog's health. This will continue—a colleague of mine describes it as the mobile becoming “the remote control for your life”. He's not wrong. But for any service or content to be successful it needs to work over all these different devices. Services will need to be seamless—if I continue watching a film on a tablet I expect it to be in the same position it was on my phone. If I collect objects as part of a gallery visit, I'll expect them to be waiting for me online when I get home.

People use mobiles to enhance their daily lives and in the future they will do this even more. The potential for the cultural sector to exploit this is immense and offers rewards in engagement, efficiency, reach and ultimately relationship building. People in the future, just like those in the present and in the past, will always seek genuine, emotionally enriching experiences. Sometimes these will be facilitated by mobile technologies, but sometimes through the deliberate exclusion of them.

Mobiles are intensely personal tools. But we should never lose sight of the fact that one tool is never appropriate for every job. It's in the innovation projects of the future that the cultural sector will discover where and how mobiles and their constellation of companion technologies truly deepen our relationships with our visitors. ▲

Making Digital Work

Visit the Digital R&D Fund for the Arts website at artsdigitalrnd.org.uk for a wide range of resources to help organisations of different sizes and types on their own digital innovation projects.



Theme Films

Engaging short films on the four learning themes of mobile, accessibility, data & business models.



Product Toolkit

The processes and tools you need to take an idea through to a successful product.



Print Magazine

Limited edition publication full of inspiration and opinion, also available as a PDF.



Research Reports

Fascinating accounts from the R&D Fund projects from England, Scotland and Wales on the successes and challenges of their work.



Digital Culture

Results from this major 3-year study tracking how arts and cultural organisations in England use technology.



Magazine Features

Interviews, profiles and guides from a range of people and organisations working in arts, technology, research and beyond.

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