

# **Paisley 2021 Digital Latency and Digital Welcome Consultancy Report**



A response to an issue raised around “digital latency” and proposals for a “digital welcome” researched, compiled, analysed, written and presented by Dougal Perman of creative content communications consultancy, Inner Ear.

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## Introduction

### *“What will you do about digital latency?”*

That question prompted this piece of work. At first the question may seem straightforward, albeit esoteric. However, if we deconstruct it, then the question becomes cryptic, if not obtuse. In attempting to provide a robust answer to it, though, the question pushed us to consider how best we could provide both a strong digital foundation for the Paisley 2021 UK City of Culture Bid and a set of strategic recommendations for developing infrastructure to enhance Paisley’s venue and location assets in line with DDCMS<sup>1</sup> objectives and enable future potential.

This report uses research, consultation and original thinking to answer the question, evaluate potential and recommend action. First we tackle the notion of digital latency, then we roll out the digital welcome. In the development section we suggest interventions to enhance infrastructure and increase opportunity. We imagine innovations, including the virtual recce and play with the economic potential of using digital media as a cultural tourism driver.

Inner Ear is well placed to investigate this topic, consider possibilities and make recommendations because of our position in the culture and media ecosystem. We detail our place and experience in the final chapter.

Both the exploration of “digital latency” and development of the “digital welcome” should be considered within the context of the Paisley 2021 movement ignited by Renfrewshire Council’s bid for Paisley as UK City of Culture 2021 and includes everything that has been done so far and everything that will be done in the future, regardless of the fact that, unfortunately, the bid was not successful. Despite that, everything envisaged in this report can still be realised. In this, and many other respects, because of the energy, enthusiasm, creativity and community intrinsic to the bid, in many ways for the town of Paisley and its people, it won anyway.

To investigate this subject we combined a mixture of site visits, case studies, exemplar scenarios, actual and imagined interventions and economic analysis. We hope you enjoy this report and find our ideas informative and inspiring.

## Digital Latency

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<sup>1</sup> [dcmsblog.uk/2017/07/cultureisdigital-have-your-say](http://dcmsblog.uk/2017/07/cultureisdigital-have-your-say)

What was meant by “digital latency?” Let’s put the broad meaning of “digital” to one side and accept that it is often used in the cultural context to describe technology, online and mobile communication and a progressive approach to engagement and experience using connected platforms.

When asked, many people say “digital latency” evokes thoughts of audio lag in recording. The broader definition of “latency” is “the delay before a transfer of data begins following an instruction for its transfer. ‘poor performance due to network latency’.”<sup>2</sup> For live events, this relates to data transfer of audio, video and broadcast. Latency issues can affect negatively audience enjoyment, comprehension and appreciation. They can be overcome in several ways. Latency can be considered more broadly, with problems and solutions for its influence on experience, opportunity, access and inclusion.

Before we explore those digital latency problems and solutions, it is worth exploring possible inferences of the term further. Shaun Fensom<sup>3</sup>, who founded the trade association Manchester Digital<sup>4</sup>, co-wrote a paper (with academics Steve Walker, Simon Bell and Keith Straughan) called “The ‘Infinite Bandwidth, Zero Latency’ Project: Inventing a Digital Future”<sup>5</sup>. Fensom writes about Infinite Bandwidth, Zero Latency (or IBZL) on various blogs and websites. It is a thought experiment that imagines possibilities as a way of looking beyond what we consider feasible, or even possible, now. The IBZL blog explains:

“We are not predicting a future of infinite bandwidth and zero latency; rather we are using this as a way of thinking a world in which network constraints disappear for increasing classes of application. For example, if latency can be reduced to below approximately 30ms it might be possible for musicians to play together remotely as if they were in the same room. Typically, the ideas generated bring together the idea of superfast networks with other near-future technological developments.”<sup>6</sup>

It is useful to bear the IBZL concept in mind, but first let us solve problems.

## **Experience**

Latency can affect the audience experience in several ways. Audience includes performance spectators, conference delegates, workshop participants, retail and

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<sup>2</sup> [en.oxforddictionaries.com/definition/latency](https://en.oxforddictionaries.com/definition/latency)

<sup>3</sup> [shaunfensom.com](https://shaunfensom.com)

<sup>4</sup> [manchesterdigital.com/about-us](https://manchesterdigital.com/about-us)

<sup>5</sup> [oro.open.ac.uk/29920/6/1ADIS\\_IBZL\\_paper\\_final.pdf](https://oro.open.ac.uk/29920/6/1ADIS_IBZL_paper_final.pdf)

<sup>6</sup> [ibzl.wordpress.com/about](https://ibzl.wordpress.com/about)

trade consumers and online communities. In respect to the “delay before a transfer of data begins” there are a number of problematic issues for which technological solutions can be applied.

<b>Digital latency types, problems and solutions</b>		
<b>TYPE</b>	<b>PROBLEM</b>	<b>SOLUTION</b>
<b>AUDIO</b>	Delay can be evident in live sound, from the moment the performer makes a noise, to the moment the amplified sound reaches audience ears. This is especially apparent in large venues where relay PA speakers are required. The spectator experiences the delay as an echo.	To overcome audio latency, delay can be applied to loudspeakers as part of the PA system deployed in the space. Increments of delay are calculated <sup>7</sup> using a standard formula <sup>8</sup> . This overcomes perceived delay and is the responsibility of the event sound engineer.
<b>VIDEO</b>	Latency in video builds up through the workflow <sup>9</sup> of a recording or live broadcast situation. Each link in the chain (camera, cables, converters, vision mixers, recorders, capture devices, etc.) can increase delay which results in video lagging behind the audio so the sound and picture are out of sync.	Video sync issues can be overcome by delaying the audio so that the sound matches up with the picture. This can be done with hardware or software. Audio delays are best set manually by getting someone to stand on stage and clap into a microphone and adjusting the delay incrementally.
<b>CALL</b>	Callers using VoIP and video conferencing systems can experience latency during calls <sup>10</sup> (Skype, Hangouts, GoToMeeting, etc.). This can be seen on TV broadcast with live satellite link-ups too.	Many variables affect call latency so the best way to mitigate or reduce it is to experiment with different platforms and ensure the internet connection is stable with at least 5 Mbps upload.
<b>BROADCAST</b>	Live streams, and most forms of broadcast, create a delay between subject and audience because the signal is buffered	Broadcast latency <sup>11</sup> is not usually an issue. If the experience is a televisual one, then it does not matter if

<sup>7</sup> [brightonsoundsystem.co.uk/calculator/audio-delay.php](http://brightonsoundsystem.co.uk/calculator/audio-delay.php)

<sup>8</sup> [music.tutsplus.com/tutorials/how-to-calculate-a-delay-tower--audio-10471](http://music.tutsplus.com/tutorials/how-to-calculate-a-delay-tower--audio-10471)

<sup>9</sup> [us-tech.com/RelId/1490479/pagenum/2/ISvars/default/Understanding\\_Video\\_Latency.htm](http://us-tech.com/RelId/1490479/pagenum/2/ISvars/default/Understanding_Video_Latency.htm)

<sup>10</sup> [wowza.com/blog/what-is-low-latency-and-who-needs-it](http://wowza.com/blog/what-is-low-latency-and-who-needs-it)

<sup>11</sup> [streamingmedia.com/Articles/Editorial/Featured-Articles/Latency-Sucks!](http://streamingmedia.com/Articles/Editorial/Featured-Articles/Latency-Sucks!)

	<p>by the encoder (on site), at the server (online) and by the player (with the end user). Building up a buffer of data helps mitigate disruption for the audience but does delay the broadcast by up to a minute or more.</p>	<p>there is a deliberate delay. If live audiovisual interaction is required then a call is needed (see above). If text interaction in real time is desired (such as in an auction) then use a platform with close to zero latency.</p>
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These examples show that latency can occur in the mediatisation of an event, which compromises its liveness<sup>12</sup>, but each latency problem has practical solutions. With broadcast, the worst experience for the viewer or listener is buffering, where the broadcast, or stream, pauses, stutters or fails completely. Social networking live streaming platforms like Facebook Live, YouTube Live and Periscope can be particularly susceptible to these issues. Our many years of experience in live streaming cultural events enables us to present the following detail on how to mitigate online broadcast issues.

<b>Viewer or listener experiences buffering or a stuttering stream</b>	
<b>POSSIBLE CAUSE</b>	<b>MITIGATION</b>
Poor internet connection on site.	Ensure <i>at least</i> 5 Mbps upload.
Contended internet connection (i.e. a WIFI network shared with production staff or spectators).	Dedicate a connection to the live stream, ideally hard wired rather than wireless.
Stream is being sent directly to Facebook Live (or other social platforms).	Route the stream through Livestream (which has a sophisticated anti-lag feature).
Many operations are being executed by software (e.g. vision mixing, graphics processing, encoding and upload).	Use faster processing power, configure settings accordingly and replace software with reliable hardware where possible.

So the venue should be well provided with a suitable internet connection (be that permanent or temporary, see our infrastructure enhancement recommendations below) and the producers of the event and/or calls or broadcast needs to be able to cope with challenging situations.

<sup>12</sup> [books.google.co.uk/books?id=YNyqBgAAQBAI&pg=PA40](https://books.google.co.uk/books?id=YNyqBgAAQBAI&pg=PA40)

## Access and Inclusion

Digital technology can be used to make events more accessible and reduce a potential latent barrier between subject and audience.

Extending the notion of accessibility, digital technology can be employed to include as many people as possible in an experience regardless of financial situation, geographic location, age or ability.

## Financial Situation

Paisley 2021 sees the roll out of free public WIFI around Renfrewshire. While the available bandwidth may not facilitate operations for which high speed internet access is mission-critical, such as live streaming, it will democratise access. This kind of “digital inclusion” may facilitate the consumption of content created, published and shared in Paisley with a local audience who many not otherwise be able to access it due to concerns about the cost of using mobile data.

