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NEW REALITIES:

*Activating AR & VR potential for the creative industries and
tourism in the Legatus Region*

DR HEATHER ROBINSON
FLINDERS UNIVERSITY
heather.robinson@flinders.edu.au

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We would also like to thank the members of the Project Reference Group for their input and support, and Sarah Cheesmur, the Regional Creatives Facilitator for the Legatus Group of Councils.

Executive Summary

The Legatus Group of councils cover some of South Australia's (SA's) most beautiful, culturally rich and compelling tourism regions. From unique natural landscapes, Cornish mining heritage and Indigenous traditions to ancient fossil sites, world class wineries and windows on colonial lifestyles, the regions of the Northern and Yorke Region of SA offer a diverse range of experiences to visitors. This region also supports a burgeoning population of creative industries practitioners. Along with tourism, this priority sector is garnering support across Federal and State Government agencies in the wake of economic and social challenges wrought by the Covid 19 pandemic. These challenges afford the opportunity to consolidate current partnerships to develop a suite of visitor experiences, combining the tourism and creative industries sectors to reinvigorate economic development, employment opportunities and social benefits across regional communities.

Drawing on a qualitative desktop research approach, this report presents recent international research examining the potential of engaging new technologies to apply Augmented, Virtual and Mixed Reality (AR/VR/MR) visitor experiences across the Legatus Group of councils. The research identified in the literature highlights key factors that are essential to the successful and ongoing implementation of AR/VR/MR visitor experiences, namely the importance of:

- involving local voices and perspectives to develop community acceptance and ownership, as well as authentic experiences for visitors
- using reliable and easily accessible platforms and local creative industries practitioners to design, develop and deliver these experiences, to ensure ongoing maintenance, responsive trouble-shooting, and ongoing employment opportunities
- building on existing tourism projects and community partnerships to capitalise on previous investment, reinvigorating the regions to attract previous visitors and encouraging overnight stays
- creating thematic tourism opportunities to draw people with a range of interests into and across the regions and encouraging them to extend their stays
- maximising a mix of technologies to support and complement one another to deliver a complete end-to-end user experience that incorporates interpretation with a marketing 'try before you buy' approach that leads through to a booking, purchasing, planning and repeat visitation.

Summary recommendations:

This report recommends exploring the following as priority areas required for the success of potential projects:

Cross-regional coordination

There is a definite role for the Legatus Group to act as coordinator and facilitator between local practitioners, councils, state partners and other agencies, and particularly for the Regional Creative Facilitator during the early development and later production phases. This should be coordinated in consultation with the Regional Development Authorities and the SA Tourism Commission and promoted through the new blended and visitor-centric model for the delivery of Tourism Visitor Information Services in the regions.

Start simple and small and grow

Existing road trips or single site experiences can be piloted, building on existing experiences and their brand value (such as the Epicurean Way or Riesling Trail) already established in the regions and tourism market. These could be expanded and linked with more thematic transregional projects, encouraging visitors and tourists to explore further or vary their area of interest.¹ Such collaborative transregional experiences could explore and showcase the identities and creative potential of local communities within a mixed reality context. Linking such experiences with commercial providers and accommodation booking systems also offers the potential to increase average per capita spend across a range of industries.

Build on existing projects with simpatico partners

The National Trust is actively developing a number of projects within the Legatus regions, pursuing similar goals for economic development and cultural heritage tourism. This partnership potential, geological similarity and geographical proximity of the sites demand further exploration by the Legatus Group.

Be game and go large

- This research suggests that an interactive experience, such as an online game developed in consultation with locals and stakeholders of Martindale Hall/Mintaro and Bungaree Station, would bring these sites to life. Starting with one pilot project, the experience could be adapted to suit others, linking sites and stories via the interpretive digital platform. These could be applied across the heritage stories of the Barossa and Clare Valleys, creating a

¹ For a complete list of road trips already promoted by the South Australian Tourism Commission, see <https://southaustralia.com/things-to-do/road-trips>, accessed 19 January 2021.

linked thematic experience, interpreting layers of stories and their connections between communities, cultures and industries.

- An interactive documentary approach should be considered for the natural and Indigenous heritage sites, starting with the Dhilba Guuranda. With a Visitor Centre and walking trails planned around story lines and traditional custodianship of the park, this approach once proven could be applied to the Remarkable Flinders Ranges development as well as future planning for the Adelaide International Bird Sanctuary.
- A major sound and light projection at the Burra Mine site is also worth considering, given the success of touring projection shows and the longevity of the sound and light shows at Victoria's Sovereign Hill.

Local leadership

This research proposes that local councils take an active leadership role in the design, development and delivery of these AR/VR/MR projects. Local councils are ideally placed to ensure the ongoing success of these projects, with facilitation and coordination support by the Legatus Group.

Preamble

Aim:

The aim of this project was to determine the opportunities for Augmented Reality/Virtual Reality (AR/VR) projects for tourism across the Legatus Group of Councils of South Australia. It sought to identify the lead agency or agencies, locations, entities, types of AR/VR to be used, their associated costs and stakeholders to inform the development of a business case and accompanying funding strategy.

Scope:

The report engaged a range of stakeholders to:

- Determine the priority locations most suitable for interpretation and promotion to tourists through AR/VR platforms and productions according to a set of decision-making criteria identified in the literature
- Develop a plan and recommendations for how the next steps of the implementation of AR/VR in the regions might proceed
- Prepare an indication of what the costs of such a project or projects might be
- Develop a list of potential partners within the regions whose goals and policy priorities may align with the project
- Highlight other information required to support the next phase – applying for funding.

Priorities:

Underpinning this report are a set of priorities identified as guiding principles at the commencement of the research project:

1. Through regular reporting and consultation, build on what is already in place, drawing on existing relationships, technologies and creative enterprises proposed, active or in development within the regions.
2. Recognise the intellectual property of content owners through consultation and suitable licensing agreements.
3. Add value to existing tourism products through the application of a cultural and creative layer of interpretation.
4. Use Thematic tourism's potential to link sites in a multi-destination, transregional experience that will generate long-term employment pathways and opportunities in the Creative Industries.
5. Note the potential for community engagement and ongoing ownership of the products, in support of community identity, cohesion and sense of belonging.

Partners & participants

- Simon Millcock, CEO Legatus Group, ceo@legatus.sa.gov.au
- Dr Tully Barnett, Flinders University, tully.barnett@flinders.edu.au

Researcher & Writer

Dr Heather Robinson, Adjunct Research Associate (Level B), Flinders University,
heather.robinson@flinders.edu.au

Reference Group – bringing theory and practice together

The Reference Group was chaired by Simon Millcock, the CEO of the Legatus Group.

The Legatus Group's Strategic and Business Plans include a focus on the key roles of local government and are broader than that of organisations with a primary focus on economic development or natural resource management. Their purview includes maintaining and developing both local and visitor amenities that support the growth of regional and subregional tourism opportunities as well as integrated visitor information services.

The Legatus Tourism Visitor Information Services project made three recommendations to improve the visitor experience across the regions:

1. Regional: focussing on tourism regions rather than local government boundaries, to support regional planning and delivery, as well as the allocation and sharing of costs and resources
2. Visitor-centric: ensuring that Visitor Information Services are responsive to visitor needs providing information people want when and how they want it
3. Blended: providing a range of mixed services ranging from face-to-face to pop-up to integrated technology, operating alongside digital delivery of information that is timely, accurate and available to visitors before during and after they travel²

The Legatus Group has direct involvement with Regional Development Plans which include building on and promoting the unique characteristics, identities and offerings of each of the regions' townships and communities.

Simon brought to the committee a wealth of leadership experience in both regional development and tourism including with the creative industries. Simon was assisted by a new Regional Creative

² Legatus Group - Tourism Visitor Information Services project, summary report.

Facilitator, Sarah Cheesmur, a local performance artist with experience as a local council Arts Coordinator. As an artist and resident, Cheesmur is well-placed to facilitate the development and coordination of local creative projects, acting as an ambassador for the cultural development and creative practitioners:

As a regional advocate for increased connectivity and shared story throughout our regions, I am thrilled to be able to support growth within creative industries. Enriching arts and cultural experiences being made available to tourists and armchair travellers around the world, engaging in the collective meaning of being an Australian with all of the colonial and Indigenous history blended and combined fills me with a new sense of belonging. I look forward to this becoming reality.³

The Reference Group was a wellspring of practical knowledge and experience, providing local and historical insights across government policy, creative industries, tourism and the innovation sectors. The group met virtually approximately once a month to discuss progress of the research program and ensure compliance with the project's broader goals and objectives. This was augmented by direct phone calls, meetings or emails with relevant members as required and to provide clarity.

Members of the Reference Group are:

Name	Position	Organisation
Simon Millcock	CEO	Legatus Group
Dr Heather Robinson	Adjunct Research Associate	Flinders University
Dr Tully Barnett	Senior Lecturer, Creative Industries	Flinders University
Dee Edwards	Entrepreneurship Facilitator, Barossa Valley, Yorke & Mid-North Regions	Flinders University New Venture Institute
Kelly-Anne Saffin	CEO & Director of Regional Development	Regional Development Australia, Yorke and Mid North
Sarah Cheesmur	Regional Creatives Facilitator	Legatus Group
Stu Nankivell	Co-founder	Blue Goanna Digital
Anne Maroney	Chief Executive and Director of Regional Development	Regional Development Australia, Barossa
Kim Mavromatis	AR Mixed Media Producer	Mav Media
Dan Thorsland	Business Development Manager	CHASS, Flinders University
Geidre Millard	Founder and Creative Director	Honeycomb Design

The consulting research team from Flinders University also participated in the meetings. Dr Tully Barnett is a Senior Lecturer in Creative Industries in the College of Humanities, Arts and Social

³ Correspondence with Sarah Cheesmur, 10/01/2021.

Sciences and a Chief Investigator for the Australian Research Council Linkage funded project, Laboratory Adelaide: The value of culture, looking at more inclusive ways of understanding the benefits of cultural activity and for a project looking at cultural implications of digitisation. She serves on the executive committee of the Australasian Association of Digital Humanities (AADH). Dr Heather Robinson is an experienced creative producer across the Australian government and GLAM sectors (Galleries, Libraries, Archives and Museums) who has recently completed a PhD in creative industries policy and impact as part of the Laboratory Adelaide team at Flinders University. Robinson was an inaugural Board Member and Executive Producer of the Adelaide Festival of Ideas (2013 & 2016), is an Honorary Research Associate of the Los Angeles Natural History Museum and a Research Adjunct Associate (Level B) of Flinders University.

This report presents the results of research and consultation undertaken by Robinson to identify how to support the development of thematic tourism in the Northern and Yorke Region of South Australia. The original intention was to identify 5-6 potential sites best placed to develop and manage AR/VR experiences across a range of pre-identified locations in the region. These digital interpretive experiences would be aimed at expanding tourism to the regions by taking people on a journey across time, space, industries, nature and peoples.

The sites and regions put forward for consideration were:

- The Yorke Peninsula, including Marna Banggara – Rewilding Dhillba Gurranda (also known as the Innes National Park)
- The history and development of the Barossa Valley viticultural industry
- Clare Valley, incorporating Bungaree Station and Mintaro
- The Flinders Ranges
- The Remarkable Southern Flinders Ranges
- The Copper Mining Heritage, including Wallaroo, Moonta, Burra and Kapunda
- The Silver 2 Sea Way (S2SW) Stage 1 – Port Pirie to Peterborough
- Adelaide International Bird Sanctuary

The development, production and maintenance of these experiences are envisioned to maximise local regional capacity building, education and pathway development for current and future practitioners working in the local creative industries, as well as those operating and working in the tourism sector. This research builds on a range of previous reports produced for the Legatus Group of councils. Of greatest significance to this project is *Creative Industries in the Regions* (2020) produced by Verity Loughton as part of an internship program managed by Flinders University.

Laughton's work established the value and meaning of the creative industries to regional communities, establishing the depth of talent and potential within the sector. However, this work identified that practitioners lacked a sense of connection and accepted relevance to the broader community. Laughton's research suggests that to nurture the creative industries as a regional growth sector and to sustain local creative practices:

Scaffolding of practitioners and the networks around them is a vital way to boost practitioners' productivity...the strongest and most sustainable changes come in response to community-inspired initiatives, and that, guided by the active networks of stakeholders already in the regions, there may be as yet unidentified opportunities for policy makers to be responsive to those moments.⁴

The aim of Laughton's work was to provide an evidence base for decision making regarding the current functioning of the creative industries within the regions, to determine 'what projects, programs and partnerships might foster their consistent development into the future', as well as to investigate avenues of support to develop the economic and social benefits this growth sector provides.⁵ A significant product of this research was a database of creative practitioners and organizations across the Legatus Group. This impressive body of work established that there are (at time of writing) '291 individual and group practitioners, 209 venues, and 102 organizations and associations across fifteen council areas, as well as 106 stakeholders'⁶.

Laughton's research also confirmed the need for the role of Creative Industries Coordinator. This coordinator role was established in the fourth quarter of 2020 in response to the wide dispersal of practitioners over the regions, the need to coordinate opportunities and communications across them and the breadth of industry offerings established in the regions. The Legatus Group considered funding opportunities to initiate projects across the area, drawing together practitioners with local tourism providers to develop AR/VR storytelling projects, aligning with one of the dominant industries in the regions, cultural tourism. Following initial scoping it was felt more research was required to underpin successful funding strategies and ensure the projects' success and long-term sustainability. This need for a rigorously researched business case study for AR/VR initiatives to inform a funding strategy gave rise to this project. This report is the result of an extensive academic literature survey, consultation and collaboration between Flinders University, the Legatus Group, the Reference Group and a range of other providers and government representatives who all have an interest in seeing the creative industries and tourism sectors within the regions flourish.

⁴ Laughton, 2020, p. 3

⁵ Laughton, 2020, p. 3.

⁶ Laughton, *ibid.*

Introduction

The tourist who has no curiosity is doomed to boredom

A. Huxley, *Along the Road*, 1925

To investigate the application of augmented and virtual realities is to explore the boundaries of digital communication technologies. Interactive digital technologies have been used within the cultural and tourism sectors for as long as there have been websites and booking systems. Over the last thirty years, these digital platforms have become standard tools with an accompanying set of practices across the GLAM sector. The commercial opportunities within the experience sector are an attractive and comfortable fit for the reach and capacity of these technologies. Indeed, they may have provided the rationale for the development of tools for not only communicating with distant parties, but offering the means by which potential audiences, visitors and customers from around the world could be informed and engaged for economic as well as interpretive ends.

This report addresses the possibilities offered by AR/VR experiences within the Legatus Group of councils. The geographical area covered by this coalition extends from the Yorke Peninsula to the Mid North, Clare Valley, Flinders Ranges and through to the Adelaide Plains and Barossa Valleys of South Australia. Working with the Legatus Group, this research has been conducted in partnership with the Flinders University Creative Industries stream, building on previous work investigating the values generated by cultural experience.⁷ The author has extensive experience working across the Australian GLAM sector and recently completed a PhD investigating the impacts of the creative industries policy environment on cultural institutions and the communities they support. A priority for the Legatus Group has been to cultivate the creative industries within their regions of South Australia, drawing on the talent, skills and networks that exist across and within widely dispersed communities of varied histories, geography and heritage. Employment opportunities, economic and social well-being benefits would be fostered by boosting audiovisual, storytelling and digital heritage skills and tourist offerings within the regions. Much work has already been undertaken in this area, with post-secondary education and Uni Hub initiatives at Port Pirie. The combination of this study's transdisciplinary nature—covering advances in technology, cultural heritage interpretation, new tourism, regional economic development and the creative arts—and the range of stakeholders

⁷ See Meyrick et al. 2018, *What Matters: talking value in Australian culture*, Monash University Press.

actively involved in similar projects underway, requires a balanced and multi-lateral approach, aligning the breadth of policy goals and rationalisation of both effort and support.

What is required are ongoing opportunities to capitalise on these multi-stakeholder investments, building on the existing and growing creative industries skills base and putting it to work for tourism development. The potential is rich, and the scope of the questions driving this research are broad.

This research meets the initial project goal: to 'produce a report that supports the development of thematic tourism in the region'. The scope of this research included the development of a plan for such a project, an indication of costs, a list of potential partners and the locations most suitable for such a project. These goals would be relatively simple, were it not for a range of variable factors inherent with what is essentially an iterative creative project currently at the concept stage. A significant variable became apparent while researching the potential of AR/VR experiences within the national and international tourism and cultural heritage sectors. In interviews with practitioners experienced in producing AR/VR experiences within regional contexts, it became clear that limiting the scope of this research to 5-6 potential sites would be selling the potential of the technologies available, as well as the regions and its people, short. It also became clear that the story should decide the technology, not the other way around, whereby a technology dictates which story or experience should be selected. As will be discussed in the final recommendations, it is both practical and sensible to start with small-scale projects with the support and direct input of the local community. However, to not take into account the broader opportunities that are also available through an upscaled and mixed realities approach would be unfortunate.

This report presents several case studies of comparable local, national and international sites that use AR/VR technologies in natural and cultural heritage tourism sites, to suggest how the technology could be applied both within and across the regions by starting small, proving the model and growing sustainably. This approach allows for the presentation and discussion of iterative and interactive opportunities that show how one technology could be applied at one site. However, it also provides opportunities for how a mix of compatible technologies centralised within a single framework and portal may also cover numerous attractions, businesses and experiences. That is, the one tool could be adapted to suit many sites: only the stories would change. This iterative mixed-reality approach also opens the potential to link with a range of partners currently developing similar projects within the regions or regional Australian contexts for both knowledge exchange or direct support, to combine digital platforms and resources with the physical world. This also poses challenges addressing another of the project's aims, which was to identify a lead agency or agencies to take this project forward.

Katrina Sedgwick (Director of the Australian Centre for the Moving Image) suggests, when working with technology within a creative context:

It is important not to get hung up on the technology itself, but to focus on how you can support artists to experiment with the technology as a canvas for their ideas. The technology is going to constantly change. Depending on whom you ask, VR is over, and AR will be the dominant mixed-reality platform. I don't know. I do know that commissioning artists in both of those spaces will lead to exciting shifts in their practice, but also exciting shifts in how the platform can be deployed.⁸

Rather than focussing on one type of technology, this report explores the potential of a range of digital AR/VR interactive storytelling frameworks in combination with some of the tourism sites in the region, presenting hypothetical experiences as a means of discussing how certain platforms may be deployed in different contexts. Such a broad approach will draw on a range of artists, sites and storytellers, as Sedgwick implies, in order to broaden the ownership of the project across the region, encouraging a collaborative and cross-thematic approach which distributes the risk as much as it opens opportunities through a cross-sectorial funding strategy. The potential to capture and share some of South Australia's unique, vernacular narratives is exciting. The ultimate winners with such an approach will be not only the tourists to the area—presented with a multi-layered thematic set of experiences that communicate the regions' rich history and culture and unique contributions to the good life—but the communities who stand to benefit from the creation and sharing of their stories with others, developing a strong sense of community identity, connection and pride. This approach gives each community the chance to tell their stories in their own words. In addition, the regions' talented artists and creative industries professionals stand to gain from this initiative through increased opportunities for paid work, collaboration and the exposure it brings.

This report demonstrates how a mixed reality approach may maximise the cultural, social, tourism and economic benefits sought by the Legatus Group and their partners, traversing boundaries between regions, themes and potential partners, as tourists will do, in the same way as the technologies can potentially merge with the physical world to create an exciting, informative and profitable experience.

⁸ Excerpt from *Future of the Museum: 28 Dialogues* by András Szántó, published in *Artnet News*, 1 January 2021, <https://news.artnet.com/art-world/future-of-museums-andras-szanto-1934142>, accessed 12 January 2021.

A note on the impact of Covid-19

With the limitations imposed on international and interstate travel as a consequence of the Covid-19 pandemic, the travel and tourism industries across the globe have been severely impacted.

According to *Forbes* magazine, the World Travel and Tourism Council have suggested that governments increase budgets for promoting travel destinations to maintain jobs within the sector:

This is where we could see the use of virtual reality (VR) ramp up once the travel restrictions have been eased and consumers have confidence in traveling again. The unique medium...can offer a try-before-you-buy experience which will give people a taste for travel again leading to more holidays being booked.⁹

The cultural sector was amongst the first to put forward virtual tours and online access to their sites and collections as a means of maintaining contact and experience opportunities with their current and potential audiences. As suggested above, these opportunities offer people beyond the actual sites a point of engagement that acts as both a genuine cultural, intellectual or hedonic experience as well as a 'try-before-you-buy' opportunity for future visitors.

According to the South Australian Tourism Commission, before the pandemic, Regional South Australia attracted 5.2 million overnight visitors generating \$3.6 billion in expenditure and employing sixteen thousand people over six thousand businesses.¹⁰ Of these, the regions covered by the Legatus Group contributed 1.8 thousand overnight stays worth just over \$1 billion, employing almost five thousand people across 14 hundred businesses.¹¹ Creating opportunities that would shore up and support these businesses to maintain the viability of tourism in the regions is reason enough to support the development of AR/VR experiences that would both promote the experiences on offer and draw people to the areas. It would also create new employment pathways and create a raft of social benefits that will be addressed in the following sections.

⁹ Rogers, 2020, [https://www.forbes.com/sites/solrogers/2020/03/18/virtual-reality-and-tourism-whats-already-happening-is-it-the-future/?sh=19d1c2c428a6#4bbcbcd128a6\[23/09/2020](https://www.forbes.com/sites/solrogers/2020/03/18/virtual-reality-and-tourism-whats-already-happening-is-it-the-future/?sh=19d1c2c428a6#4bbcbcd128a6[23/09/2020), accessed 9 January 2021.

¹⁰ The value of Regional Tourism to South Australia, 2019, South Australian Tourism Commission, https://tourism.sa.gov.au/media/jstovreusatc_corporate-affairs_research-and-insights_the-value-of-tourism_june-2020_regional-sa.pdf accessed 18 January 2021.

¹¹ The Value of Regional Tourism, regional statistics for Barossa, Flinders Ranges and Outback, Yorke Peninsula, <https://tourism.sa.gov.au/insights/regional-statistics> accessed 18 January 2021.

Methodology and approach

This report has been developed with a standard approach to research. It has commenced from a literature survey building on Verity Laughton's *Creative Industries in the Regions* report (2020) to establish common terms and definitions of concepts and practices to be integrated in this report. This report has incorporated desktop research to identify AR/VR interpretation platforms for comparative purposes, potential application and information gathering regarding costings and partners. Consultation with the reference group led to the identification and development of a list of sites and individuals in the regions for closer investigation. This was also supplemented with meetings or phone conversations with relevant State Government representatives, Indigenous leaders and creative industries professionals listed below, and we are grateful for their generosity and enthusiasm for this project:

- Jenny Parsons, Director of Development, South Australian Museum
- Darren Peacock (CEO) and Allison Russell (Director, Assets and Operations), National Trust of South Australia
- Kirsty Parkin, Manager, Industry Development, Creative Industries Team, Department for Innovation and Skills
- Miranda Lang, Manager, Infrastructure and Regional Engagement, Destination Development, South Australian Tourism Commission
- Steven Moad, Adventure Mode
- Ben Pederick, Film Maker and Transmedia PhD Candidate
- Garry Goldsmith, Business Manager, Narungga Nation Aboriginal Corporation
- Michael Matthews, FrameworkVR
- Anthony Fox, General Manager, Northern and Yorke Landscape Board
- Vicky Stewart, Manager, Bungaree Station
- Jarrod Pickford, Founder, Storytowns
- Dan Tormey, President, Catalyst Environmental Solutions

These semi-structured interviews were followed up by further desktop research to identify the sites with greatest interpretive potential using recommendations and approaches identified in national and international literature. An extensive list of resources drawn on for this report is included as the final section. For ease of reading, referencing has been limited to footnote attribution for direct quotes. Full descriptions of the recommendations regarding best practice and challenges involved with implementing AR/VR projects in tourism are included in this report.

Site visits and consultation

Following the first reference group meeting it was decided that a field trip to visit key sites was required. This would promote greater degree of understanding of the sites in question, the challenges and opportunities they may present, the development of a ‘tourist perspective’ and allow for serendipitous connections and concepts to evolve in situ.

The field trip was designed to experience relevant regions the researcher team had not previously visited and, unfortunately could not be exhaustive. The researcher aimed to put herself in the position of a tourist, meet with key stakeholders identified or nominated through consultation with the Advisory Group, as well as to gain an objective insight into the regions and points of interest that may not be thought of as being of interest to those who are deeply familiar with them.

The sites visited and people consulted over two days (Thursday 5 - Saturday 7 November, 2020) were:

Site	Stakeholders met	Council Area
Ballara Art and Lifestyle Retreat, Warooka	Steph Ball	Yorke Peninsula Council
Wallaroo Heritage and Nautical Museum	National Trust, Volunteer	Copper Coast Council
Copper Coast Council, Kadina	Lynn Spurling, Libraries & Tourism Coordinator, Katrina Borlace, Corporate & Community Services	Copper Coast Council
Moonta Tourist Centre at the Old Railway Station, Moonta Mines Museum, open pit & lookout	National Trust, Volunteer.	Copper Coast Council
Burra Art Gallery, Paxton Square Cottages & Burra Heritage Trail	Barry and Maureen Wright - BRAG Board members and NT Volunteers, Kerry Youde - Artist, Lis Jones Ingman - Artist, Hannah Dale, former Tourist Information Officer	Regional Council of Goyder
Bungaree Station	Vicky and Mark Stewart, Managers	Clare and Gilbert Valleys Council

Although time was limited, the trip was a success, allowing for a taste of the regions to identify the nature and personality of each site and communities that surround them. For information on areas and sites not visited, phone and zoom meetings were arranged as required.