### Scenario: Digital Inclusion for Project Z

Fiona and Peter live in Johnstone want to take part in a new Project Z game being piloted around Renfrewshire (see below). Fiona has an iPhone (not the latest model, but it can still do everything she needs it to and much more) and Peter has an inexpensive, but pretty cool, Android phone that he has customised to suit the way he uses it. Both of them are on Pay-As-You-Go (PAYG) contracts and using mobile data can quickly become expensive. Neither of them have decent broadband at home, and they aren't able to access all of the Project Z games at college or work. Using the Renfrewshire Council Free Public WIFI, they can get online in their own town and take part in an entertaining, educational, immersive community event from which they would otherwise have been excluded. Thanks to this provision, Fiona and Peter will experience inclusion latency no more.

## Geographic Location

Location can be a barrier to access. While Paisley 2021 focuses on the town of Paisley itself, Renfrewshire Council, and its associates, want to ensure everybody in its catchment area is included. For example, there are about 13 miles by road

between Renfrew and Lochwinnoch. To travel by public transport can take over an hour. To get from either Renfrew or Lochwinnoch to Paisley takes about half an hour. Digital media can be used to engage audiences in towns and villages surrounding Paisley.

### **Scenario: Communities Come to the Show**

Shelley and Stuart live in Lochwinnoch with their young children Sunniva (3) and Angus (1). Shelley wants to take the kids to Paisley Arts Centre's Christmas Show but their car requires significant repairs and she can't find a suitable time to take both children into Paisley by public transport. Luckily for them the show is being live streamed from Paisley Arts Centre and shown as a public screening at the Mckillop Institute community centre. Shelley can take the kids and they can still experience a version of the live show, which is attended by other children in their local area and proves to be just as lively as it would have been if they could have watched it in the theatre. Digital latency need not be an issue simply because of geography.

## **Age**

Digital laggards can encounter digital latency, especially when it comes to the opportunities offered by online interaction. Age can be a decisive factor. While the Office for National Statistics (ONS) reports that in the first quarter of 2017, 89% of UK adults used the internet in the last three months, that included 99% of 16–34 year-olds but only 41% of those over 75. Of disabled adults aged over 75, 34% were recent internet users compared with 50% who were not disabled<sup>13</sup>. Lack of access and lack of familiarity could cause elderly people to be disenfranchised in our increasingly digital world.

Interventions such as free public WIFI and community outreach projects can tackle this issue. On top of this, in the spirit of the IBZL project, we could imagine a community outreach project that puts young digitally-savvy people with those elderly people who seldom get online. Take this project into a care home, combine it with council services and we reduce digital latency.

### **Scenario: Enabling Online Interaction In Over 75s**

Not all old people are silver surfers! Jaspreet's granny and grandad are surprisingly sprightly, tech-savvy 80-year-olds so she gets a shock when she starts volunteering in a care home in Renfrew. Sheila runs Craigielea care home

<sup>13</sup> [ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2017](https://ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2017)



and is working with a local after school club that encourages young people to help elderly people access online services. This is done through an oral history project. Using a simple voice recorder app on her iPhone, Jaspreet interviews Angie, a bubbly 85-year-old, about growing up in Paisley in the 1940s and works with her to do simple edits of the content and post them on the Paisley People's Past blog. Each post is tagged with keywords that help other users find connections. Jaspreet and her friends work with Angie and other people in Craigielea to compile and collage archive photos and secondary source material to augment the personal histories. The archiving work is fun and sparks more memories from its contributors. Getting involved in this project helps Angie and her friends overcome their fears of internet technology and embrace online communication.

## Ability

Levels of ability, or disability, can be related to barriers to access and digital exclusion. Inclusion is improving, but still has some way to go. According to the ONS study, 22% of disabled adults had never used the internet in 2017 (a figure down from 25% in 2016<sup>14</sup>). But when it comes to digital latency issues of access and inclusion, internet availability is only one part of the problem.

Mobility issues can exclude people just as much as geographic location. While council venues strive to be as accessible as possible, sometimes it is next to impossible for some people to get to venues to take part. Social constraints come into play too. Relaxed performances for people with conditions such as autism, for example, can aid inclusion. Ben Fletcher-Watson is an academic who joined us in a panel discussion about using digital media to make the arts accessible<sup>15</sup> (part of a broader, ongoing, scope of work Inner Ear does in accessibility<sup>16</sup>).

Fletcher-Watson is particularly interested in relaxed performances. Writing in the Scottish Journal of Performance, he posits a:

“movement of inclusion [that] aims to encourage attendance at mainstream productions by audiences disadvantaged by various factors, including disability (for example, via the provision of a T-loop or hearing aid loop for D/deaf patrons, and touch tours of the set for partially-sighted visitors), income (as at ‘Pay What You Can’ performances) or inexperience

<sup>14</sup> [ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers](https://ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers)

<sup>15</sup> [innerear.co.uk/making-the-arts-accessible-panel-discussion-at-edfringe](https://innerear.co.uk/making-the-arts-accessible-panel-discussion-at-edfringe)

<sup>16</sup> [innerear.co.uk/innovating-increasing-accessibility](https://innerear.co.uk/innovating-increasing-accessibility)

(through audience development and outreach activities).<sup>17</sup>”

Technology can be employed to enhance all Fletcher-Watson’s suggests. Provision of a hearing aid loop is straightforward enough. Broadcasting audio description for the blind that is either read aloud live or synchronised with the performance is also relatively straightforward. Progressive ticketing platforms facilitate “Pay What You Can”, or voluntary donation models.

Developing on these ideas, augmented reality layers could use phone, tablet or and smart glasses (even those as simple as Google Cardboard) to display closed captions for scripted performances (from plays to lectures) which could include multiple languages and provide more information as a second screen experience. But it is in audience development and outreach activities where digital latency can be reduced further. Broadcasting performances is great, but what about including people in cultural community activities who otherwise would not have a chance to participate.

### Scenario: The Digital Gardener

Brian has always been passionate about gardening but as someone with motor neurone disease, exercising his green fingers in an electric wheelchair is very challenging. He is a fountain of knowledge and often knows more than the panelists on his favourite radio programme, Gardeners’ Question Time. Brian would love to get his hands dirty helping with the development of Erskine Community Garden<sup>18</sup> but getting there is not really an option. Thanks to some digital innovations Brian is able to join the working party. Moira has recently bought, and learnt to use, a low-cost Mevo<sup>19</sup> live streaming camera. By setting up a simple stream (and a 4G MIFI), Brian can join in the on site planning discussions and offer his advice and expertise. His niece is a dancer and has ideas about performance in the garden. Thanks to readily available technology, digital latency does not need to prevent Brian from indulging his passion for gardening.

## Opportunity

Business development can be enhanced by strategic deployment of digital technology to reduce latent barriers to market and overcome obstacles, thus “levelling the playing field”. Opportunities that could be made possible by using Paisley 2021 as a catalyst to reimagine the present and future of the area include

<sup>17</sup> [scottishjournalofperformance.org/Fletcher-Watson\\_relaxed-performance](http://scottishjournalofperformance.org/Fletcher-Watson_relaxed-performance)

<sup>18</sup> [erskincommunitygarden.co.uk/about/4591876227](http://erskincommunitygarden.co.uk/about/4591876227)

<sup>19</sup> [getmevo.com](http://getmevo.com)

developing new business models that encourage entrepreneurial spirit, assist feasibility, encourage play and promote online collaboration.

## Innovating Business

Stimulating innovation around business models can be a positive outcome of implementing procedures to reduce digital latency. Enhancing digital technology can encourage an entrepreneurial spirit. With more readily available internet access, textile designers, craftspeople and makers can more easily sell their products online. Market traders can take credit card bookings at events and increase sales and transaction values<sup>20</sup>.

Mundane business functions can be monetised too. Online broadcast and interactivity facilitates collaboration (see below) but can also create value out of essential preparation. For example, rehearsals and soundchecks can be live streamed and ticketed. Several years ago, Hue And Cry pioneered selling tickets to “soundcheck experiences”<sup>21</sup>. Music streaming e-commerce platform StageIt has a section for selling access to soundchecks<sup>22</sup>. The Call List extends the opportunity for actors, comedians and other performers<sup>23</sup>.

### Scenario: Selling The Soundcheck

Esther is excited about her show in Paisley Abbey. She has an active social media following and a highly engaged fan base. Obtaining permissions from the other acts on the bill for her concert is too tricky for her to be able to live stream everything but she knows she has an opportunity to create additional value to sell to her fans. So she uses her iPad and Focusrite iTrack<sup>24</sup>, sets up a StageIt Soundcheck and sells tickets to her Facebook followers. With a little innovation, Esther reduces digital latency between her and her fans, increases revenue and stimulates more ticket sales to the live event.

## Assisting Feasibility

How can technology improve efficiency and assist with feasibility studies? For example, we began by wondering what a venue could do to make itself more attractive to event managers, production companies and promoters. It could start by packaging up plans and schematics, associated info and a full catalogue of AV

<sup>20</sup> [smallbusinessheroes.co.uk/features/can-accept-credit-card-payment-small-business-owners-guide](http://smallbusinessheroes.co.uk/features/can-accept-credit-card-payment-small-business-owners-guide)

<sup>21</sup> [thequeenshall.net/whats-on/shows/hue-and-cry-2012](http://thequeenshall.net/whats-on/shows/hue-and-cry-2012)

<sup>22</sup> [stageit.com/static/static\\_pages/how\\_to\\_soundcheck](http://stageit.com/static/static_pages/how_to_soundcheck)

<sup>23</sup> [thecalllist.com/2017/07/new-live-streaming-tech-gives-fans-behind-scenes-access](http://thecalllist.com/2017/07/new-live-streaming-tech-gives-fans-behind-scenes-access)

<sup>24</sup> [stageit.com/static/static\\_pages/how\\_to\\_soundcheck](http://stageit.com/static/static_pages/how_to_soundcheck)

and ICT kit and making it available via a dedicated section of the website. Examples of content could be added to demonstrate the versatility and viability of the venue for a range of events. But that is all fairly standard stuff. What else could we do? What if we put a 360° camera in the space and created a virtual reality film, which could then be enhanced with augmented reality? Welcome to the virtual recce.