Presentation

Rather than create separate sections describing the range of technologies available, followed by an analysis of the myriad sites and stories available to tourists within the region covered by the Legatus Group, the findings of this research are presented as hypothetical cases demonstrating how technologies used overseas and across Australia could be applied. All of these cases have been developed in close consultation with the owners and managers of both the sites in question as well as practitioners in the field familiar with the capacity, costs and scale of the technology or tools required. Most owners and operators consulted within the regions have already been thinking about how they would engage with such AR/VR tools if the opportunity arises and are aware that their contributions to this report are presented as hypothetical examples. Their contributions and insights into both their sites and the local networks and connections across the regions were vital in consolidating the research and hypothetically applying it to their reality.

This streamlined approach overcomes the challenges involved with presenting detailed information requiring a high level of technical expertise to appreciate. The contributions from the local tourism providers demonstrate the depth of thinking and potential ready to be activated as part of any development and funding programs that may occur in the future. These clear examples and hypothetical applications are designed to 'show' the results of the research, rather than present it in the level of detail which is better placed as part of a business case, funding and quotation scenario, which this report, hopefully, will inspire.

Literature Survey and Definitions

Tourism destination marketing and product development can be based on an understanding of cultural landscapes and sense of place, and if local knowledge and creativity is lined to planning and projects being driven by wider policy agendas, there is greater potential for visitors to develop deeper appreciation of the cultural values of the places they visit.¹²

Since the late 1990s, academic papers in the tourism, creative industries, new media communications, and technology sectors have explored the various applications and potential of AR/VR technologies to facilitate making sense of places for cultural, social and economic benefit. A survey of the literature cannot fail to note that much of the research conducted has been investigating the potential and promise of the application of these new digital tools. There are a proliferation of popular articles espousing this potential within the tourism and hospitality sectors, written by technology developers clearly promoting the potential of their products.¹³ There is little empirical evidence, by comparison, regarding the impact of the introduction of these tools in attracting visitors to sites for tourism or otherwise. The research shows that the viewers intention to visit is impacted, as is the depth of their understanding of the experience on offer. However, whether that translates to quantifiable increases in visitor numbers is yet to be established:

Gamification, tourism education, destination marketing, and cultural heritage are just some of the tourism sub-sectors which have utilized VR in different ways. Although research in understanding tourism innovations has been gaining momentum, there has been a recent call for more substantive and theory-based research into user experience and consumer behaviour.¹⁴

This does not, however, mean that these technologies do not improve visitor experiences or draw people to areas offering AR/VR experiences. There is a greater chance that, as still relatively new technologies, the research and data are not yet published or widely available.¹⁵ This presents an opportunity to fill this gap in the research through the implementation of an academically rigorous evaluation program attached to projects that may result from this project.

¹² Convery et al. (eds), 2014, p. 215.

¹³ As an example, see Tromp, 2017 <https://www.hospitalitynet.org/opinion/4080737.html>, 'How Virtual Reality Will Revolutionize the Hospitality Industry'. Paulo Tromp is CEO and Creative Director of VRMADA, a virtual reality agency 'dedicated to creating beautiful, memorable experiences enabling brands to connect with their audiences in new and unique ways'.

¹⁴ Huang et al., 2016, p. 2061.

¹⁵ Yung and Khoo-Latimoor, 2017, p. 2074.

What is Augmented and Virtual Reality (AR/VR)?

Developed initially for the commercial sector, Virtual Reality is described as the use of computer technology to create immersive simulated environments accessed and experienced via a head-mounted display. When the users move their eyes or head, the graphic display also moves to reflect the change in perspectival direction:

Users are immersed and able to interact with 3-D worlds. By stimulating as many senses as possible, such as vision, hearing, touch, even smell, the computer is transformed into a gatekeeper to this artificial world. The only limits to near-real VR experiences are the availability of content and cheap computing power.¹⁶

The Geevor Tin Mine in Cornwall is one example of VR headsets being used to provide access to one part of the World Heritage listed mine site, through a virtual tour. This has allowed visitors with mobility or other capacity issues to experience a popular tour of the underground site.¹⁷

There are several definitions of Augmented Reality available and for the purposes of this report, the following has been selected for its emphasis on the provision of knowledge and its impact on users:

A technology that allows the superimposition of synthetic images over real images, providing augmented knowledge about the environment in the user's vicinity which makes the task more pleasant and effective for the user, since the required information is spatially superimposed over real information related to it.¹⁸

Some experts have suggested that AR and VR are actually 'two sides of the same coin' whereby AR keeps 'one foot in the real world' and does not limit the use of only one form of digital object to create a sense of immersion through sensory stimulation:

Augmented Reality simulates artificial objects in the real world; Virtual Reality creates an artificial environment to inhabit.¹⁹

One form of AR is the use of sound and projections, whereby producers create an audiovisual sound and light show that is projected onto a physical structure, such as the evening *Storywall* event at the State Library of South Australia, or the mixed reality show *Aura* at Victoria's heritage gold mining living museum, Sovereign Hill.²⁰ One of the major benefits of projections in the cultural heritage sector is the minimal interference with the physical fabric of buildings and collection items, overcoming several conservation and preservation concerns. However, more recent innovations

¹⁶ Bardi, 2020, What is Virtual Reality, <https://www.marxentlabs.com/what-is-virtual-reality/>.

¹⁷ See news release of the launch of the 3D VR Tours, <https://geevor.com/news/3d-vr-accessability/>.

¹⁸ Yung et al, 2017, p. 76.

¹⁹ Bardi, 2020, <https://www.marxentlabs.com/what-is-virtual-reality/>.

²⁰ An evolved version of the popular 'Blood on the Southern Cross' sound and light experience, *Aura* has been developed to incorporate Indigenous creation stories with the complexities of 19th political and social history of the gold rush. <https://sovereignhill.com.au/aura>.

provide the opportunity to enjoy an audio and visual AR experience anywhere via smartphones. Downloadable apps such as *Portal AR* allows users to ‘step into Scotland’, depicting a window-like virtual portal that changes perspective as the user moves the phone around physical space.²¹ Users are able to choose experiences based on themes, such as castle sites, a motorbike ride or paragliding adventure and, of course, a tour of Scotland’s oldest distillery.

Many researchers propose that the extension of a subject’s sensory involvement in an experience on site—through audio, visual, touch and even taste—would ‘expand the avenues of information dissemination’.²² Strongly supported by the developers of these technologies, AR/VR has gained a great deal of traction within the tourism and cultural heritage sectors as a means of engaging with visitors prior to their visit as well as facilitating access to their experience on site. These experiences have been shown to make the tourist experience ‘more interesting and enjoyable’, to ‘increase social awareness’ and assist in the exploration of ‘unknown territory’.²³

Although not included in some definitions of AR, podcasts are a familiar digital asset that can facilitate the transition to and development of more complex digital experiences. Audio experiences such as podcasting are increasingly popular and currently available to tourists in Victoria, enhancing users’ access to local information and experiences of regional towns.²⁴ Such interpretive audio experiences demonstrate how AR can be accessed and used as regional marketing tools, attracting visitors to an area, as well as for interpretive purposes and didactic experiences on site. As will be discussed in this report, these experiences also offer visitors connections with local communities and open economic opportunities for businesses.²⁵

Other research has shown that AR provides a range of benefits for both tourism and the cultural heritage sector:

AR applications have changed the way that travellers experienced a destination. Especially, in cultural heritage tourism sites, AR helps tourists gain a deeper understanding of the origins of geological heritage.²⁶

Documented examples include historic sites and areas of environmental significance developing platforms that enable the superimposition of historic images over physical sites or buildings. Some projects using this image-based technology are currently in development in South Australia.²⁷

²¹ Step into Scotland can be found at <https://www.scotland.org/about-scotland/scotlands-stories/portal-ar>.

²² Yung and Khoo-Lattimore, 2019, p. 2057.

²³ Yung et al, 2017, p. 76.

²⁴ See *Storytowns*, <https://Storytowns.com.au>.

²⁵ See Podcasts/Audio tours, p. 34.

²⁶ Chung et al, 2019, p. 4.

²⁷ Silver 2 Sea Way, Stage 1 Paper, National Trust of South Australia, July 2020.

According to recent research, the proliferation of smartphones and other mobile devices such as laptops and tablets that incorporate GPS, camera and internet-access capabilities, 'tourism destinations and businesses can deliver tourists an enjoyable, personalized, and context-aware tourism experience' using AR, changing the nature, depth and value of their experience.²⁸ Many of these experiences, however, are dependent on mobile coverage, a factor that must be considered when designing and producing digital experiences in regional areas where coverage may be an issue.²⁹

Some experts have also suggested that AR/VR tourism content is shown to change consumers' behaviour. A positive AR/VR experience creates a sense of 'being there' which impacts on consumers' liking and preference for the destination which leads to higher levels of users' intentions to visit.³⁰ These findings add to the case for developing audio and visual AR/VR experiences within the Legatus Group of regions, to not only bolster employment opportunities for creative industries practitioners and provide enjoyable experiences for visitors on site, but to be utilised as marketing tools to spark interest draw tourists onto the road and into the regions.

Mixed Reality (MR): one with the lot

Recent research explores the emergence of tourism experiences that draw on a range of AR/VR tools in combination with real world sites and objects. As described by some, this Mixed Reality (MR) combination of platforms and points of engagement allows for a high degree of connection, interaction and immersion within a cultural tourism context:

Augmented Reality (AR) provides an efficient and intuitive way to visualize computer generated information overlaid and aligned with objects in the real environment. ... As real and virtual objects can coexist within the same augmented environment, AR solutions have been also used to enhance the user experience. ... If the term augmented reality refers to the possibility to overlap computer generated contents to the real environment, the term Mixed Reality (MR) denotes the possibility of the user to interact with these contents.³¹

In combination with additional compatible links and carefully constructed narratives, MR experiences can connect tourists to other information services, such as websites for local businesses, relevant state cultural agencies or booking facilities, increasing the economic impact of their visit. This mixed or blended approach offers the opportunity through the Internet of Things (IoT) to

²⁸ Yung et al, 2017, p. 76.

²⁹ See Gordon, M 2019, *Final Report: Legatus Digital Maturity Index*, Legatus Group.

³⁰ Tussyadiah et al, 2017, p. 140.

³¹ Debandi et al 2018 *IOP Conf. Ser.: Mater. Sci. Eng.* 364 012048, open access <https://iopscience.iop.org/article/10.1088/1757-899X/364/1/012048/meta>.

showcase special events, local businesses and experiences within the vicinity.³² Visitors may also select specific elements to pursue within the experience, such as subsections of information for more detail, or connect to another story, user or theme. This creates a bespoke visitor experience which maintains the users' sense of agency and choice over their engagement with the site, one driven by their specific areas of interest and subjective perspective.

International trends in using MR indicate a wealth of examples within the natural and cultural heritage and tourism sectors, with benefits to preservation, reconstruction and 'second chance tourism', leading to the 'permanent enhancement of cultural resources' and their attendant stories:³³

Digital replications can be presented in interactive digital environments for public and visitor consumption. Most notably, sites and artefacts are being presented in augmented and virtual reality experiences. For instance, Toubekis et al. (2009) used laser scan documentation to reconstruct destroyed Buddha figures in Afghanistan. The computer-generated simulation was then developed into a VR tourism experience to allow visitors to engage with the destroyed Buddha figures and other no longer existing aspects of the local site. ... The ArkaeVision project also examined cultural heritage experiences that had been enhanced through the creation of technological infrastructure using virtual (AR and VR) representations. ... Arvia'juaq National Historic Site in Nunavut, Canada developed an interactive virtual tour to connect people to sites that are otherwise inaccessible and simultaneously increase awareness of cultural heritage to visitors. Although both AR and VR are progressively becoming more common in tourism experiences... VR is commonly designed as the basis of an experience, whilst AR was used to supplement an existing experience.³⁴

These examples cited above demonstrate how digital artefacts used to visualise information for another purpose, such as research and conservation, can be re-purposed as tourism experiences, as will be discussed further as part of this report.

³² The Internet of Things (IoT) is essentially a concept describing the connections created between digital devices with access to broadband which allow for devices and their human operators to communicate, transact and collaborate. Jacob Morgan describes it as "the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other). This includes everything from cellphones, coffee makers, washing machines, headphones, lamps, wearable devices and almost anything else you can think of... if it has an on and off switch then chances are it can be a part of the IoT. The analyst firm [Gartner](#) says that by 2020 there will be over 26 billion connected devices... That's a lot of connections (some even estimate this number to be much higher, over 100 billion). The IoT is a giant network of connected "things" (which also includes people). The relationship will be between people-people, people-things, and things-things.

³³ Bec, Ali et al, 'Virtual Reality and Mixed Reality for Second Chance Tourism' (2021) 83 *Tourism Management* 1, p. 2

³⁴ Bec, Ibid.