### Scenario: Doing A V-Rec

Ania is an event manager based in Bristol. Her client has commissioned her to run a contemporary artistic performance conference. They are considering venues. They need something near an international airport with convenient road and rail links. They want a classic kind of venue which can be used in a flexible way. A big fan of contemporary Scottish music of all kinds, Ania has watched the SAY Award ceremony many times. She loves the look of Paisley Town Hall and is considering it alongside venues in Dundee, Newcastle, Salford, Brighton and Belfast. She needs to recce the venues on her shortlist before she can make a decision. Her budget only allows her to make three reconnaissance trips. Colin at Paisley Town Hall introduces her to their new feature: the V-Rec. Colin sends Ania a password to access the promoters' section of the venue website. There she can use Google Cardboard<sup>25</sup> (or any headset compatible with 360° Videos) to explore the venue's spaces, measure distances, test the compatibility of the newly installed patch panels and watch examples of PTH in active use. Almost as good as being there – better in regard to the additional information she can access – she opts to visit venues in Paisley, Newcastle and Brighton. The following year her client is delighted with the results of their cosmopolitan conference, which has found its new home in Paisley Town Hall.

<sup>25</sup> [support.google.com/youtube/answer/6239930?hl=en-GB](https://support.google.com/youtube/answer/6239930?hl=en-GB)

## Encouraging Play

It's playtime. Fitness and learning are probably best achieved through play. Games and sports can reduce digital latency by encouraging participation in play at all levels. And digital technology can make that happen.

Innovative marketing agency Bright Signals designed a tool to engage online audiences with five-a-side football, ostensibly as a marketing activity for Tennent's Lager. T5s<sup>26</sup> has been installed in selected five-a-side football pitches, including Pro5s in Paisley. We helped develop the original system. Participating pitches have a big red button near each goal. When something worth sharing happens, a player hits the button and the last 20 seconds of play is uploaded to the T5s website from where it can be shared socially. The service has been a huge hit, with some clips attracting millions of hits and being featured on major US TV shows and blogs<sup>27</sup>. This ingenious idea was relatively low cost to develop and launch as a minimum viable product. What started as a quirky piece of brand marketing has engaged audiences internationally, and provided a point of difference for participating pitches.

It turns out the zombie apocalypse can provide positive development opportunities for young people. The Zombie Project (nicknamed Project Z) based in and around Paisley spawned the film "Dawn Of The Fegs", which was very well received, even by Hollywood star and Linwood native Kate Dickie<sup>28</sup>. We collaborated with youth arts worker Pamela Givan to develop the concept, based on an idea by the young people behind the film and series of graphic novels, and roll it out as an immersive game called Agents of Z which would encourage people to learn about heritage and culture through play.

### Scenario: Agents of Z

Teenager Duncan lives in Elderslie. He hasn't touched Minecraft since he became an Agent of Z. The immersive game is more fun than Pokemon Go and has encouraged Duncan and his friends to research local history in the library, devour oral histories online (using the Renfrewshire free public WIFI), search local news archives and contribute to an ever-evolving storyline as part of a large scale crowdsourced living fiction. Like most players Duncan accesses and adds to Agents of Z on his mobile phone and is far from latent. He hasn't been as digitally or physically active in years.

<sup>26</sup> [t5s.tv](http://t5s.tv)

<sup>27</sup> [brightsignals.co.uk/portfolio/t5s](http://brightsignals.co.uk/portfolio/t5s)

<sup>28</sup> [eveningtimes.co.uk/news/13235305.Paisley\\_zombie\\_movie\\_is\\_pure\\_dead\\_brilliant](http://eveningtimes.co.uk/news/13235305.Paisley_zombie_movie_is_pure_dead_brilliant)

## Promoting Collaboration

As the Infinite Bandwidth, Low Latency project asks, what if we could have ultra-low latency video conferencing? What would that facilitate? Musicians could collaborate online: enabling creativity and driving revenue. Rogue Orchestra<sup>29</sup> sell online recording sessions from Cottiers Theatre in Glasgow to music directors, music supervisors and composers around the world.

Composer Eric Whitacre is even more interactive. His Virtual Choir project began in 2009. The first Live Virtual Choir for TED<sup>30</sup> added 30 international singers from 28 countries to the 100-strong chorus with him in the auditorium. Whitacre brought the concept to the Glasgow 2014 Commonwealth Games<sup>31</sup>. It is clear from reading about these projects and watching the videos that these were large scale productions with big budgets. But the initial toolkit was based on the readily available video conferencing app: Skype. Inspiring collaboration and creative innovation were made possible by innovating on standard feature sets offered by popular platforms.

### Scenario: Galbraith's Global Gala

Paulo is a local musician from Paisley who has had some success in pop music. He is inspired by the possibilities evident in the newly redeveloped Galbraith's Warehouse to team up with future broadcasting pioneers Inner Ear to orchestrate a gala concert featuring musicians and singers from around the world. Members of the Scottish diaspora join in from far and wide. Anna Meredith contributes from London, Konx Om Pax from Berlin, Hudson Mohawke from Los Angeles and David Byrne from New York City. Facilitated via a Google Hangout and streamed via Livestream to Facebook Live, the concert is performed to a capacity crowd in the warehouse, relayed to venues around Renfrewshire and streamed online to millions.

A landmark event, the gala concert also attracts tens of thousands in charity donations for socioeconomic development music charities worldwide. Digital latency evaporates.

<sup>29</sup> [rogueorchestra.com](http://rogueorchestra.com)

<sup>30</sup> [ericwhitacre.com/the-virtual-choir/about](http://ericwhitacre.com/the-virtual-choir/about)

<sup>31</sup> [ericwhitacre.com/news/footage-of-the-virtual-youth-choir-at-the-glasgow-2014-commonwealth-games](http://ericwhitacre.com/news/footage-of-the-virtual-youth-choir-at-the-glasgow-2014-commonwealth-games)

## **What Will We Do About Digital Latency?**

So what will you do about digital latency? We hope you feel inspired to use the references and imagined scenarios in this part of the report to help you answer the question.

Firstly you can take a robust approach to forecasting potential problems and implementing practical solutions. Once the physical manifestations of digital latency are dealt with, broader issues of opportunity, access and inclusion can be tackled to improve the cultural, social and economic situation for everyone.

Once the challenges of the present have been addressed we can take a step forward into the future and dream big about what could be made possible by adopting the right mindset.

Now, let's roll out the digital welcome.



## Digital Welcome

How can Paisley use digital technology to welcome audiences, performers, producers, customers and suppliers and ensure that everyone can participate?

First, let's answer that question in reference to the four main challenges identified by the Department for Digital, Culture, Media and Sport<sup>32</sup> (DDCMS) which are:

- Access and Participation: How can digital content and distribution support new forms of engagement and attract more diverse audiences?
- Cultural Infrastructure: How can we position the UK as a world leader in digitised collections and digital cultural content?
- Cultural Content and Technology: How can we encourage innovation between content and technology?
- Skills, IP and Business Models: How can we build the digital skills and capability needed to drive innovation and ensure financial resilience?

Then, in the next chapter, let's explore how we can develop our digital welcome by assessing our location assets, implementing infrastructure enhancements, facilitating opportunities for business growth and planning for sustainable evolution in terms of legacy and future proofing this development. The DDCMS website poses a set of questions for each challenge. We will answer them in reference to the this report's findings and recommendations.

### Access and Participation

- How effectively do cultural organisations use digital distribution and new forms of content to engage with audiences?

In Paisley venues can live stream, film and audio record shows to promote Paisley cultural output and engage audiences through chat and Q&A. Programme elements distributed in this way can include theatrical performances from Paisley Arts Centre, live music large shows from Paisley Town Hall, choral and chamber music from Paisley Abbey and first looks, artist talks, author interviews and readings from the Museum and Library.

- How can we use digital distribution and new forms of content to engage broader and currently underserved audiences?

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<sup>32</sup> [dcmsblog.uk/2017/07/cultureisdigital-have-your-say](https://dcmsblog.uk/2017/07/cultureisdigital-have-your-say)



Live streamed content can also help engage broader audiences. Remote and outlying areas can arrange screenings of special shows from Paisley for community members who may be unable to attend due to transport or care constraints, for example. Underserved audiences could benefit similarly with screenings of shows in care centres for those physically unable to attend in person. Augmented reality and virtual reality adaptations of cultural events can enhance the experience for people with a whole variety of disabilities and challenges by providing closed captions, sign language interpretation, audio description, 360° immersive experiences and so on.

- What are the barriers?

The barriers are explored thoroughly in the Access and Inclusion part of the Digital Latency section of this report. They include financial situation, geographic location, age and ability. Infrastructure enhancements will help remove barriers to access and participation.

- How might digital culture projects help support community cohesion?

Some of the scenarios explored in Digital Latency have already answered this question. Community gardens, youth arts programmes and cross cultural storytelling (e.g. young volunteers capturing stories from older people) all use digital technology to facilitate them. Thus digital culture helps support community cohesion by making the projects possible, bringing people together, stimulating creativity and preserving prosperity.

- How might cultural and creative content help encourage people to go online?

Online access is provided through municipal services, like libraries and community centres and free WIFI. Cultural and creative content entice people to go online to investigate subjects further, access entertainment and engage with enjoyable activities. Once people are online they can get more out of local services, engage with community programmes, enjoy streamed audio and video content from the surrounding area and participate in games and educational experiences. As more people get online, the market grows and more people can do business with one another, presenting opportunities to local businesses, especially those in culture, craft and creative industries.

- How can digital cultural content and distribution be used to enrich and add value to educational experiences?

Digital cultural content can augment real world educational experiences through audio, video, interactive and gamified elements which deepen engagement and get more people involved. For example, Agents of Z is just one example of how games, challenges and treasure hunts can utilise digital technology to get people active, encourage them to work together to solve problems and, in doing so, learn new things, either implicitly or explicitly.

Access and Participation  QUESTIONS	Digital Latency			Digital Welcome		
	Ex	A&I	BO	IE	EO	Ev
How effectively do cultural organisations use digital distribution and new forms of content to engage with audiences?	•	•	•	•	•	•
How can we use digital distribution and new forms of content to engage broader and currently underserved audiences?		•		•		•
What are the barriers?		•		•		
How might digital culture projects help support community cohesion?	•	•				
How might cultural and creative content help encourage people to go online?	•	•	•	•	•	•
How can digital cultural content and distribution be used to enrich and add value to educational experiences?	•	•			•	•

Ex = Experience • A&I = Access & Inclusion • BO = Business Opportunity • IE = Infrastructure Enhancement • EO = Economic Opportunity • EV = Evolution

### Cultural Infrastructure

- What value do you think digital content adds to the offer of cultural organisations? What is the bigger win for audiences, society and the economy?