Thematic Tourism

Thematic tourism is a form of destination marketing that allows for tourism destinations to be linked or presented by theme, allowing tourists to explore regions along common threads of interest or subject. Thematic tourism is a growing influence in tourism development and is described as the:

Opposite to mass tourism...there is an increased trend of thematic tourist activities that enable tourists to verify their own identity, promote their living styles and personal inclinations.³⁵

Linking destinations by theme allows tourists to choose a unique adventure and explore regions offering a range of activities aligning with their existing interests. Visiting these sites as individuals promotes the use of self-drive options and bespoke selections that are presented and accessible for the tourists' consideration. Thematic tourism is ripe for the application of AR/VR, to allow for the more immersive exploration of these themes. This is demonstrated by the *Storytowns* podcast mentioned previously, whereby the developer took a user centric (UX) approach to their region's challenges in engaging tourists. The result was the development of a series of podcasts, first within the streets and immediate area, then branching out along popular road trip routes, packaging the experiences under themes such as silo art, foodie trails or wine tours. These podcasts are accessed via an app with a Google map pinpointed with relevant locations, allowing users to follow a pre-designed journey at their own pace or side-track to explore areas or businesses nearby.³⁶

This is a good example of a thematic approach to tourism which will further be developed to incorporate AR/VR technologies. Another is the Silver 2 Sea Way project, currently in development in the region, incorporating a thematic approach to tourism with the information transfer capacity of AR/VR. This project, led by the National Trust of South Australia, traces over 400 kilometres between Port Pirie in South Australia and Broken Hill in New South Wales, following an original railway line that once joined the two regional cities. This historically significant route is a popular inland journey for tourists. The project aims to 'capitalise on the nationally significant stories and cultures of this region to create a multi-day driving experience, connecting two states and 14 communities'.³⁷

The Silver 2 Sea Way shares many aims with this current Legatus project, particularly around economic development, employment opportunities, community identity, ownership and well-being as well as improved capacity building. It is also capitalising on the promise of AR/VR to improve or develop deeper understanding of Indigenous cultural heritage sites, providing opportunities for First Nations communities to share their stories of place and history as well as contribute to the

³⁵ Djurasevic, 2014, p. 110.

³⁶ Conversation with Storytowns developer, Jarrod Pickford, 7 January 2021.

³⁷ Silver 2 Sea Way, Stage 1 paper, National Trust of South Australia, July 2020.

development of physical infrastructure and heritage conservation works. This project is still in the early development stages and could potentially be incorporated or partnered officially with AR/VR/MR projects that may result from this research.

These examples demonstrate how a range of organisations and individuals are already engaging with AR/VR tools within regional areas to provide access to their stories, histories and businesses for tourists and people interested in exploring the area, online and in person. There is a momentum gathering, responding to both the imperatives around attracting visitors to the regions to secure the future of the tourism sector as well as to capitalise on both the creative industries talent and depth of storytelling potential evident within the Legatus regions.

The will, creative content, appealing themes and production capability are there. All that remains to be established is the means.

Case studies, comparisons and costs

Early into this research it became clear that the areas in question are rich with stories and physical sites that are not only beautiful but intensely valued and meaningful for their surrounding communities. Most also have connections and relevance beyond South Australia to significant localities around the world. Selecting only a handful of sites from amongst dozens was not only challenging but also seemed contrary to the project's aims. The diversity of these stories and the common threads tying many of them together lend these regions to a thematic tourism and a multi-layered interpretation approach, one that does not narrow a visitors' focus to only one point of interest but encourages a more blended exploratory approach; the richness becomes apparent when the visitor is led from one set of stories deeper into another. The most effective means of presenting how these stories could be interpreted or communicated through AR/VR technologies was to combine them hypothetically, demonstrating through the description of existing case studies how AR/VR may be applied to actual sites within the Legatus regions.

The research found that the interconnectivity of the stories and experiences reflects the potential of digital technologies to communicate and link disparate information and opportunity. The sites and their stories speak to each other across the regions in a similar way that could be linked via thematically designed digital objects. When combined with the depth of talent identified through Laughton's previous research, the regions are ripe for capitalising on their individual, connected and collective identities as rich hives of heritage, creative activity and points of interest with tourism appeal. Building on existing development momentum to share this richness with visitors offers the potential to realise a range of economic, environmental and social aspirations.

Gaming

The Shadow Initiation is a game devised in partnership with Adventure Mode and the South Australian Museum. It is based on escape room game design whereby participants are led through a series of challenges which encourage team building and collaboration. In partnership with museum staff, the technology was adapted to create a game to encourage visitors to the museum to explore and discover different spaces in search of clues and objects. Visitors can play as an individual or as teams. According to the developers, 'it has been designed with 18 to 35-year-olds in mind – adults who may not have visited the museum since they were children – but can be played by children 7+'.³⁸ However, multigenerational family groups have been the earliest players, surprising both the

³⁸ *The Advertiser*, via <https://www.adventuremode.com.au/news/the-advertiser-south-australian-museum-launches-new-digital-interactive-gaming-experience-the-shadow-initiation>, accessed 7 February 2021.

museum and the developers. When the game was launched in February 2020, Emma Moad, Director of Adelaide based Adventure Mode, told *The Advertiser*:

That experiential entertainment is what they (the museum) were looking for to bring that Millennial audience back. ... There's nothing like it. Even for people who know the museum really well, it is showing them things they didn't know were here. We're trying to send them across different parts of the museum; there are some physical puzzles, so they'll be opening secret doors, there are secret panels (and) there are some special lighting effects that will give you answers along the way.³⁹

The game is played by up to four people at a time. They are led around the museum following prompts and clues via a tablet. The game gives participants one hour to complete as many challenges as possible, with more than 40 to choose from.

The Shadow Initiation is currently licenced by the museum for a monthly fee which has built-in ongoing troubleshooting, updates and monitoring by Adventure Mode to ensure a high-quality experience for participants. The museum retains ownership of the content. According to Jenny Parsons, Head of Development at the SAM, their arrangement operates on an outsourced licencing arrangement whereby Adventure Mode manages all the 'back end' issues, system operations, maintenance and updates to ensure a smooth experience for visitors.⁴⁰ The museum hires tablets with the gaming application preloaded to visitors on site, and provides to Adventure Mode any information such as building maintenance or object relocation that would impact on the visitor experience. Barcodes are installed at different locations around the museum which visitors scan to obtain information, confirm their success in reaching a location and be provided the next clue. This game results in visitors exploring spaces and stories that they may otherwise not encounter, learning along the way and creating shared memories with their companions. The time limit of one hour encourages a sense of competition and urgency to fulfill as many challenges as possible. According to the SAM's Director Brian Oldman:

The museum holds collections of over 600 million years of life on Earth...this game will unlock untold secrets from the galleries you've walked 100 times and introduce you to collection items you may not know exist.⁴¹

The game was designed with younger audiences in mind, such as school groups and holiday care registrants. However, trials which offered *The Shadow Initiation* to slightly older 'after dark'

³⁹ *The Advertiser*, via <https://www.adventuremode.com.au/news/the-advertiser-south-australian-museum-launches-new-digital-interactive-gaming-experience-the-shadow-initiation>, accessed 7 February 2021.

⁴⁰ Conversation with Jenny Parsons, Head of Development, South Australian Museum, 26 October 2020.

⁴¹ See South Australian Museum Launches New Interactive Gaming Experience, *The Shadow Initiation*, 7 February 2019, <https://www.adventuremode.com.au/news/the-advertiser-south-australian-museum-launches-new-digital-interactive-gaming-experience-the-shadow-initiation>.

audiences sold out weeks before the event, demonstrating the breadth of appeal for transgenerational audiences.⁴²

What's involved?

According to David Moad from Adventure Mode, the platform behind *The Shadow Initiation* is easily adaptable to different contexts, creating bespoke immersive interactive experiences:

- The platform can be scaled to cover a small defined area, such as the museum, or more broadly, such as a small town or region.
- The game is currently delivered via an app but there are plans for moving it online.
- The platform is easy to adapt to new contexts and purposes—entertainment as well as learning.
- It can be packed with prizes, incentives, games and puzzles.
- There are ways to deliver layers of stories or different experiences by hosting them on a centralised website.

These adaptive characteristics of *The Shadow Initiation* lend such an AR/VR interactive game-based applications to sites within the Legatus regions. For example:

- On a small-scale, a similar game-based experience could be applied to a building or site such as Martindale Hall.
- Larger-scale projects would enable the delivery of thematic experiences allowing users to pick their own adventure (linking a range of different sites under one banner of, say, Wine, Mines, Indigenous conservation, or colonial history) or users could select options according to the area they are visiting (Clare Valley, Yorke Peninsula, Burra).
- That local input can be accommodated in both development and ongoing management of the experience, such as in the creation of the story, troubleshooting and help-desking onsite and providing information for updates such as objects being moved or closures.
- Licencing agreements with site owners include maintenance and 'helpdesk' services.

There are a range of physical sites and stories that could be told using a similar platform. The popularity of the application is also evolving, moving from an app-based platform to a web-based system. This will allow anyone anywhere to access the game through their own mobile devices if

⁴² South Australian Museum, Highlights Report, 2019-2020, p. 9.

they have internet coverage. This example demonstrates that a similar game could be developed to suit different sites within the Legatus council regions of varying scales. The following are examples developed with site managers and owners or suggested by the researcher to present what such experiences would look like.

The Hypothetical Application – Mintaro & Martindale Hall

Martindale Hall in Mintaro was identified as a suitable site for the application of AR/VR applications. Given the similarity in size and rich historic connections, it offers the potential for the development of a game such as *The Shadow Initiation* to build on the existing visitor base and provide a new means of engaging with the site for new visitors.

A historical or creative narrative with an accompanying set of questions could be developed to lead visitors through the site within a set period of time, challenging them to locate different items in the collection that are evidence of a certain event, with pictures in different rooms coming to life on their mobile devices. Participants may be required to pass certain challenges before they are allowed to progress. Their response will then direct them to another part of the building that may be off the main house or in a room rarely visited.

Another option would be to expand the game to include the state heritage listed buildings in the township of Mintaro. A hypothetical narrative could be developed as a means of interpreting the relationship between buildings in town, taking visitors on an augmented tour before they travel to Martindale Hall. For example, imagine visitors have been asked by their hosts at Martindale Hall to call in to the Millers House to pick up another guest. Instead, they are informed that this guest left to go to the Institute and Council Chambers. When visitors check the QR code at this location, they face a challenge only to find that the guest has been seen at the Magpie and Stump Hotel. When they search for a clue, they find the guest has been arrested for getting into a fight with someone on the road from Burra. Players then need to find the police station and answer a set of questions in town before they are allowed to take the guest to Martindale Hall. Once there, they all need to find their rooms, bathe and dress for dinner, etc.

A multi-venue experience such as this would be more complex, but according to Adventure Mode, it is possible. Many of the venues are not open to the public and this lack of access could be overcome through the use of the game platform, revealing the story and function of the building to create a picture of life in whatever time period is represented. Players learn of the interconnected nature of Martindale Hall and the township, how people over time have interacted and worked as a community. Participants could complete the challenges at their own leisure on their own devices or hire them at a point of entry. Encouraging visitors to enter the hotel, for example, provides an

opportunity to stop for lunch and support a local business. With the cooperation of local community or managing agency, there is the added value of providing an onsite representative to provide assistance and orientation for visitors and manage updates and communication with the game licensor. If the game is available online for access anywhere, it would provide an opportunity to pay a virtual visit to the area in preparation for a holiday. If hosted online, there would be the added opportunity for a 3D video tour of the township.

The Hypothetical Application - Bungaree Station

A similar interactive game could be developed which takes visitors around this historic and nationally significant homestead site, sharing the Hawker Family heritage and the story of the growth of the wool industry through South Australia. According to the current Manager, Vicky Stewart, there is a 'large gap in activating heritage sites for families – and a general gap for activities for families in our region'. She suggested the following scenario as the basis for a set of games-based activities to entertain and inform visitors to Bungaree Station:

I really like the idea of a treasure hunt / adventure game for kids. ... I have an idea for an AR game (similar to the Pokémon Go craze and other location-based gaming apps) where children use...smart phones to 'muster' up sheep from various locations around the property (with a points ladder based on the amount of wool cut from those sheep by the time they get to the Woolshed). There could be different levels of difficulty to suit for different ages and abilities, so they learn more. For example, older children could try and collect the best merino rams for breeding more sheep. Or cutting more quality wool vs. meat-breed ram for lesser quality wool but more meat; having to collect hay in summer or risk losing sheep/lambs, etc. They could choose a year and be governed by that year's costs of shearing/feed and wool/meat prices.⁴³

Ballpark costs

According to Steve Moad from Adventure Mode, these projects are relatively low cost to develop and licence:

For something small/simple like the Martindale Hall it would cost approximately 5-10 thousand dollars to set up then a monthly fee of approximately 1-2 thousand dollars.⁴⁴

The SA Museum charges users a fee to access the game through the hiring of on-site tablets. If this option is not available, other avenues would be needed to generate income from the experience.

⁴³ Correspondence with the researcher, 17/12/2020.

⁴⁴ Correspondence with the researcher, 08/01/2021.