Digital content adds value by creating new products (e.g. screenings, recordings and interactive experiences) that can be monetised in a variety of ways, provide a point of difference and provide cultural tourism stimulus. Audiences get a more rounded, holistic experience and enjoy increased access, greater inclusivity and an opportunity to revisit and review projects. Society is brought closer together as

collaboration and communication are encouraged and the economy thrives through increased online spending locally and inward investment (from cultural tourists and selling online products).

- What digital infrastructures (platforms, standards and frameworks) are needed, between and across cultural organisations, to maximise the reach and impact of digital cultural content?

Investment in physical infrastructure in terms of connectivity, networking and digital media facilities will enable cultural organisations to extend audience reach and create more immersive, enriching experiences. Adopting common standards across venues and cultural sector organisations will make intercommunication easier and promote a joined up approach to working with internal and external suppliers. Establishing a framework for the digital welcome will help people put the digital welcome into practice effectively.

- What could cultural organisations do to collect and preserve digital cultural assets, now and in the future? Which organisations already do this well?

Digital assets are collected and preserved through the documentation of events (whether live streamed or recorded for later consumption), capture of stories and first-person accounts and experiences and creation of immersive interactive experiences. Some performing arts companies and entertainment events do this well when they work with, or embed, digital media service providers to live stream shows, for example (like the SAY Award live stream from Paisley Town Hall in 2016 and 2017, see below). Many museums and research projects have captured experiences from people from a wide range of backgrounds, ages and experiences and used them in storytelling and discussion (such as Luminate's Broth show at Paisley Arts Centre in 2015, also see below). Perhaps immersive interactive experiences are yet to be fully realised in Renfrewshire but Project Z is one such initiative that is alive with potential.

- What are the key considerations cultural organisations should take account of when digitising their collections and making them available to audiences?

When digitising their collections, cultural organisations should consider making their content as accessible as possible in terms of audio description for the blind, sign language interpretation for Deaf and deafened people and live streaming for those unable to attend in person. Common standards, universal file formats and

intuitive user interfaces should be also be considered. And the advanced features and functionality offered by new technology should be embraced with being mindful of not excluding people by using too much proprietary hardware or software. For example, do you need to use Oculus Rift or would Google Cardboard do?

Cultural Infrastructure  QUESTIONS	Digital Latency			Digital Welcome		
	Ex	A&I	BO	IE	EO	Ev
What value do you think digital content adds to the offer of cultural organisations? What is the bigger win for audiences, society and the economy?	•	•	•	•	•	
What digital infrastructures (platforms, standards and frameworks) are needed, between and across cultural organisations, to maximise the reach and impact of digital cultural content?	•			•		•
What could cultural organisations do to collect and preserve digital cultural assets, now and in the future? Which organisations already do this well?	•	•			•	
What are the key considerations cultural organisations should take account of when digitising their collections and making them available to audiences?	•	•				

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### Cultural Content and Technology

- What are the UK’s current strengths and weaknesses when employing new technologies within the cultural sector?

A quick appraisal of the UK’s strengths and weaknesses is useful when assessing the use of new technologies in the cultural sector in Renfrewshire.

**Strengths** include: high quality work, innovative use of digital technology, progressive attitude to access and inclusion.

**Weaknesses** include: poor connectivity in (too) many areas, lack of joined up thinking and sometimes poor execution of projects due to flimsy frameworks.

Paisley, and Renfrewshire as a whole, can learn from this UK-wide snapshot by adopting the strengths and mitigating the weaknesses.

- What opportunities do emerging technologies offer for cultural creation and production?

Emerging technologies include 360° video, virtual reality and augmented reality. All of these technologies have been in development, and use, for at least several years, but they still do not have widespread adoption. Even somewhat more established technologies like live streaming, 3D (projection) mapping and artificial intelligence have only become more commonplace recently. All of these emerging technologies offer cultural creation and production the opportunity to try out new ideas and innovate, experiment cost-effectively, extend access and include more people, develop new business models and revenue streams and contribute to a constantly evolving cultural archive.

- How can cultural organisations and practitioners support the development of technology and its role in our lives?

Technology plays an increasingly important role in our lives. Cultural organisations and practitioners can support its development by using it, trying new things, taking calculated risks, embracing failure, maintaining dialogue with technology developers and sharing their experiences.

- What are the opportunities and challenges of closer working between the cultural and tech sectors?

When it comes to closer working between cultural and tech sectors, we can identify these opportunities and challenges.

**Opportunities:** collaborate to create more inspiring work (than the sectors could alone), pioneer new business models by learning from each other's working practices (i.e. culture learns how to fail forward, tech learns how to think laterally) and incorporate new thinking into their work.

**Challenges:** with cross sector collaboration there is often a language barrier, organisations can be resistant to new ways of thinking and learning, the familiarisation required on both sides may take too long.

- What are the opportunities and challenges of delivering cultural content and technology projects?

Delivering cultural content and technology projects present these opportunities and challenges.

**Opportunities:** reach more people from different backgrounds with varied interests, cross promote and pollinate ideas and engage audiences as both critical fans and constructive consumers of one’s work.

**Challenges:** if common standards are not met then not everybody can receive the work or get the most out of it, a base level of technical infrastructure is required, especially connectivity and emerging technologies may require proprietary hardware or software not yet in common use.

- What are the opportunities and challenges for the UK in developing its international reach in digital cultural content and expertise?

To develop international reach in digital cultural content and expertise, the UK faces these opportunities and challenges, which are as pertinent to Paisley and all of Renfrewshire as they are to any part of the UK. In fact, especially in the case of the latter opportunity, Paisley-specific niches can excel.

**Opportunities:** reach diaspora audiences, export IP and monetise audiences, champion excellence and compete in a global marketplace.

**Challenges:** disparate audiences are fragmented and can be hard to reach, international copyright legislative variation can make IP exploitation complicated and niche propositions can take a long time to establish.

Cultural Content and Technology	Digital Latency			Digital Welcome		
	Ex	A&I	BO	IE	EO	Ev
<b>QUESTIONS</b> What are the UK’s current strengths and weaknesses when employing new technologies within the cultural sector?	•	•	•	•	•	•

What opportunities do emerging technologies offer for cultural creation and production?	•	•	•	•	•	•
How can cultural organisations and practitioners support the development of technology and its role in our lives?	•			•		•
What are the opportunities and challenges of closer working between the cultural and tech sectors?	•	•		•		•
What are the opportunities and challenges of delivering cultural content and technology projects?	•	•		•		•
What are the opportunities and challenges for the UK in developing its international reach in digital cultural content and expertise?			•		•	•

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### Skills, IP and Business Models

- What skills are needed within cultural organisations to take advantage of new digital technology? What are the opportunities and challenges of building these skills within organisations?

To take advantages of new digital technology, cultural organisations need an open minded attitude to learning new skills. They do not necessarily need to have all of the skills inhouse required to produce and exploit projects. The opportunities presented are the same as those listed above, in addition to the chance to be innovative, progressive and develop unique propositions. The challenges are listed above too, in addition to having limited time, people and financial resources.

- What digital skills are needed by leaders (including trustees) within cultural organisations?

Leaders should be aware of the potential pitfalls explored in our deconstruction of the digital latency issue. They should have a base level of digital literacy, which includes an awareness of current and emerging technologies and the innovations

they facilitate. Leaders do not need to be able to produce a live stream, code a game or make a VR experience, but they should be aware of what is possible, be able to cite examples and get excited about the possibilities presented by learning honing digital skills.

- In what ways can cultural organisations use data to better understand audiences and improve user experiences and their operational performance?

Data underpins everything. Cultural organisations can do a lot with data. To better understand audiences and improve user experiences and operational performances, cultural organisations need to do several things. Firstly they need to get better at collecting data from their audiences, their collaborators and the work they create. Secondly they use their initial data to benchmark their current position. Using that benchmark they set targets and establish key performance indicators so they can figure out what works well and what needs improved about their processes. Next they need to manage their data to enable analysis, using open standards wherever possible. Then they need to share and pool data with each other and make data sets available for public, industry and academic analysis so that everyone can benefit. Finally they need to apply recommendations resulting from analysis of their data and then measure results against the original benchmark. Then they start the process again.

- What are the challenges and opportunities for cultural organisations to exploit their IP assets, and how effectively do they currently do so?

Challenges and opportunities for exploitation of IP assets have been outlined above. Current efficacy should be evaluated as part of a local creative industries consultation and audit, which we will suggest in the Evolution part of this report.

<b>Skills, IP and Business Models</b>	<b>Digital Latency</b>			<b>Digital Welcome</b>		
	<b>Ex</b>	<b>A&amp;I</b>	<b>BO</b>	<b>IE</b>	<b>EO</b>	<b>Ev</b>
<b>QUESTIONS</b>  What skills are needed within cultural organisations to take advantage of new digital technology? What are the opportunities and challenges of building these skills within organisations?			•	•	•	•



<p>What digital skills are needed by leaders (including trustees) within cultural organisations?</p>	•		•	•		•
<p>In what ways can cultural organisations use data to better understand audiences and improve user experiences and their operational performance?</p>	•		•		•	•
<p>What are the challenges and opportunities for cultural organisations to exploit their IP assets, and how effectively do they currently do so?</p>	•		•		•	

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# Digital Development

To develop Paisley’s digital welcome, we will appraise its assets, recommend enhancements, evaluate opportunity and consider its evolution.

## Location Assets

When it comes to spaces and places, Paisley has a lot to offer visitors and businesses. There are many assets on offer which include indoor, outdoor, permanent and temporary locations. For the purposes of this report we have considered the development potential, and consequent requirements, of:

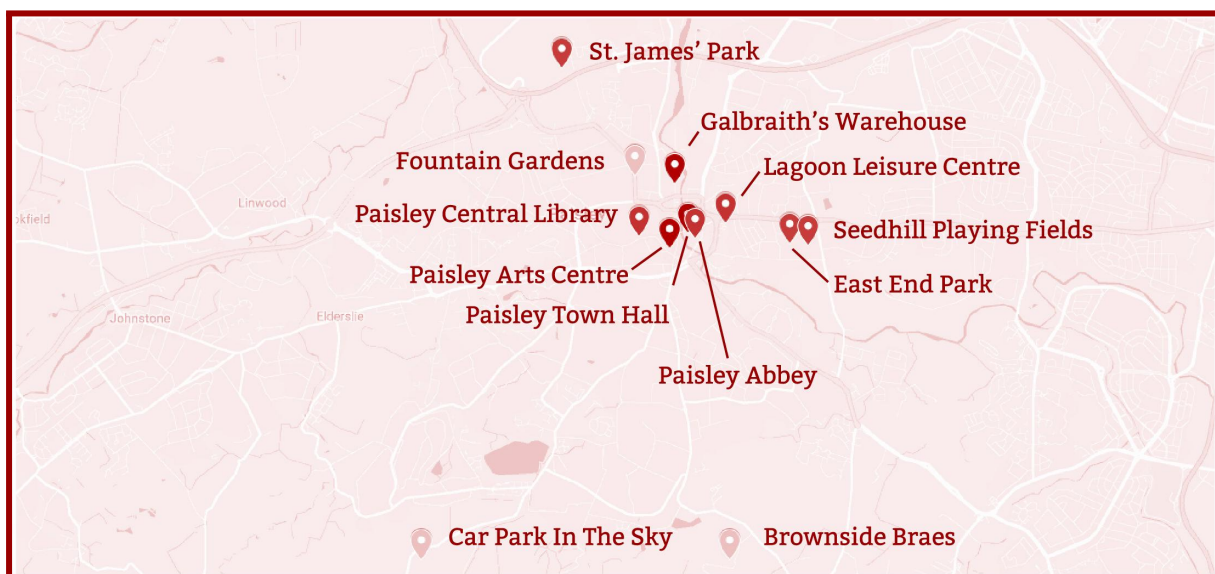
INDOOR SPACES	OUTDOOR PLACES
Paisley Town Hall	St. James’s Park* <sup>3</sup>
Paisley Arts Centre	East End Park* <sup>3</sup>
Galbraith’s Warehouse* <sup>1</sup>	Seedhill Playing Fields* <sup>3</sup>
Paisley Abbey* <sup>2</sup>	Fountain Gardens* <sup>4</sup>
Lagoon Leisure Centre* <sup>2</sup>	Car Park In The Sky* <sup>4</sup>
Library Event Space* <sup>2</sup>	Brownside Braes* <sup>4</sup>

\*1 Development was contingent on bid success

\*2 Occasional use for events

Conventional event use \*<sup>3</sup>

Occasional unusual events \*<sup>4</sup>



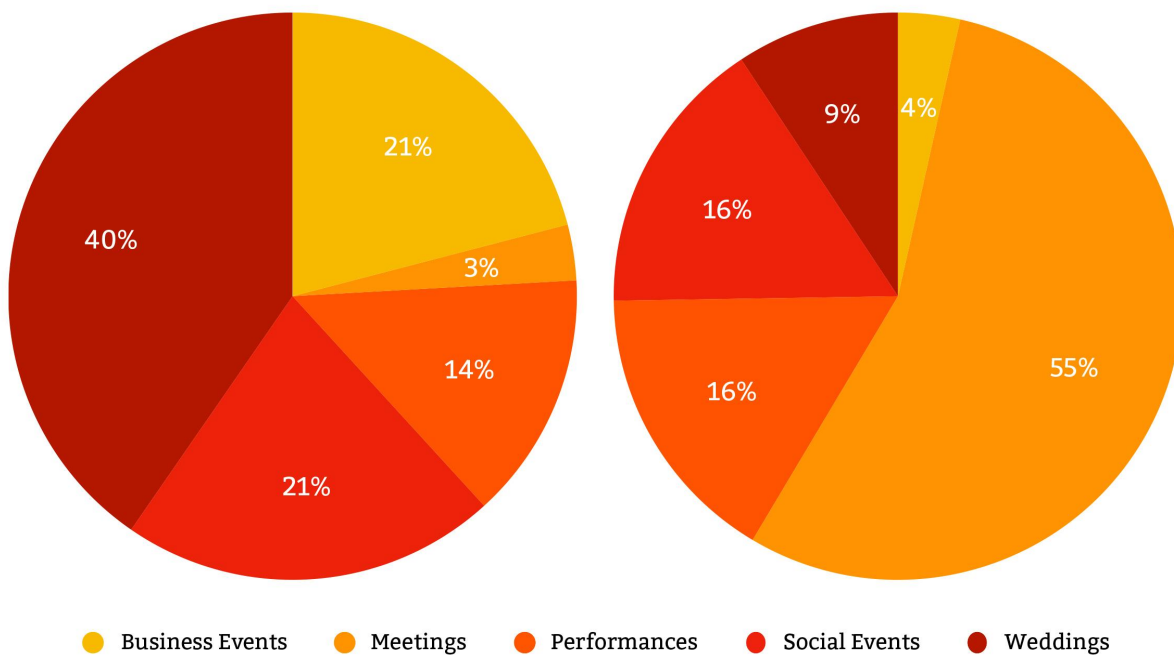
Before we recommend enhancements to infrastructure, we will describe typical, or likely, use of each location.

### Paisley Town Hall

We will start with an obvious one. The Scottish Album of the Year (SAY) Award ceremony has taken place in Paisley Town Hall in 2016, 2017 and the third time will be August 2018. The event welcomes music industry, media and the public and includes live performances and prize givings. It is streamed live to an international audience<sup>33</sup>.

Paisley Town Hall (PTH) is grand and elegant yet welcoming and friendly. Plans for its refurbishment include restoring a reception room at the back of the venue, reopening an entrance on the side of the building and refitting a room often used as a bar so it that could accommodate events that do not require opening up the whole building. Better green room, dressing room and potentially rehearsal spaces will be present.

Renfrewshire Leisure provided data on usage and revenue for financial years 2015/2016 and 2016/2017. From that data we have calculated average value per event and per hour. These charts show *the value of each type of event* on the left and *the number events* on the right. Weddings are the most valuable yet second least common. Meetings are least valuable but most common.



<sup>33</sup> [livestream.com/innerear/sayaward2017](http://livestream.com/innerear/sayaward2017)

Here are the data tables, for reference.

Apr 15—Mar 16	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Business Events	15	4%	131	5%	9	£10,173	£678	£78
Meetings	216	55%	860	34%	4	£20,769	£96	£24
Performances	63	16%	555	22%	9	£25,564	£406	£46
Social Events	64	16%	562	22%	9	£42,740	£668	£76
Weddings	34	9%	457	18%	13	£42,448	£1,248	£93
Totals:	392	100%	2565	100%		£141,693		

Apr 16—Mar 17	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Business Events	13	3%	108	4%	8	£7,709	£593	£71
Meetings	222	55%	1051	37%	5	£21,451	£97	£20
Performances	66	16%	591	21%	9	£29,821	£452	£50
Social Events	63	16%	557	20%	9	£39,716	£630	£71
Weddings	40	10%	521	18%	13	£48,163	£1,204	£92
Totals:	405	100%	2836	100%		£146,859		

Aggregated data Apr 15—Mar 17	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Business Events	14	4%	120	4%	9	£8,941	£636	£75
Meetings	219	55%	956	35%	4	£21,110	£96	£22
Performances	65	16%	573	21%	9	£27,692	£429	£48
Social Events	64	16%	560	21%	9	£41,228	£649	£74
Weddings	37	9%	489	18%	13	£45,305	£1,226	£93
Totals:	399	100%	2697	100%		£144,276		

From a business perspective it is clear that increasing the number of high value events (weddings, business events, social events and performances) will yield a significant increase in room hire revenue. Meetings seem to dominate the schedule yet yield the lowest return. However, there may be a remit or social obligation to provide municipal meeting space.

Redevelopment of the building to improve its capabilities for hosting multiple events could facilitate meetings in one part of the building while hosting high value events in the main hall. Improved connectivity and digital infrastructure will help in this regard. Anecdotal reports indicate that the venue may be considered unavailable for general hire (for a large event, for example), but in actual fact only one room is occupied by a meeting for half a day in total. A more sophisticated booking system with availability displayed online may help increase usage.

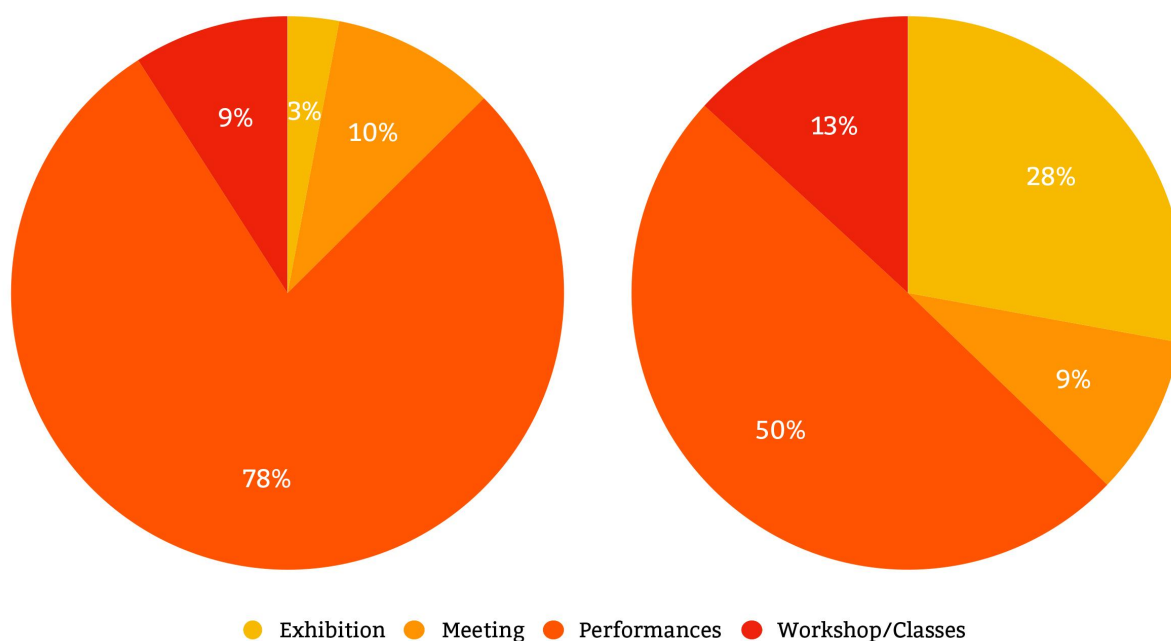
Digital content can stimulate cultural tourism (see below). There is huge potential for furthering the creation of digital content, especially live streams and interactive broadcasts. To facilitate this we have suggested infrastructure enhancements in the recommendations section below.