Benefits of thinking big

Depending on the level of interest and available funding opportunities, a game-based platform such as that supporting The Shadow Initiation also has the potential to be applied to cover individual regions or, indeed, can be upscaled to cover the whole Yorke and mid-North. For example, there may be games available at each of the sites under consideration, developed for each site but available through a single web-based point of engagement. This would allow for visitors to choose their areas or sites of interest, such as a food or wine trails or Indigenous story lines across regions with adventure games for families or children based on thematic approaches or existing tourist pathways, such as the Copper Coast, Walking the Yorke or geological formations. These latter larger-scale projects would also be more costly to establish. However, as the investment would be spread over different regions, the risks, costs and rewards would likewise be distributed.

Approximately 100 thousand dollars, paid over the three-year period covered by the licensing agreement. The more projects rolled into one would be more cost effective too as we could do it all at the same time and save us doing different trips, etc.⁴⁵

The more developed the concept and narrative for such projects, the more detail can be provided regarding costs. Incorporating connections to booking agencies and other local providers via the internet would encourage additional benefits for both tourists and businesses across the regions.

Projections

Sound and light shows are popular forms of augmented reality experiences across the cultural heritage and tourism sector. South Australia is fortunate in the availability of award-winning creative producers in the field who set high standards in delivery and access with a track record of success.

Between 2013 and 2020, Illuminart produced and developed a sound and light projection show that toured to 40 sites along the coastline of South Australia. They visited 17 towns over 2000 kilometres, projecting animations developed by local artists on silos, railway sheds and other forms of heritage architecture, drawing on local narratives and expertise, earning the company the honour of being named the Best Regional Event in Australia for 2020. Engaging a range of supporting partners and funding bodies, the project produced over 100 different stories relating to 20 sites that were shared with thousands of people across the state, with plans to make them available on an ongoing basis.

Found across Australia and overseas, projections can be scaled up or down depending on the size and audience capacity of the site. The Copper Coast Council have discussed the projection of a light show onto silos and warehouses to build on the success of the Travelling Light project. More

⁴⁵ Correspondence between Steve Moad and the researcher, 08/01/2021.

permanent or regular projection experiences, drawing on local stories, artists and events, would offer tourists and the regions ongoing benefits.

Burra and Moonta Mines

The benefits of projections are many for the cultural heritage sector. Primarily, they bring sites to life with minimal interference to their physical structure and cultural integrity. Projections also offer the added advantage of being able to be used indoors, on a room-sized scale, as well as outdoors on a much larger and even multi-site scale, such as seen at Sovereign Hill with *Aura*. This regular permanent sound and lightshow takes visitors in a bus tour at night across a range of sites relevant to the story, allowing visitors to enjoy the spectacle superimposed across a range of historically significant buildings and natural formations.

The adaptability of these technologies could be applied across a number of sites within the Legatus regions. The diversity of experiences, richness of stories available and varying scales of landscapes and buildings offer a richness of creative potential. As an example, projections could be applied across and within both the Burra and Moonta mine sites, as separate site-specific experiences or as a transregional experience connected by theme. As well as the initial economic advantages for local artists, regular ticketed experiences may draw people into the regions for an evening show, necessitating overnight stays and generating further economic impact and employment opportunities across local businesses.

Small-scale projections could build on work already undertaken in Burra. The local branch of the National Trust has previously invested in an app associated with the Burra Heritage Passport, which provides access to buildings across the township via a key picked up and paid for at the local tourism office. The app drew on Cornish legends and presented 'Johnny Green' as a virtual tour guide. The content developed for this app could be repurposed as audiovisual projections in heritage buildings, telling stories using animations, archival footage or recordings of live performances, either individually or as part of a guided thematic experience.

The National Trust of South Australia considers the Moonta and Burra Mine sites as the most significant sites in their care.⁴⁶ The National Heritage listing of 2017 has broadened the Trust's funding opportunities and they have succeeded in gaining funding from the Commonwealth Government through the Building Better Futures funding to develop the Moonta Mine site and the Silver 2 Sea Way project. The National Trust are leaders in cultural heritage tourism and see the use of digital technologies as crucial to engaging tourists and local visitors to their sites. These

⁴⁶ Conversation with Darren Peacock (CEO) and Allison Russell (Director, Assets and Operations), National Trust (SA), 8 January 2021.

engagement opportunities can then support conservation and preservation projects to ensure the long-term viability and integrity of their sites.⁴⁷

The National Trust of South Australia are already working with projection artists as part of their Silver 2 Sea Way project to drive tourism to the regions. The first stage will focus on the town of Peterborough and include a nightly sound and light show developed in partnership with Illuminart. Described as an initial ‘flagship’ experience, this first stage of the broader project stretching from Port Pirie to Broken Hill will build on what is already in place to demonstrate the value of the experience to the community and create ongoing employment opportunities and sustainable management models. With 15 sites under their auspices across the Yorke Peninsula (five in Moonta) as well as 14 in the Mid North (including eight in Burra and one in Clare), the National Trust in South Australia is well positioned to participate in the development and implementation of AR/VR cultural heritage tourism projects. With branches and associated teams of active and passionate volunteers across the Legatus council regions, they are an obvious potential development partner for this project, particularly as they are already developing similar projects that share the same objectives and priorities of this project.

Ballpark costs

As will be the case with all hypothetical proposals within this report, the complexity of the production and scale of delivery will be reflected in the price. According to short film maker and digital artist Stu Nankivell, of Blue Goanna, small-scale animations using a combination of green screen technology and live projection cost ‘a few thousand dollars’ and can be shown using an \$800 projector.⁴⁸ Other projects where he has provided storyboarding, animations and a small professional crew cost approximately \$8,000.

For larger-scale building or landscape projections, information from the Illuminart website offers a good indication of production costs and equipment. The following figures are presented as ‘a special offer for Winter 2020’ and do not include permanent or long-term installations:

Small Building or Venue (1 x 12K projector and equipment)

- 1 night pop up \$4,363 + GST
- 1 week installation \$7,513 + GST

Medium sized Building (2 x 12K projectors and equipment)

⁴⁷ Conversation with Darren Peacock (CEO) and Allison Russell (Director, Assets and Operations), 8 January 2021.

⁴⁸ Correspondence with the researcher, 7 December 2020.

- 1 night pop up \$5,213 + GST
- 1 week installation \$10,913 + GST

Big building (3 x 12K projectors and equipment)

- 1 night pop up \$6,063 + GST
- 1 week installation \$14,313 + GST

What we include in this offer:

- 12000 lumen Projector(s) hire for the specified period
- A media player for the specified period
- Two hours free support to help you plan your projection and tick the important boxes
- A technical team member who will travel, install it for you and get your projection operational, and then return to de-install it at the end.
- Option of basic content help or stock from our library
- Notes about the projectors – each 12K projector is suitable for projection of at least 10m x 6m areas, which is perfect for theatre backdrops, medium sized buildings and open-air spaces. Multiple projectors together will cover larger areas. We will help you decide what's best, if you aren't sure.⁴⁹

As a special offer, these prices above are presented here only as an indicator, as requested by the project brief, and should be confirmed with Illuminart or other suppliers before any serious funding proposals are assembled. Please note that these figures do not include production costs and only relate to projection. Further consultation with equipment providers and production creators will provide more information regarding permanent or long-term projects.

Podcasts / Audio tours

As an audio medium, podcasts also fall into the definition of Augmented Reality, where audio rather than visual images are superimposed over the real world to transfer information. Podcasts are audio soundscapes or narratives which are accessed online, selected at predetermined points or automatically activated through an app via GPS location. Such audio files have long been associated with the museum and gallery sector. Audio tours were traditionally presented as part of special exhibitions, whereby visitors would pay additional fees for headsets to select numbered points of interest from a menu to access in-depth information about a piece.⁵⁰ More recently, audio tours are

⁴⁹ See <https://illuminart.com.au/announcement/winter2020offer/> accessed 10 January 2021.

⁵⁰ The South Australian Museum, for example, has a range of podcasts available to take people 'behind the scenes' or to access special lectures visitors may have missed.

widely available through apps such as Smartify to be accessed by virtual and onsite visitors via personal communication devices.⁵¹ Research has found that podcasts as an audio-only media are an effective tool for communicating with visitors in national parks, museums and cultural heritage areas. As well as conveying layers of information and interpretation of objects, podcasts offer additional benefits, suggesting that ‘the human voice creates a positive social context for meaningful interaction which influences tourist experiences and stewardship’.⁵²

Podcasts are attractive as interpretive technologies for their ease of use, widespread popularity and relatively low-cost production techniques. Research examining the efficacy of podcasts within national parks has shown these audio interactions can change visitor attitude and behaviours, creating a sense of connection with the environment due to an increase in personalised and mindful interpretive effectiveness.⁵³ This encourages a perceived relationship with the social presence created by interacting with human voices, encouraging the visitors’ awareness and stewardship of the site.

The ability to engage locals of all ages in the production and development of podcasts, as seen in the following example, is an advantage —not only does this create a skills base in local areas, but it also increases listeners’ familiarity with local personalities associated with tourism sites. Although found in a range of contexts around the world, the following is a simple and elegant example of how podcasts can be used for regional thematic tourism found much closer to home.

Storytowns: every town has a story

According to Kang and Gretzel, ‘three facets of tourist experiences (learning, enjoyment, and escape) are consistently identified in the tourism literature as important experiential dimensions’.⁵⁴ These three elements of the tourism experience are evident in *Storytowns*, a website and mobile app presenting a range of podcasts based on themed road trips across the south and west of Victoria. Intended to be used on site as an orientation for each town or locality, they are also entertaining and informative listening from a distance. This is a positive and effective combination of history, nature and descriptions of local commercial operations and interviews with local characters who visitors can connect with in person.

⁵¹ See <https://www.theguardian.com/culture/2020/mar/26/smartify-makes-all-museum-audio-tours-free-for-rest-of-2020>.

⁵² Kang and Gretzel, 2012, p. 440.

⁵³ Kang and Gretzel, 2012, p. 450. This paper also stresses the importance of several voices presenting the narrative, rather than a single monotone, creating a more conversational and realistic experience listeners are more inclined to relate to and enjoy, rather than creating the effect of a one-way or instructional lecture.

⁵⁴ Kang and Gretzel, 2012, p. 442.

The founder of the series, Jarrod Pickford, grew up in the regional town of Mortlake, Victoria, and has an extensive background in national and international radio production. Pickford described how each episode in the series is broken into sections, based on what visitors would encounter and need as they approach a new town. These sections cover local geological landmarks, historical events, what the town is famous for and even where to get the best pies, for example. Pickford then interviews some of the locals. They may be business operators, producers, artists, Indigenous Elders or geologists. Testing for the initial series—the Silo Art tour—was conducted on a regular listener group, described as 45 grey nomads and emerging grey nomads. Their responses helped identify tourist needs, their abilities to engage with technologies and the various areas of interest. This enabled a model and set of themes to develop along popular road trips. The resulting podcast series exploring Silo Art in the Wimmera was proposed to the Wimmera Shire Council as a means by which they could adequately disperse information to tourists and connect them with the regions.⁵⁵ As Pickford described, they aimed to ‘break the ice’ for visitors—they wanted information to reach out to the tourist, rather than continue traditional models of information provision whereby tourists needed to seek points of information. The length of each episode varies, and they are accessible via the app downloaded onto users’ smartphones or tablets. Following the friendly and accessible orientation narratives, episodes conclude with directions to accommodation services, restaurant options and the address for Tourist Information Centres. The listener is left with a sense of familiarity with their surroundings, connection to the residents and confidence in their welcome.

Storytowns’ most recent podcast, launched in mid-December, was downloaded 1700 times in two weeks, equivalent to 50 per episode. Their Facebook page is populated with positive feedback from users and they have had very little in the way of marketing and promotion in traditional media. They have partnered with Visit Victoria, the Victorian State Government tourism commission, in order to raise their profile through their website.⁵⁶

Hypothetical application - Any town in any (or all?) of the regions.

Storytowns presents a model for an elegant and simple to use interpretive tool to attract visitors to the regions in South Australia and assist them with their information needs when they get there. The operation is run by a team of three professionals and a small group of regular contributors from the regions. The podcasts are developed in consultation with and support from local councils. This independent initiative offers the opportunity to both interpret the areas and connect visitors with local businesses for improved economic impact as well as community identity and other social

⁵⁵ Conversation with Jarrod Pickford, 7 January 2021.

⁵⁶ Conversation with Jarrod Pickford, 7 January 2021.

reasons, such as embedding skills and creating employment opportunities around the development and production of the series.

Theming the podcast series ties in with the aim of the Legatus Group to provide thematic tourism experiences, whereby information from different sites and areas of interest can be crafted into a narrative tale comprised of the areas' points of interest. For example, walking tours currently available and promoted, such as Walk the Yorke or the Coastal Way, could be investigated for people and places of interest for visitors, as suggested by Steph Ball of Ballara Retreat in Warooka.⁵⁷ Such a series could not only impart local historic, Indigenous, agricultural and geological information, but also connect visitors with places to eat and where they can find accommodation along the way.

On a larger regional scale, series could be developed for the Barossa Valley, Clare Valley and Adelaide wine regions, drawing on the relevant resources of institutions such as the State Library of SA's wine literature collection of manuscripts.⁵⁸ Such a series of podcasts could focus on the historic beginnings of viticulture, the geological conditions that created the specific terroir of each area as well as Aboriginal creation stories of the pre-colonial landscape. These themes could be woven into the one narrative, as evident in the *Storytowns* approach, or crafted independently to enable tourists driving through the area, or investigating it for future holiday planning, to follow pathways and stories to thread together a single themed experience based on their preferences or one which reflects the layers of stories connected to each region. The information available would come to them via a GPS activated alert on their device, a QR code at a point of entry or be downloaded and accessed anywhere.

Pickford's plans for the *Storytowns* app include developing it as more of a Mixed Reality experience, whereby images and video can be incorporated. Their plans for the series include linking the platform to GPS technologies widely available and included in most mobile devices, activating an alert when visitors approach the town or site.

Approximate costs

As with all technologies explored for this research, the cost for production is tied to the level of complexity.

⁵⁷ Conversation with Steph Ball, 6 November 2021.

⁵⁸ The SLSA's collection of wine literature is amongst the best in the world and includes medieval manuscripts and publications tracing the development of international viticulture, contextualising the South Australian wine regions and is supported by some of the most established South Australian wine families through the SLSA Foundation. See <https://wine-literature.collections.slsa.sa.gov.au>, accessed 18 January 2021.

According to Pickford, the podcasts are made using professional production and voiceover teams operating at award or above rates. The simpler and shorter varieties cost around 2.5-3.5 thousand dollars. The more complex, requiring a greater length of travel and stay in the regions cost between 8-10 thousand dollars each. This does not include the cost of setting up the app itself or webhosting.

Another point to note regarding *Storytowns* is the mix of supporting partners. Most of the regions' Tourism and Shire Councils have contributed financial or pro bono support. This has been supplemented through some local commercial sponsorship, as well as state and Commonwealth funding. In 2020, they were named an AMP Tomorrow Maker and awarded a grant from the AMP Tomorrow Fund, aimed at supporting regional projects and creative practitioners.

Mixed Reality

Landscape can be read as a text and, like literary texts, will have different meanings for different individuals. Time also plays a part, with meaning and value varying over the short, long and even deep time periods. Dhillba Guuranda, also known as the Innes National Park on the Southern Yorke Peninsula, has over the ages been connected to regions such as Kangaroo Island. The Narungga community are the traditional custodians of these lands and have witnessed the changes wrought by colonial settlement and agricultural practices upon the landscape, the wildlife and their communities.

Separated by the rise of oceans, the site we think of today as a peninsula was previously a mountain range. Similarly, the rubble strewn faces of the Flinders Ranges were previously ocean beds supporting some of the earliest forms of multicellular life on the planet. Today they are iconic semi-arid landscapes of South Australia, populated by a unique flora and fauna and enjoyed by bushwalkers, adventurers and mountain cyclists. Within 50 kilometres of the city of Adelaide is a vital feeding and breeding ground for birds who for millennia have been riding the winds of the East Asian/Australasian Flyway which traverses 22 countries around the world. This aerial pathway connects Niniatyinaityi Pangkara, the National Park at the heart of the Adelaide International Bird Sanctuary, with a network of wetlands and coastal habitats stretching along the edge of the Pacific to the tip of Alaska and Northern Russia. Evidence of the evolution of life on life on earth can be found and continues to be renewed in South Australia.

These wild places struggle to maintain their integrity, relevance and sustainability in the modern world. Working with State Government partners, traditional owners and passionate local communities, this project has the potential to use modern world tools to communicate and protect these sites whilst making them available to tourists and bringing economic benefits to the communities. Much work has already been undertaken to develop points of engagement for visitors

across all three natural heritage sites within the Legatus Group, all of which are connected to various international bodies such as the World Wildlife Fund for Nature and UNESCO through active World Heritage proposals. All sites have the potential to be promoted, interpreted and experienced using AR/VR combinations using a mixed reality approach based on common themes, maximising the broad appeal of the areas' stunning natural beauty and the richness of associated stories. According to media scholars:

Interactive documentaries provide creative possibilities for nonlinear forms of engagement and interaction among audiences, producers, and the material world, which in turn opens new possibilities for engagement and meaning making. For instance, interactive documentaries enable possibilities for collaborative authorship among humans and nonhumans alike.⁵⁹

The interpretive and interactive capacity of moving images have been shown to be effective in conveying such complex and layered information within natural heritage sites:

Video images have become one of the primary media through which various publics engage with contemporary environmental issues.⁶⁰

This approach of mixed reality and methodology is demonstrated by *Bear 71*. Produced in partnership with the National Film Board of Canada and the Banff National Park in 2012, this award-winning interactive documentary is comprised of blended footage shot as part of environmental monitoring programs, framed around a specially constructed narrative, to present the life story of a grizzly bear within the park environment.⁶¹ The NFB Web site introduces the project as follows:

Bear 71 reimagines the bear's story from an omniscient narrative vantage point. She speaks directly to us, and her insight forms a bridge between millions of years of evolution in the wild, and a few decades of technological advances that have infiltrated nearly every part of our lives.⁶²

Although not produced to enhance tourism experiences, it has become a marketing campaign exemplifying how diverse existing materials can be used within a cultural or, in this case, natural heritage environment. Using the mixed media combination of existing footage and narrative voiceover developed effectively and with great emotional impact, the video components of *Bear 71* are overlaid on a 3D topographical rendering of Banff National Park, the bear's territory. Viewers are able to explore the virtual park whilst listening to the narrative, selecting flags and information

⁵⁹ Blue, 2016, P47.

⁶⁰ Blue, 2016, P47.

⁶¹ Ahearn, 2013. *Bear 71: An Interactive Documentary About the Impact Humans Have on the Natural World*. *PDN; Photo District News*, 33(12), pp. 34-37.

⁶² See About section, <https://bear71vr.nfb.ca>.

boxes which provide details of the environment and other occupants, human and non-human, of the area. The film is available online to be experienced anywhere.⁶³

The Hypothetical Application

The interactive video format has the potential to be adapted into a site-specific experience available through a visitor centre or via an online application to be accessed as and when visitors enter a National Park. A similar approach could be adopted to interpret the many stories to be found across the Legatus Group of councils. To demonstrate this adaptive potential, only one example is required: Marna Banggara: Rewilding Dhillba Guuranda. The following MR experience has been developed in consultation with Michael Matthews and Garry Goldsmith, the Business Manager speaking on behalf of the Narungga Nation Aboriginal Corporation, and Anthony Fox from Parks SA. This area has associations with deep time geological forces, through the rising sea levels, the even older geological forces that shaped the landscape, the flora and fauna that populate the coastal environments and the Narungga people who are the traditional custodians of the land and its stories.

Marna Banggara is a rewilding project developed with the Narungga nation and Parks SA with partners to reinstate the pre-colonial landscape and wildlife of the region. A fence has been constructed to keep out feral pests and predators. Breeding programs are underway to reintroduce endemic species to the area and visitor infrastructure improvements and engagement opportunities are in development. The partners are eager to see what may come of this project and one way of combining the many points of view and depth of knowledge informing the area is to adopt an MR approach. Ecologists and rangers are conducting monitoring programs using cameras and audio, which may be available to be incorporated into interpretive programs. This includes monitoring a barn owl nest in real time. This inspired the idea to adopt a barn owl's perspective as an interpretive tool to present the landscape, leading visitors through the geography in a virtual 'bird's-eye view' experience. The 3D tour of Seppeltsfield winery is a good example of the use of drone technology to achieve this perspective.⁶⁴ However, Michael Matthews is part of a team at Framework VR developing 3D virtual tours of Hallett Cove using technologies that could be adapted to other contexts, such as the three natural heritage sites under consideration as part of this report. These platforms can be linked to other sites that could take visitors to information developed in external agencies, such as the specialists at the SA Museum, Geological Society of SA or International Bird Sanctuary Collective sites. In a more complex scenario, a narrative could be developed from available scientific information and traditional stories that, like *Bear 71*, are told from an animal's

⁶³ <http://bear71.nfb.ca/#/bear71>.

⁶⁴ See <https://seppeltsfield.com.au/take-a-virtual-tour-2/>, developed by Honeycomb Design.

perspective. It was suggested that the Barn Owl may be an appropriate narrator and point of view to lead visitors around for Dhillba Guuranda, with a Wedge Tailed Eagle used for the Remarkable Flinders Ranges, for example, as well as selecting one of a suite of bird species who travel each year to the Adelaide International Bird Sanctuary being used to interpret that location. Links could be incorporated that tie the VR overview to expert commentary or information boxes from external organisations such as the SA Museum, Zoos SA or university scientists monitoring different species. Bike trails could be incorporated to appeal to adventure tourists or bushwalkers.

Ballpark Costs

Michael Matthews from FrameworksVR is closely associated with the Narungga Nation Aboriginal Corporation and would be ‘super excited to be involved in this fantastic project’.⁶⁵ Matthews’s Adelaide based company has provided the following detailed overview of what would be required to develop a Virtual Reality (VR) cultural storytelling experience for use in the proposed Dhillba Guuranda visitors centre:

‘Key Features:

- The user will navigate a 3D Interactive Terrain accessing content via a fluid, icon-based user interface.
- The user interface will be designed with simplicity in mind making it suitable for first time VR users.
- Content may include, but is not limited to; 180° and 360° videos and photos, scanned 3D models, pop-up text or artwork, 2D and 3D spatial audio, interactive 3D models and tools.
- The experience will enable the user to discover content and stories based on what they choose to interact with on the 3D terrain.
- The experience will feature a dynamic soundtrack that helps immerse and guide the user and to differentiate between static and interactive content.
- We would be thrilled to have any or all content (including artwork, audio and text) developed in conjunction with Indigenous consultants/artists/experts where directed.

The estimated price for the delivery of the above is between \$10k - \$15k and we estimate a development time of approximately 10 weeks. Costing and schedule depend on the amount and complexity of content to implement.⁶⁶ There is also an hourly fee for development.

⁶⁵ Correspondence with Michael Matthews, 14 January 2021.

⁶⁶ Correspondence with Michael Matthews, 14 January 2021.

In Summary

These hypothetical narratives and examples are presented as illustrations of the research findings and as a starting point for conversation. They require detailed consultation, development and decision-making driven by the local communities and stakeholders. Any prices mentioned are indicative only for the purposes of this research project. The technologies required to present these stories must be assessed at each local area to identify the appropriate points of access and engagement, with a view to potentially centralising the experiences to promote a themed and mixed reality approach. All these considerations must be accompanied by final cost analyses before any fundraising projects can be undertaken. This business case process is essential to not only cultivate the authenticity of the product and ensure a quality experience for visitors, and to identify opportunities for support, consolidate relevant stakeholder groups and facilitate the transregional coordination required to develop effective and sustainable AR/VR/MR tourism products and experiences.

Conclusion

Domestic arts tourism supports local jobs and economies while enriching and connecting Australians through creative experiences.⁶⁷

Community-led projects offer benefits beyond the tourism sector. The potential application of the technologies presented here have been shown to create community identity, economic development and jobs through cross-sectorial collaborations and skill building programs. The application of AR/VR/MR projects for tourism in the regions would also contribute to the reactivation of natural and cultural heritage sites, providing marketing and engagement opportunities that are new and attractive to local and visiting audiences, drawing sightseers into the regions for overnight stays and providing new perspectives on familiar sites (for example, as seen at the SA Museum and Sovereign Hill's sound and light shows). This appeal to local, inter- and intrastate visitors may go some way to alleviating the devastation wrought upon the South Australia tourism sector by the dearth of international tourists as a result of the pandemic.

The challenges and risks to the tourism industry are also opportunities to address the triple bottom line for regional communities offered by innovative approaches to tourism development. The transmedia affordances of 'The Internet of Things' and developments in AR/VR/MR and other ICTs, if used creatively to deliver authentic and reliable interpretive experiences, have the potential to contribute to the sectors' resilience in an uncertain future marked by declining international visitors. That these developments are occurring at a time when government agencies across the local, state and federal levels are keen to support regional development and tourism projects is advantageous. However, as the research presents, design and usability have a major impact on customer actions.⁶⁸ It is vital to bear in mind the following three key constructs identified as being essential guidelines underpinning the impact of tourists' AR/VR/MR engagement:

1. **The effect of content quality on user acceptance:** content production and narrative authenticity must be high quality and genuinely engaging.
2. **System quality has a strong and direct effect on satisfaction and intention to use:** how the experience is delivered and the amount of assistance available matters to users and impacts on the overall experience and willingness to engage.

⁶⁷ Australia Council for the Arts 2020, *Domestic Arts Tourism: Connecting the Country*, Australia Council for the Arts.

⁶⁸ Navío-Marco et al, 2018, p. 464.

3. **Service quality has important implications for continued use:** if people have difficulty accessing AR/VR experiences dependent on high quality broadband access and/or mobile coverage, they are not likely to attempt to do so again.⁶⁹

These constructs are aimed at developing trust in the technologies conveying the experience for users and must be applied across all proposed AR/VR/MR projects. For example, if there are coverage black spots, as have been identified in previous research, projects must be designed to accommodate or overcome them: don't design something that won't work.