## Paisley Arts Centre

As part of the Luminate Festival in 2015, Donna Rutherford's Broth was live streamed from Paisley Arts Centre<sup>34</sup>. A dedicated online audience watched Rutherford's moving exploration of memory, identity and age as she cooked three soups which were then shared with the theatre audience during the post-show discussion. The discussion was also live streamed with comments and questions contributed via Twitter.

Paisley Arts Centre (PAC) is a lively, vibrant space for making and sharing new work. It hosts many community projects and includes a mixture of exhibitions, meetings, performances and workshops and classes. With the reopening of what is now the exhibition space, then in theory there is sufficient space in the building for three or four event types to happen simultaneously (provided there are sufficient human and technical resources).

Similarly to PTH, these pie charts show *the total value of event revenue* on the left and *number of events* on the right.



Average annual revenue (April 2015–March 2017) from PAC is only 7% (£10,948) of PTH's (£144,276). We assume this is because of the amount of community projects the venue hosts, which is a vital part of the role it plays for Paisley and Renfrewshire.

Here are the data tables, for reference.

<sup>34</sup> [livestream.com/innerear/broth](http://livestream.com/innerear/broth)

Apr 15–Mar 16	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Exhibition	181	34%	552	14%	3	£406	£2	£1
Meeting	21	4%	94	2%	4	£1,741	£83	£19
Performances	253	48%	2841	73%	11	£8,587	£34	£3
Workshop/Classes	76	14%	405	10%	5	£1,006	£13	£2
<b>Totals:</b>	<b>531</b>	<b>100%</b>	<b>3892</b>	<b>100%</b>	<b>24</b>	<b>£11,739</b>		

Apr 16–Mar 17	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Exhibition	94	21%	223	6%	2	£250	£3	£1
Meeting	71	16%	404	12%	6	£356	£5	£1
Performances	237	52%	2578	75%	11	£8,566	£36	£3
Workshop/Classes	54	12%	245	7%	5	£984	£18	£4
<b>Totals:</b>	<b>456</b>	<b>100%</b>	<b>3450</b>	<b>100%</b>	<b>23</b>	<b>£10,156</b>		

Aggregated data Apr 15–Mar 17	Number of Events	% of Total Events	Number of Hours	% of Total Hours	Ave. Hours	Actual Room Hire	Ave. Value/Event	Ave. Value/Hour
Exhibition	138	28%	388	11%	3	£328	£2	£1
Meeting	46	9%	249	7%	5	£1,048	£44	£10
Performances	245	50%	2710	74%	11	£8,576	£35	£3
Workshop/Classes	65	13%	325	9%	5	£995	£16	£3
<b>Totals:</b>	<b>494</b>	<b>1</b>	<b>3671</b>	<b>1</b>	<b>24</b>	<b>£10,948</b>		

With enhanced technical infrastructure, PAC can host more events, facilitate digital content creation and contribute to an ongoing cultural archive. PAC offers a relatively small yet versatile theatre and performance space which can be attractive to events of many kinds including performing arts, music, literary festivals, discussions, live and recorded TV and radio (especially for online distribution).

### Galbraith's Warehouse

While its development was contingent on the success of the Paisley 2021 UK City of Culture bid, there is potential for turning the old Galbraith's Warehouse into a multidisciplinary arts venue, perhaps as a public private partnership. The venue is large with several useful, versatile spaces that could host performing arts, including opera and ballet, exhibitions, promenade and site-specific pieces and immersive multimedia displays.

The building can be likened to Tramway in Glasgow but it has its own character and style. Its proximity to Glasgow International Airport, Paisley Gilmour Street and the M8 motorway make it suitable for international brand experiences, expos and conventions.

For example, The Biscuit Factory in Edinburgh<sup>35</sup> was recently host venue for an international conference for technology company Live Person. The one hundred and twenty delegates included the company's top clients such as Apple, Sky and Microsoft. The creative agency and event production company running the event wanted a raw brick warehouse. Galbraith's could have provided an even more characterful location than The Biscuit Factory and been even more convenient to get to.

Multinational co-working space giants WeWork held a series of Creator Awards ceremonies around the world in 2017<sup>36</sup>. The Berlin event took place in Motorwerk, a former car factory<sup>37</sup>. Travel time by car from Alexanderplatz to Motorwerk is 12 minutes. It takes 14 minutes to get from The Biscuit Factory to the Waldorf Astoria Caledonian Hotel (where delegates were staying) and it takes 16 minutes to drive from Galbraith's to the Radisson Blu in Glasgow or the same journey time to Mar Hall. So if equipped with enticing digital infrastructure and marketed to the right brands, agencies and event managers, Galbraith's could feasibly host international conventions and tech giant parties as well as cutting edge performing arts events.

## **Paisley Abbey**

Beautiful, historical atmospheric, Paisley Abbey is an active place of worship, visitor attraction, iconic landmark and stunning venue. Used effectively during The Spree, Paisley Abbey hosted the RSNO in concert with Frightened Rabbit in October 2017. It is the perfect setting for cross cultural collaborations. The chapel, within the Abbey, provided a sublime setting for music showcases during The Visit 2017 for artists like Fara<sup>38</sup> and Talisk<sup>39</sup>.

Working in the Abbey presents production challenges, especially in terms of working with the natural acoustic but that is part of its aesthetic. Accessing adequate power can be tricky and if it were possible to run more power cables (including options for 16 or 32 amp supplies) that could make event setup and operation easier in general. For live broadcast and communications during a job, connectivity is crucial. While Paisley Abbey probably does not warrant installation of permanent superfast broadband, the option to use temporary connections, especially professional bonded, and load balanced, 4G would be useful with designated, venue approved, cable runs for outdoor antennas.

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<sup>35</sup> [biscuitfactory.co.uk](http://biscuitfactory.co.uk)

<sup>36</sup> [creatorawards.wework.com](http://creatorawards.wework.com)

<sup>37</sup> [motorwerk.de](http://motorwerk.de)

<sup>38</sup> [youtu.be/k\\_kU85X7ev0](https://youtu.be/k_kU85X7ev0)

<sup>39</sup> [youtu.be/yyE98qLbwSE](https://youtu.be/yyE98qLbwSE)



Concerts like the RSNO and Frightened Rabbit could be filmed and either streamed live or made available later, either publicly or privately. Content captured in such stunning settings serves as stimulus for cultural tourism. The Talisk video referenced above has attracted an international audience including 28% UK, 13% US, 13% France, 10% Japan and 8% Germany<sup>40</sup>. Videos like these offer an opportunity to market Paisley location assets to an international audience of potential visitors.

The Abbey could be an attractive venue for making live recordings too. Linn Records (off-shoot of Linn Products) specialises in classical, jazz and Scottish music and makes recordings in venues such as churches all over the UK. The particular acoustic characteristics of Paisley Abbey could be analysed, packaged up and included in marketing materials for the venue as part of a virtual recce product. Examples of video content created in the Abbey could also form part of the virtual recce package to demonstrate what is possible in terms of set, staging and lighting.

### **Lagoon Leisure Centre**

Playing host to the 15th annual MG ALBA Scots Trad Music Awards<sup>41</sup>, the Lagoon Leisure Centre has the space and facilities required for a high profile industry event broadcast live on BBC TV. While the venue is primarily a leisure centre, The Trads demonstrated its potential use for large scale, live studio events. Ambitions for events it could attract could include more awards ceremonies, BBC Question Time and pre-election political debates.

The Lagoon is an attractive event space. It is well located in the town and has excellent parking provision and step-free access. As with Paisley Abbey however, due to the Lagoon's primary purpose as a leisure centre, it may not warrant much in terms of permanent infrastructure, but the facility for bringing in enhanced internet connectivity for specific events and a "tech pack" that includes power supply information, examples of previous use and recommended cable runs could give the venue the edge over other large spaces when it comes to high profile events.

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<sup>40</sup> Stats from TRADtv YouTube channel (an Inner Ear brand property) as of December 2017

<sup>41</sup> [projects.handsupfortrad.scot/scotstradmusicawards](https://projects.handsupfortrad.scot/scotstradmusicawards)



## Paisley Central Library Event Space

As part of its reimagination, the consultation of Paisley Central Library includes suggested provision of a versatile space for events<sup>42</sup>. In addition to community meetings and local activities and discussion, literary events could find a home in this space as part of writers' appearances during festivals like Weave<sup>43</sup>. Future aspirations could include the formation of a dedicated literary festival akin to the likes of Glasgow's AyeWrite<sup>44</sup> or Aberdeen's Granite Noir<sup>45</sup>. Events like these provide potential for creating captivating content for live streams, web videos, serials and podcasts. The Library Event Space could also host quirky music sessions inspired by NPR's charming Tiny Desk Concerts<sup>46</sup>.

To facilitate events like these, Paisley Central Library's Event Space should have excellent connectivity (see the recommendations below). It could aid content creation by recommending the best way to load equipment in and out of the space, suggested spots for cameras and live broadcast control positions and approved cable runs.

## Outdoor Location Assets

Paisley and the wider Renfrewshire area has an excellent catalogue of outdoor spaces suitable for a portfolio of valuable events.

Outdoor locations include:

- St. James's Park
- East End Park
- Seedhill Playing Fields
- Fountain Gardens
- Brownside Braes
- Car Park In The Sky

Events like the British Pipe Band Championships, more mainstream music festivals and other family-orientated days out can readily take place in some of Paisley's outdoor locations. Existing events can be amplified to increase value, promote the area and attract new activities in the future.