Age is another factor that has been raised as part of this research, usually connected to a perceived divide between digital natives and older digital immigrants. What has been found in some of the projects already underway, particularly *Storytowns* and *The Shadow Initiation* at the South Australian Museum, is that older age groups are quite comfortable using online technologies for research and making bookings when on holiday or engaging with a cultural experience. *The Shadow Initiation* was originally designed to engage with Millennials. However, a large segment of their user groups are families, include grandparents with grandchildren, playing the game together. The important factors are about good design and clear points of assistance to provide an introduction and clarification if needed, so people can be confident in how to use any devices involved. The inclusion of podcasting here as a form of AR/VR builds directly on this element of user confidence. Audio files are familiar tools to access information and increase access to valuable information for tourists. Critically for this project, a series of podcasts would serve as the means by which networks in the community can be brought together, partners aligned, and resources directed towards common thematic pathways. With these foundational steps in place, and trust established between platforms and users, more complex projects may follow. Good service and clear communication are transgenerational. All participants, tourists and producers, become co-creators of their cultural experience. That personal involvement, sense of achievement and what it allows them to access adds to the memory of the site, and their likelihood of returning.

⁶⁹ Yung et al, 2015, p. 77.

Recommendations

A complete cultural and historical analysis of the region is beyond the scope of this report but may be worth considering at a later stage to establish the links and connections between communities, not only for thematic tourism purposes but for a deeper understanding of the social and identity benefits such collaborations across regions may provide. What has been established, though, is that there are a range of projects at different stages of development currently developing AR/VR/MR experiences within the regions, engaging with a diversity of technologies that have the capacity to be upscaled, piloted and adapted. As suggested through the literature, the first step is to engage with the relevant local communities and provide them with the opportunity to engage with artists and creative practitioners to identify and interpret how they wish to tell their stories. Without local grassroots support, collaboration and adoption, any future projects risk having a limited lifespan.

This report recommends exploring the following as priority areas required for the success of potential projects:

Cross-regional coordination

There is a definite role for the Legatus Group to act as coordinator and facilitator between local councils, state partners and other agencies, particularly during this early development and later production phases. This should be coordinated in consultation with the Regional Development Authorities, to maximise the potential of cross-regional economic opportunities and to present a united front to other agencies. This combined facilitative role would continue in communication with the SA Tourism Commission to market and promote the experiences once the projects are operational, testing has been completed and they are ready to engage. The effectiveness of this cross-regional approach would be enhanced by the implementation of the new blended and visitor-centric model for the delivery of Tourism Visitor Information Services in the regions. This approach would be underpinned by the Regional Creative Facilitator, ensuring the timeliness of reporting to government agencies and channelling of information to and from the relevant project partners and creative practitioners.

Start simple and small and grow

Depending on the level of local community support, small-scale audio and visual AR projects can be supplemented and thematically developed into transregional trails along the lines of the *Storytowns* model, driven at the local level. Involve the communities in developing themes that may expand on existing themes such as the Epicurean Way,⁷⁰ a road trip that stretches from the Clare Valley,

⁷⁰ See <https://southaustralia.com/travel-blog/epicurean-way-road-trip>, accessed 19 January 2021.

through the Barossa down to McLaren Vale—why not include a series of podcasts that visitors can listen to over the four-day road trip, introducing them to local producers and linking them to booking and reservation services, creating an MR multi-sensory experience?⁷¹ Just add local voices. These road trips or single-site experiences can be piloted, building on existing road trips and their brand value (such as the Epicurean Way or Riesling Trail) already established in the regions and tourism market. These could be expanded and linked with more thematic transregional projects, encouraging visitors and tourists to explore further or vary their area of interest.⁷² For example, the wine trails around the Barossa and Clare Valleys could go more deeply into the geology of the area, or Indigenous cultural heritage and therefore encourage longer stays. Such collaborative transregional experiences could explore and showcase the identities and creative potential of local communities within a mixed reality context. Tourist Information Centres and the SA Tourism Commission could become active partners in marketing and promoting these experiences and, when possible, integrate them with their central digital booking systems. Linking such experiences with commercial providers and accommodation booking systems also offers the potential to increase average per capita spend across a range of industries. However, proving the model and securing the partnerships in developing the initial small-scale experience—be it a podcast trail or an interactive game-based experience—would be markers of success for the first iteration of the project. With partners, community, economic and social impact data on board, an enhanced or upscaled second phase would have a greater chance of success.

Build on existing projects with simpatico partners

The National Trust is actively developing a number of projects within the Legatus regions and are pursuing similar goals for economic development and cultural heritage tourism in the regions. The Silver 2 Sea Way project and a major heritage conservation and development project have been granted federal funding. Burra is considered one of their key sites for tourism potential and has already been the site of digital interpretation projects. According to the National Trust's CEO, the National Trust currently enjoys good relations with the councils they are engaging with to develop the Silver 2 Sea Way and Moonta Mines projects, already part funded and in development.⁷³ This partnership potential, geological similarity and geographical proximity of the sites demand further exploration by the Legatus Group. Such a conversation may establish how this current and previous

⁷¹ Martins, José, Gonçalves, Ramiro, Branco, Frederico, Barbosa, Luís, Melo, Miguel, and Bessa, Maximino. "A Multisensory Virtual Experience Model for Thematic Tourism: A Port Wine Tourism Application Proposal." *Journal of Destination Marketing & Management* 6.2 (2017): 103-09. Web.

⁷² For a complete list of road trips already promoted by the South Australian Tourism Commission, see <https://southaustralia.com/things-to-do/road-trips>, accessed 19 January 2021.

⁷³ Conversation with Darren Peacock (CEO) and Allison Russell (Director, Assets and Operations), 8 January 2021.

research conducted for the Legatus Group may support these National Trust projects and highlight avenues for cross-promotion, joint-funding applications and opportunities for creative practitioners in the regions. Both organisations would benefit from a sharing of resources and alignment of goals, to learn from each other and build on the current momentum to bring tourists to the area using AR/VR and MR experiences.

Be game and go large

As demonstrated by the experiences shared at the South Australian Museum, interactive games are not just for kids—they can appeal to all age groups and offer great potential to create new experiences at sites tourists may think they already know. This research suggests that a game developed in consultation with locals and stakeholders of Martindale Hall/Mintaro and Bungaree Station would bring these sites to life. Starting with one pilot project, if a platform can be developed within the regions, it could be adapted to suit others, linking the sites via the interpretive device. The game becomes another thread of the thematic tourism. They could be applied across the winery stories of the Barossa and Clare Valleys, providing non-drinkers of any age another point of engagement and entertainment with the area or areas.

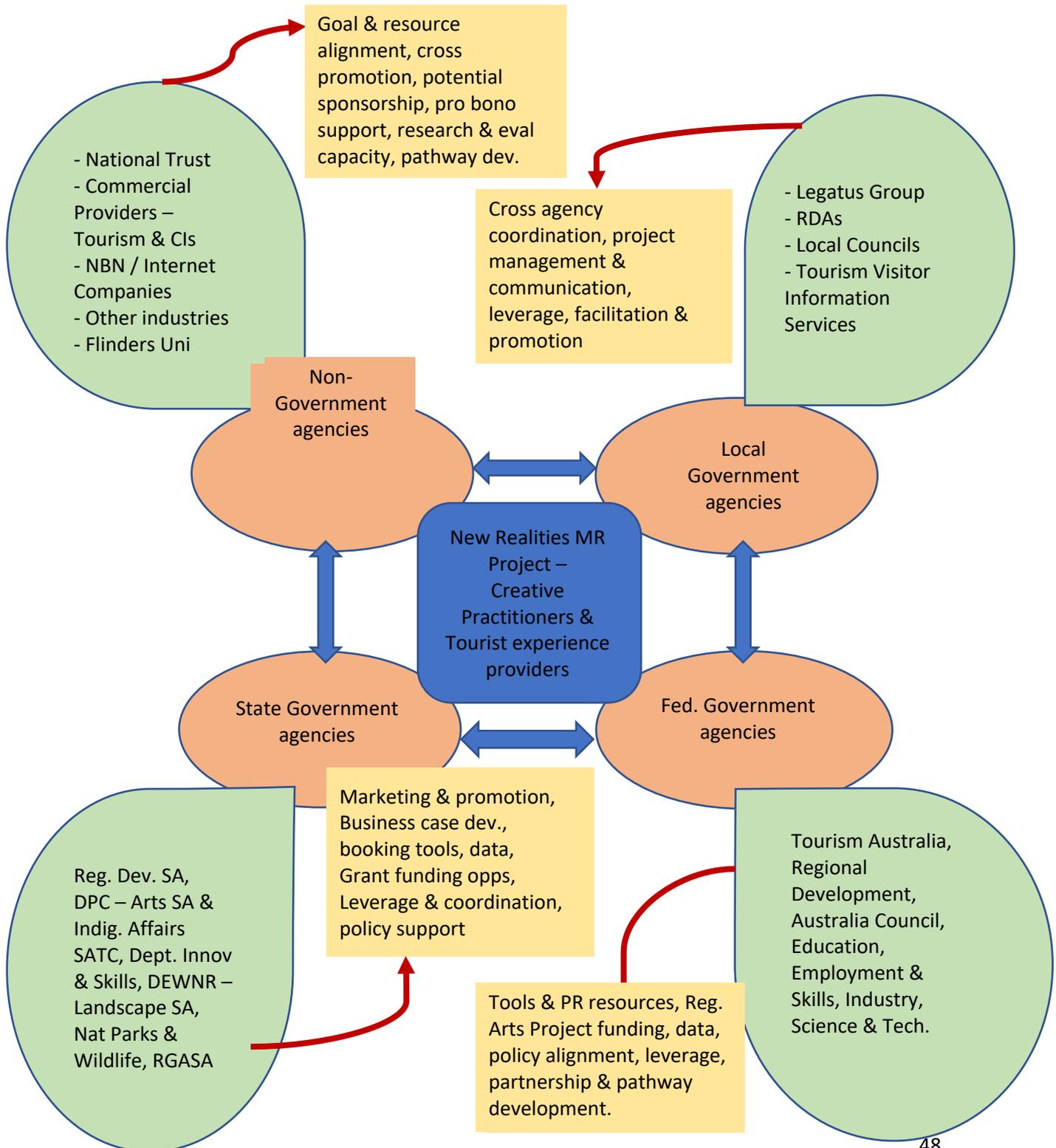
Similarly, an interactive documentary approach should be considered for the natural and Indigenous heritage sites, starting with the Dhilba Guuranda. With a Visitor Centre and walking trails planned around storylines and traditional custodianship of the park, this approach once proven could be applied to the Remarkable Flinders Ranges development as well as future planning for the Adelaide International Bird Sanctuary. This project could also develop to encompass other similar activity-based experiences in the regions, such as Walk the Yorke and coastal management projects in development with the Landscape Board.

A major sound and light projection at a locality such as the Burra Mine site is also worth considering, given the success of touring projection shows and the longevity of the sound and light shows at Victoria's Sovereign Hill. A new major attraction could first be tested as a special ticketed event to tie into a local festival or project launch in the region, with a long-term view of establishing a regular (perhaps monthly or weekly) performance to maximise engagement with seasonal travellers and weekend visitors from across the state.

These recommendations make the most of existing technologies and potential partners pursuing similar goals to bring just some of the valuable and significant stories offered by these regions to tourists. Pursuing one or all of these recommendations would provide the opportunity to showcase the richness of local stories as well as provide regional creative practitioners the opportunity to develop networks and do their best for the people who matter most: their own local communities.

New Realities Stakeholder & Support Map

This diagram presents the layers of government (orange), relevant agencies and other stakeholders (green), and the range of support options available (yellow) should this project proceed to the next stage of development and funding. The blue arrows indicate the need for active and unified communication and project coordination.



Ownership and oversight

Local councils would need to play an active role in the development, production, roll-out, ongoing management and evaluation of projects that may result from this research. Fulfilling these elements requires development and oversight of the initial project and ongoing marketing and management of the final experience or product. Such oversight would be the responsibility of a lead agency with the capacity to both identify current issues and respond appropriately to ensure visitor acceptance, experience and the trust it creates. Local Councils are positioned to fulfil these responsibilities which align with the functions they provide as part of the delivery of Visitor Information Services. As the Legatus Group Tourism Visitor Information Services project demonstrates, there are a number of private operators and state government agencies also engaged within the regions and overlap in terms of the delivery of online or in-person information services to visitors. This could be both a blessing and a challenge, regarding both council and political boundaries as well as maintaining current information for visitors. As suggested in this previous Legatus Group VIS report, a blended approach is required to market and maintain any experiences developed for tourism by creative industries practitioners through the type of AR/VR/MR projects described herein.