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<sup>42</sup> [libcat.renfrewshire.gov.uk/iguana/uploads/file/ANewChapter.pdf](http://libcat.renfrewshire.gov.uk/iguana/uploads/file/ANewChapter.pdf)

<sup>43</sup> [eventscotland.org/news/2017/6/top-names-in-the-arts-to-perform-at-paisley-s-first-weave-festival](http://eventscotland.org/news/2017/6/top-names-in-the-arts-to-perform-at-paisley-s-first-weave-festival)

<sup>44</sup> [ayewrite.com/Pages/default.aspx](http://ayewrite.com/Pages/default.aspx)

<sup>45</sup> [aberdeenperformingarts.com/granitenoir](http://aberdeenperformingarts.com/granitenoir)

<sup>46</sup> [npr.org/series/tiny-desk-concerts](http://npr.org/series/tiny-desk-concerts)

The British Pipe Band Championships will return to Paisley in 2018<sup>47</sup>. The use of digital and social media to amplify activity around the World Pipe Band Championships points to the potential for using this event as a cultural tourism stimulus (see below).

Paisley 2021 drive-in movie ambitions for Car Park In The Sky could still be realised with the help of private money from brands and businesses. As well as drive-in movies, models like Secret Cinema<sup>48</sup> could be adopted – whether we seek to invite that organisation to collaborate on an event in Paisley or look to run something bespoke, possibly drawing on the work of local film makers and the potential for immersive experiences like the aforementioned Project Z. Glasgow Film wants to commission interactive walking tour creators Walking Heads to devise and deliver an app-delivered treasure hunt to lead people to a secret screening of a classic zombie movie during Glasgow Film Festival 2018. There is massive potential for projects like this in and around Paisley.

Several elements make events like these viable. Beyond the usual practical considerations around safety, traffic management and power provision, the most important considerations for the digital welcome are internet connectivity on site for production and public access and physical placement of AV, media and communications equipment.

As with the indoor locations, suggestions and recommendations for placement of temporary structures (including big screens, PA speakers, camera risers, microphones, front of house and back of house control positions, production and technical offices), plans for connectivity and approved cable runs would make life easier for event and production managers, creative agencies and broadcasters, which could attract more, bigger and better events.

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<sup>47</sup> [rspba.org/html/newsdetail.php?id=560](http://rspba.org/html/newsdetail.php?id=560)

<sup>48</sup> [secretcinema.org/about](http://secretcinema.org/about)

## **Infrastructure Enhancement**

With an understanding of definite, probable and possible use of Paisley's location assets, we can consider how infrastructure could be enhanced to extend the digital welcome. Here are recommended enhancements for networking, connectivity, information and portability. Application of this information is summarised in a table at the end of the document.

### **Networking**

When it comes to event production and media coverage of events, access to networks and seemingly simple, mundane operational issues like running cables can be a major constraint. Sometimes cables can be replaced with wireless transmitter/receiver units, but they can solve one problem (i.e. restrictive or impractical cable runs) and create another (interference with other digital devices).

With some venues there is no choice but to bring everything in and run cables for long distances. However, with dedicated event venues, like PTH and PAC, there is scope for installing some networking infrastructure with patch ports at specific points around the venue.

In consultation with Paul Ancell and Colin Pratt at Renfrewshire Leisure about the redevelopment of PTH and PAC, we discussed several scenarios for live broadcast, capture and upload of events including theatre and music, pre and post-show talks, back stage interviews, discussions and conferences. Making life easier for event and media producers makes working in Paisley venues more attractive and could be the difference between a project happening or not if, for example, time and/or space are limited.

Future-proofing is desirable but some standard cables and connections will be in use for many years yet. Further research on this matter would be useful, however, prior to design, scoping and procurement of equipment.

Cabling and patch ports on stage, on pillars around PTH main hall and at the back of the gallery where the lighting desk usually resides would be very useful. Each patch panel could contain, for example, a mixture of CAT6 (ethernet RJ45) ports, BNC (HD-SDI video) plugs, optical fiber ports and XLR (audio) male plugs and female sockets.

However, because HD-SDI video over BNC would need repeaters<sup>49</sup> to extend cable runs more than 50 meters, it may be preferable to use optical fiber and either invest in some video to optical converters<sup>50</sup> or inform users they will need to bring their own converters.

Running everything over ethernet and/or IP may be more preferable still. For audio, protocols like Audinate's Dante send multiple audio signals over IP networks<sup>51</sup>. It is possible to send multiple channels of video over CAT5e/6 network cables although many systems are point to point<sup>52</sup>. It is possible to extend HD-SDI BNC video signals over IP using dedicated converters<sup>53</sup> through AVB switches<sup>54</sup>, which is the type of installation present in Hamer Hall, Melbourne<sup>55</sup>. In addition to dedicated audio and video ethernet ports, it would be desirable to have several network ports too for access to internal, temporary production and external networks.

Before doing any further scoping, and certainly before such networks might be designed, we would like to engage in further consultation with the venues, event production and media professionals and survey potential users (i.e. clients of Paisley venues) to quantify demand and thus be in a better position to assess the most appropriate networking infrastructure enhancements.

## Connectivity

In order to realise most of the potential explored in this report, we need to get connected. High speed internet access (into which the Scottish Government is investing<sup>56</sup>) is, at last, getting faster, cheaper and more prevalent<sup>57</sup>. Suppliers such as VirginMedia<sup>58</sup> and BT Openreach<sup>59</sup> provide business broadband from £40 per month (inc. VAT). Specialised network infrastructure suppliers like Boston Networks may be able to match or better that.

Public WIFI is one consideration and is being piloted by the Renfrewshire Public Free WIFI project, which has the potential to enable community development and many of the scenarios imagined earlier on.

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<sup>49</sup> [cvp.com/product/datavideo\\_data-vp633](http://cvp.com/product/datavideo_data-vp633)

<sup>50</sup> [blackmagicdesign.com/uk/products/miniconverters/techspecs#W-CONM-12](http://blackmagicdesign.com/uk/products/miniconverters/techspecs#W-CONM-12)

<sup>51</sup> [blog.shure.com/what-you-need-to-know-about-dante](http://blog.shure.com/what-you-need-to-know-about-dante)

<sup>52</sup> [digi-box.co.uk/muxlab/154-muxlab-sdi-extenders](http://digi-box.co.uk/muxlab/154-muxlab-sdi-extenders)

<sup>53</sup> [markertek.com/product/omx-3gsdi-cat5/ocean-matrix-omx-3gsdi-cat5-3gsdi-extender-over-ip-via-single-utp-cat5e-6e-7](http://markertek.com/product/omx-3gsdi-cat5/ocean-matrix-omx-3gsdi-cat5-3gsdi-extender-over-ip-via-single-utp-cat5e-6e-7)

<sup>54</sup> [avnetwork.com/article.aspx?articleid=124947](http://avnetwork.com/article.aspx?articleid=124947)

<sup>55</sup> [cdn.madisontech.com.au/pdfs/dl\\_insider-issue3.pdf](http://cdn.madisontech.com.au/pdfs/dl_insider-issue3.pdf)

<sup>56</sup> [ispreview.co.uk/index.php/2017/12/scotland-publish-tender-universal-r100-superfast-broadband-rollout.html](http://ispreview.co.uk/index.php/2017/12/scotland-publish-tender-universal-r100-superfast-broadband-rollout.html)

<sup>57</sup> [ispreview.co.uk/index.php/2017/03/scotlands-new-digital-strategy-boost-5g-superfast-broadband-2021.html](http://ispreview.co.uk/index.php/2017/03/scotlands-new-digital-strategy-boost-5g-superfast-broadband-2021.html)

<sup>58</sup> [virginmediabusiness.co.uk/connectivity/internet-access/business-broadband](http://virginmediabusiness.co.uk/connectivity/internet-access/business-broadband)

<sup>59</sup> [homeandbusiness.openreach.co.uk/fibre-broadband/when-can-i-get-fibre](http://homeandbusiness.openreach.co.uk/fibre-broadband/when-can-i-get-fibre)

But for live streaming, production and media offices on location and many other digital media uses, dedicated internet access is required. For relatively low annual costs (in the region of £600 per year, for instance), PTH, PAC and other venues can have broadband connections with up to 350 Mbps download bandwidth (allegedly, but even 50–100 Mbps download is more than adequate) and up to 20 Mbps upload bandwidth (which is crucial for live streaming and other forms of content delivery). These dedicated connections could be reserved for event use only (and thus not available to the public) and patched through network infrastructure as part of venue hire on request.

The minimum bandwidth required for HD video live streaming is 5 Mbps upload but plenty of headroom should be allowed for, so a connection with at least 10 Mbps is required<sup>60</sup>. If a media office on location is uploading photographs, audio and video recordings from an event to DropBox (or any cloud platform or distribution point), they will need similar upload capacity. Uploading 1 GB of data (which could be a mixture of photos, MP3s, MP4 videos and so on) to DropBox or sending it via WeTransfer, for example, would take just under 13 minutes over a connection with 10 Mbps upload bandwidth<sup>61</sup>. Thus a connection with 20 Mbps upload bandwidth could provide adequate capacity for live streaming and content delivery, especially if bandwidth was allocated via a network management system (or even on the router).

## Information

Providing prospective users of venues with the right kind of information, packaged and presented in a compelling way, could be the difference between them choosing to use one of Paisley's location assets or opting for somewhere else. There is a case here for providing information in two ways.

1. Potential clients (including creative agencies, event managers, production companies and media producers) could access the virtual recce we envisaged earlier (the "V-Rec").
2. Confirmed customers would also be sent a Tech Pack.

Let us imagine both packages of information a little further.

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<sup>60</sup> [help.livestream.com/hc/en-us/articles/212062598-What-Kind-of-Internet-Connection-Do-I-Need-in-Order-to-Stream](https://help.livestream.com/hc/en-us/articles/212062598-What-Kind-of-Internet-Connection-Do-I-Need-in-Order-to-Stream)

<sup>61</sup> [calctool.org/CALC/prof/computing/transfer\\_time](https://calctool.org/CALC/prof/computing/transfer_time)

## **Virtual Recce/V-Rec**

The V-Rec could start simply and develop as demand increases. We think it could:

- Be centered on a 360° virtual reality (VR) video of each of the main spaces in the venue (especially PTH, PAC and Paisley Abbey) that would enable the user to explore the space using readily available technology such as YouTube and Google Cardboard.
- Overlay VR video with augmented reality (AR) metadata including labels, descriptions and technical specifications.
- Include audio and video examples of events in the venue and content created in it.
- Present client testimonial videos, or even VR avatars, proclaiming why choosing this venue helped their event excel.

In time there could be a virtual event planner that would use an online 3D modelling interface so that people could move furniture, staging and equipment around the space, calculate cable runs and even test traffic flows of people. This sounds sophisticated and it is, but retailers like IKEA are already providing comparable services for designing kitchens<sup>62</sup>.

Teaser videos of the V-Rec would be made available on the venue's website and promoted through social media. Prospective clients could be asked to provide an email address or complete a simple form before gaining access to the full V-Rec. As with all user experience design, development should be iterative and the user journey should be tracked throughout the process, with KPIs established and AB testing to determine the most productive presentation of the information, and conversion of prospect into paying customer.

## **Tech Pack**

Once a customer has confirmed, they will still be able to access the V-Rec, of course, but will also be able to download floor plans and full tech spec documents detailing all of the usual information that event production managers need (such as power, installed AV provision, networking and connectivity, etc.).

## **Portability**

In the case of occasional venues like Paisley Abbey and the Lagoon Leisure Centre

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<sup>62</sup> [ikea.com/gb/en/customer-service/planning-tools/kitchen-planner](https://www.ikea.com/gb/en/customer-service/planning-tools/kitchen-planner)

and all of the outdoor spaces on offer, consideration can be taken when it comes to designing events.

As we have mentioned earlier, planning for “pop-up” indoor and outdoor events could include recommendations and suggestions for tried, tested and approved temporary installations of event infrastructure like power, cabins and tents, cabling, connectivity, traffic routes and so on. In respect to the digital welcome, a portable and open attitude to facilitating content creation can yield returns when it comes to PR, promotion and encouraging cultural tourism. Media coverage, especially digital media content creation and live streaming, can be considered during the planning phase of an event and embedded in the site plan so that camera positions, microphone placement, control centres, cabling and connectivity are part of the event and enhance it rather than being an afterthought or having to be integrated later on.

Infrastructure enhancement recommendations for each location asset can be summarised in this table:

	Networking	Connectivity	Information	Portability
<b>Paisley Town Hall</b>	•	•	•	
<b>Paisley Arts Centre</b>	•	•	•	
<b>Galbraith's Warehouse</b>	•	•	•	•
<b>Paisley Abbey</b>		•		•
<b>Lagoon Leisure Centre</b>		•	•	•
<b>Library Event Space</b>		•	•	
<b>St. James's Park</b>		•	•	•
<b>East End Park</b>		•	•	•
<b>Seedhill Playing Fields</b>			•	•
<b>Fountain Gardens</b>			•	•
<b>Car Park In The Sky</b>		•	•	•
<b>Brownside Braes</b>			•	•

## **Opportunity: Economic Potential**

If Paisley's location asset infrastructure is enhanced, then what is the economic potential, both for businesses and the town, and indeed the wider area? Economic potential can be unlocked by evaluating value creation around events and cultural tourism.

## **Value Creation**

Infrastructure enhancements will make it possible to monetise events and activities by using digital content to create new revenue streams, reach new audiences to sell existing products to and increase brand equity through social engagement. If events become more successful as a result of the digital welcome then there is a knock-on economic benefit in terms of increased business, additional spending and a consequent rise in local GVA spending.

## **Cultural Tourism**

Digital content, such as (but by no means limited to) the examples referenced so far from MG ALBA Scots Trad Music Awards, The Visit and SAY Award, appeal to local, national and international audiences and can be used to attract visitors to Paisley and Renfrewshire and audiences to events.

A recent survey by EKOS found that Piping Live! Festival, which precedes The World Pipe Band Championship, and both of which are live streamed by us to a substantial international audience, contributed £2.5M to Glasgow's economy<sup>63</sup>. Inner Ear works with Piping Live!'s promoters, the National Piping Centre, to live stream the Glenfiddich Piping Championship. Audience members visit Scotland to attend the event because they have watched the live stream. We estimate that these visitors contribute £50K in gross spending to the Scottish economy<sup>64</sup>. The stream costs around £6K to produce.

Paisley could do something similar with the British Pipe Band Championships and The Spree and potentially earn millions more for the local economy in GVA. We would like to conduct a study on event popularity and apply the methodology we have used in our Glasgow music tourism development work<sup>65</sup> to demonstrate the potential for economic growth through cultural tourism.

## **Evolution: Future Proofing & Legacy**

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<sup>63</sup> [bbc.co.uk/news/uk-scotland-glasgow-west-42354754](https://www.bbc.co.uk/news/uk-scotland-glasgow-west-42354754)

<sup>64</sup> [innerear.co.uk/glenfiddich-piping-championship-2018-live-stream-video-documentation](https://innerear.co.uk/glenfiddich-piping-championship-2018-live-stream-video-documentation)

<sup>65</sup> [slideshare.net/innerear/growing-the-value-of-music-tourism-in-glasgow-research-summary-81859057](https://slideshare.net/innerear/growing-the-value-of-music-tourism-in-glasgow-research-summary-81859057)



There is an exciting opportunity to realise the potential made possible by enhancing Paisley's location assets. But this potential can endure, and yield dividends long into the future if consideration is given to consultation, future proofing, establishing a digital welcome framework and investment. To conclude this report, let's consider how it could evolve.

## **Consultation**

We could run a series of industry, public sector and community consultations through focus groups, polls and surveys and interviews. Consultation could be useful as a check to ensure that work is progressive and practically useful. Topics for discussion could include the core elements of the DDCMS's culture strategy and the ideas we have extrapolated in this report by deconstructing the concepts of "digital latency" and "digital welcome".

We would then apply what we learn through consultation to development. Borrowing from the tech world, we favour a minimal viable product<sup>66</sup> approach with iterative development, review and feedback through consultation, amendment where required, monitoring and reporting (which could be done simply through a public or private blog). This is a process which is then repeated cyclically during development.

## **Future Proofing**

New systems should be installed with future proofing in mind, as proposed in the infrastructure enhancement chapter. It may not be possible to future proof everything, and there is usually a balance to strike between cost and benefit. But by evaluating likely usage cases and pushing budgets as far as possible, it is possible to future proof the digital welcome to a great extent.

## **Framework Establishment**

We would like to devise a "Digital Welcome Framework" that could serve as a best practice process for everyone involved in the Paisley 2021 project, including the Paisley 2021 team, Renfrewshire Council, Renfrewshire Leisure and the clients of and suppliers to the location assets detailed above.

The framework would take all the aspects of mitigating digital latency and extending the digital welcome into account and be contextualised by a thorough investigation of the questions posed by DDCMS. This would be done through

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<sup>66</sup> [blog.leanstack.com/minimum-viable-product-mvp-7e280b0b9418](https://blog.leanstack.com/minimum-viable-product-mvp-7e280b0b9418)

consultation and then we would analyse the results and use them to design the framework. It could then be road tested with pilot projects and refined as required.

## **Investment**

Paisley's digital welcome needs and deserves investment. But that investment is not all financial. There is a considerable contribution in kind in terms of the aggregate cultural capital already bestowed on the project through the momentum and achievements – both tangible and intangible – of the Paisley 2021 bid.

This project will continually evolve so it is hard to pinpoint a definite end but as it evolves it leaves a legacy in the infrastructure enhancements carried out as part of a large scale redevelopment programme, an archive of cultural content, a mass movement of community collaboration and economic benefit to the area due to more business done.

People are, will, can and should be inspired by the heart and soul of the Paisley 2021 movement. If some of the practical and theoretical suggestions and recommendations envisaged as part of this exploration of digital latency and digital welcome are realised then people in and around Paisley can also help inspire others around Scotland, the rest of the UK and internationally.

And in respect to how Paisley defines itself as an externally cultural place, the digital welcome can be extended to entice inward investment from businesses too. We can dream big. Could empty warehouses (akin to Galbraith's) become coworking spaces run either by local operators or multinational giants like WeWork? What would it take to stimulate then demonstrate sufficient demand to warrant such investment? And what would that mean to the local creative community, be they craft makers or digital entrepreneurs?

The digital welcome can make it viable to attract national and international brands and businesses to Paisley by virtue of its convenient geography and valuable location assets. What if we could mitigate digital latency and extend a digital welcome to such an extent that YouTube could be persuaded to run a Creator Academy in Paisley? This kind of thing could be possible. And we can build on the energy of Paisley 2021 to work together to make things happen.

## **Follow-on: Possible Next Steps**

This report should be a living document. It can evolve with the possibilities suggested within it. While much research, analysis and original thought has gone into its creation, we would like to propose further work to build on and bolster its foundations and then road test and act on its recommendations.

Our suggestions for immediate next steps include:

1. **V-Rec mock-up** for Paisley Town Hall to demonstrate the idea, conduct a feasibility study and test the market to gauge reaction, evaluate demand and assess return.
2. **Survey of existing and possible clients for Paisley location assets** to learn what they most want from venues and use that to inform and support digital welcome recommendations.
3. **Digital Welcome Framework design**, as described above.
4. **Cultural tourism economic impact** study using data provided by Paisley promoters and venues and our tried and tested methodologies.

We welcome the opportunity to discuss these possible projects with you.

## **Consultancy and Acknowledgements**

Dougal Perman, Inner Ear's director, researched and wrote this report based on Inner Ear's unique position in the create economy. It creates content and consults for a variety of public and private organisations, with a primary focus on music, arts and culture. Inner Ear is at times a producer, client, supplier, practitioner, assessor, critic and fan of creative work, especially when it comes to digital media, storytelling and engaging audiences.

Inner Ear's director also chairs the Scottish Music Industry Association, helped pioneer the Scottish Album of the Year (SAY) Award, sits on the Scottish Government's Creative Industries Advisory Group, has advised Co-operative Development Scotland, advises (and agitates) Skills Development Scotland's Creative Industries group and has been invited to join the new cross party group for music. Dougal discussed ideas for this report with Anny Deery, Fay Young, Tim Wright, Amanda Mitchell and Findlay Jamieson. Thanks too to Jean Cameron, David Amos, Gregg Young, Pauline Allan, Alan Gibson, Colin Pratt, Paul Ancell and everyone involved in Paisley 2021.