With facilitation and advocacy support from the Legatus Group, local councils are a logical choice to auspice these projects as they offer a range of skills and capabilities on which their success depends:

- Local knowledge and networks – the local council groups are best placed to link in with relevant community groups, private sector operators, creative practitioners and organisations to generate local interest, input and ownership essential to their success.
- Infrastructure and authority – local councils can advise and shepherd projects and practitioners through any legal, permit or planning processes such projects may require. This advice and insight would be invaluable for problem-solving, administrative compliance and skills transfer.
- Existing & potential partners – the National Trust have enthused about the quality relationships they already have in place with local councils involved with the first stage of the Silver 2 Sea Way project. Through engagement with councils, such partnerships have the potential to develop into successive projects, with the development of trust, consolidated working relationships and maximisation of resources.
- Continuity – with a large number of volunteers providing visitor services and experiences, it is essential that there is a significant body of paid, trained and employed professionals maintaining and delivering visitor experiences. The local councils offer just such an active presence within local communities on an ongoing basis, rather than relying on a passionate

and informed, though often mercurial, volunteer workforce. This builds in-house ‘corporate’ knowledge of the projects, related partners and the creative practitioners involved. Council ownership also ensures the essential communications channel between the projects on the ground, the Legatus Group and state agencies.

Next Steps

Consult

The representatives from State Government consulted for this research all expressed interest in the findings and offered their support for business case planning and funding proposals that may follow. Legatus is well positioned to act as a facilitator with State Government agencies to ensure a uniform understanding across each region of support opportunities and as a single point of contact between the agencies and project developers.

Any funding proposal should be aligned with policy priorities of the Department of Innovation and Skills, the South Australian Tourism Commission, Landscapes SA and Arts SA through the Department of Premier and Cabinet⁷⁴ to ensure the greatest chance of success. The manner in which projects have been discussed herein was guided by these policy synergies.

Other stakeholders to consider include the National Trust of South Australia as a recognised leader in the preservation and celebration of the state’s renowned heritage sites across the regions. The Indigenous associations of each region are key to delivering an authentic and rich experience within this growing sector of the tourism market. The Ngadjuri, Nukunu, Narungga, Kurna, Adnyamathanha and the Peramangk peoples must be involved in the development of projects within the regions to ensure all appropriate protocols, voices and story custodians are included in any consultation regarding traditional content. The benefits of incorporating Indigenous voices extend across communities and recognises their ongoing contribution to the creative, cultural and educational traditions of South Australia.

Action: Once approved by the Legatus Board, share this report with State Government and other agencies consulted and confirm the intention to pursue funding opportunities to develop projects in line with the recommendations. Incorporate feedback and follow up opportunities or suggestions for support.

Agent: Legatus CEO in consultation with Regional Development Authorities.

⁷⁴ Arts SA and Department of Premier and Cabinet were not consulted as part of this research, however the researcher is familiar with the current policy priority areas, namely jobs and opportunities for artists in the regions.

Confirm content

Secure local government support for the development of working groups in each region to identify the sites, stories and scale of projects. Such a group must be the appropriate owners or custodians of the regions' most iconic and representative stories, be they derived from Indigenous cultural traditions, colonial history, industry, science or agriculture. These working groups should include (and not be limited to) traditional owners, representative/s from the National Trust, Heritage group researchers, local archivists, long-term volunteers and tourist information representatives. As the literature attests, the content must be derived from the community and drive the choice of the media or technology that will make it available. This preliminary stage will rely on the regional knowledge and local networks established by the Legatus Regional Creatives Facilitator and the database of creative industries practitioners developed by Dr Verity Laughton.

Action: Identify the initial group to be brought together to develop a shortlist of stories most relevant and representative of the regions, under the auspices of the Legatus Group. Develop terms of reference, project roles, structure and schedule. Ensure these align with policy goals and priorities of key government agencies, such as SATC, DIS, DPC, and DEWNR.

Agent: Regional Creatives Facilitator, Legatus Group, Local Council.

Activate

Collaboration will be the key. Bring together the content owners with creative practitioners, commercial providers, and Education Hub coordinators listed on the creative industries database developed by Verity Laughton. Explore the creative storytelling potential using AR/VR & MR frameworks, drawing on expertise available in the regions as well as the potential of drawing in practitioners from Adelaide, to share knowledge and explore the partnership potential. Design suitable narrative structures to appeal to the community and visitors, engaging local practitioners and audiences to identify the most appropriate media to test the interpretive and entertainment value. Confirm the experience meets the goals and objectives of the content/IP owner. Troubleshoot any challenges to do with mobile coverage and physical site access, identify suitable technologies and platforms within and beyond the regions and gather information to inform realistic budgets.

Action: Confirm the story or the stories to be supported for development, ensuring the technology supports the original purpose and intent of the content/IP owner and identify potential project partners.

Agent: Regional Creatives Facilitator, Legatus Group, Local Council.

Apply

With the support of local and state government agencies, and the evidence of community support the first three steps would provide, the Legatus Group is well positioned to apply for State and Federal Government support through the Building Better Futures Fund and other opportunities that will be made available in the coming months. The projects, once confirmed and in development, will inform the most appropriate avenues for funding and support. Other opportunities the projects will predicate would be through the commercial and philanthropic sectors, such as the AMP tomorrow Fund. Consultation with partners and providers consulted for this research will be helpful in starting the conversations and others will become apparent as part of the project development stage.

Action: Confirm project participants and develop a production plan. Follow up advice provided by government stakeholders and identify relevant funding rounds to target. Contact program officers to note their guidelines and steer the project/s goals and intent to align with these as part of the confirmation process. Consult with other project stakeholders and confirm if partnerships applications would enhance the chances of success. Confirm their participation in writing and develop a schedule of funding rounds.

Agent: Regional Creatives Facilitator, Legatus Group, RDAs, Local Councils.

Evaluate

The gap in the academic research this report has identified concerning the impact of AR/VR experiences within the tourism sector is an opportunity for the Legatus Group to continue its relationship with a research institution such as Flinders University. This relationship offers benefits for both institutions and builds on the collaboration already impacting in the regions. There are a number of alignments evident throughout this research project between the goals of the Legatus Group and those of Flinders University concerning the role and impact of the creative industries within the regions as well as the need for pathways development for young people and the evaluation for any projects that may develop as a result of this research. A first step would be the development of a set of best practice guidelines gathered as part of this research to support the initiation of AR/VR projects on the regions. This would incorporate evaluation strategies to monitor the range of impacts such projects would have on the tourism sector as well as the economic and social well-being of the communities involved and the resilience of the cultural ecology of the regions.

Action: Participate in workshops and conferences concerning the development of creative industries opportunities in the regions, develop a proposal for an evaluation framework in line with academic and practice-based approaches that will support the success of Legatus AR/VR projects. Confirm in

kind support that may be available through the Flinders University College of Humanities Arts and Sciences, Creative Industries and Tourism streams, that could support the development and production of AR/VR/MR projects.

Agents: CEO Legatus Group – Dan Thorsland; Flinders University – Dr Tully Barnett.

References and further reading

- Adjei, P 2020, 'Working ethically with Indigenous cultural and intellectual property: Australia launches new protocols', *World Intellectual Property Organization Magazine*, accessed 8 February 2021, https://www.wipo.int/wipo_magazine/en/2020/04/article_0006.html
- Australia Council for the Arts 2020, *Domestic Arts Tourism: Connecting the Country*, Australia Council for the Arts, Australian Government, accessed 12 February 2021, <https://www.australiacouncil.gov.au/research/domestic-arts-tourism-connecting-the-country/>
- Ballantyne, M 2018, 'Valuing out Heritage', *Heritage Living*, Summer, pp. 15-23.
- Blue, G 2016, 'Public Attunement with More-than-Human Others: Witnessing the Life and Death of Bear 71', *GeoHumanities*, vol. 2, no.1, pp. 42-57, DOI: 10.1080/2373566X.2016.1166976
- Bynum Boley, B, Strzelecka, M & Watson, 2018, 'A Place distinctiveness, psychological empowerment, and support for tourism', *Annals of Tourism Research*, Vol. 70, pp. 137-139, <https://doi.org/10.1016/j.annals.2017.12.010>
- Carroll, MC & Stanfield, JR 2001, 'Sustainable Regional Economic Development', *Journal of Economic Issues*, vol. 35, no. 2, pp. 469-476, DOI: 10.1080/00213624.2001.11506381
- Champion, EM 2019, 'Virtual reality adds to tourism through touch, smell and real people's experiences', *The Conversation*, accessed 9 February 2021, <https://theconversation.com/virtual-reality-adds-to-tourism-through-touch-smell-and-real-peoples-experiences-101528>
- Chiao, H, Cien, Y & Huang, W 2018, 'Examining the usability of an online virtual tour-guiding platform for cultural tourism education', *Journal of Hospitality, Leisure, Sport and Tourism Education*, vol. 23, pp. 29-38.
- Christofi, M et al. 2018, 'A tour of the archaeological site of Choirokoitia using virtual reality: a learning performance and interest generation assessment', *Digital Cultural Heritage*, LNCS 10754, pp. 208-217, https://doi.org/10.1077/978-3-319-75789-6_15
- Chung, N et al. 2019, 'The Influence of Technology Readiness on Satisfaction and Destination Loyalty toward Augmented Reality Technologies', *Pacific Asia Conference on Information Systems 2019 Proceedings*, 36, <https://aisel.aisnet.org/pacis2019/36>
- Curtis, T 2013, *More Than Pictures on Walls: Regional Galleries SA Mapping Project Report*, Regional Galleries Association of South Australia Inc.
- Cornish Mining World Heritage, The Cornwall and West Devon Mining Landscapes World Heritage Site Management Plan 2020-2025, https://www.cornwall.gov.uk/media/43883005/whs_dmp_section-6b.pdf
- Department for Innovation and Skills, 2019, *Creative Industries: Discussion Paper*, Government of South Australia, <https://innovationandskills.sa.gov.au/upload/creativeindustries/DIS-Creative-Industries-Discussion%20Paper.pdf?t=1579664133156>
- Department for Innovation and Skills, 2020, *Hi-Tech: Sector Plan 2030*, Government of South Australia, <https://innovationandskills.sa.gov.au/upload/innovation/HI-TECH%20Sector%20Plan%20Doc%20201020%20DIGITAL.pdf?t=1613283930640>

- Department for Trade, Tourism and Investment, 2018, *South Australian Regional Tourism Strategy: Realising the potential of the regional visitor economy by 2020*, Government of South Australia.
- Department of Premier and Cabinet, 2018, South Australian Government Aboriginal Affairs Action Plan, Government of South Australia, accessed 8 February 2021, https://www.dpc.sa.gov.au/data/assets/pdf_file/0005/42809/Aboriginal-Affairs-Action-Plan-2019-20.pdf
- Djurasevic, S 2014, 'Thematic tourism as an important segment in the business of modern tour operators', *Turisticko Poslovanje*, pp. 109-117.
- Duncan J & Duncan N 1988, '(Re)Reading the Landscape', *Environment and Planning D: Society and Space*, no. 6, vol. 2, pp. 117-126. DOI:10.1068/d060117
- Fiore, A et al. 2014, 'Augmented Reality for Allowing Time Navigation in Cultural Tourism Experiences: A Case Study', in De Paolis L & Mongelli A (eds) *Augmented and Virtual Reality. AVR 2014. Lecture Notes in Computer Science*, vol. 8853, https://doi.org/10.1007/978-3-319-13969-2_22
- Gajdošik, T 2020, 'Smart tourists as a profiling market segment: Implications for DMOs', *Tourism Economics*, vol. 26, no. 6, pp. 1042-1-62, <https://doi.org/10.1177/1354816619844368>
- Giles, E et al. 2013, 'The role of local perceptions in the marketing of rural areas', *Journal of Destination Marketing and Management*, vol. 2, pp. 4-13.
- Gordon, M 2019, *Final Report: Legatus Digital Maturity Index*, Legatus Group, <https://legatus.sa.gov.au/wp-content/uploads/2019/05/Legatus-Digital-Maturity-Index-Final-Report.pdf>
- Grybowski, T & Gherashe, G 2019, *The Arts Review for South Australia: consultants' report*, Government of South Australia.
- Guttentag, D 2010, 'Virtual Reality: Application and implications for tourism', *Tourism Management*, vol. 31, pp. 637-651.
- Hammady, R, Minhua, M, & Temple, N 2016, 'Augmented Reality and Gamification in Heritage Museums', in Marsh, T et al. (eds) *Serious Games. Lecture Notes in Computer Science*, vol 9894. https://doi.org/10.1007/978-3-319-45841-0_17
- Hill, J, Curtin, S & Gough, G 2014, 'Understanding tourist encounters with nature: a thematic framework', *Tourism Geographies: An international journal of Tourism Space, Place and environment*, vol. 16, no. 1, pp. 68-87, <https://doi.org/10.1080/14616688.2013.851265>
- Huxley, A 1925, *Along the Road: notes and essays of a tourist*, Chatto & Windus, London.
- ImmersionVR, 2017, 'VR for Tourism', <https://immersionvr.co.uk/about-360vr/vr-for-tourism/> accessed 23 September 2020.
- Johnston, G & Menz 2019, *An independent review of the evidence under-pinning the rewilding of Southern Yorke Peninsula*, Government of South Australia.
- Juho, P, Raija, K & Annina, R 2015, 'Typology of senior travellers as users of tourism information technology', *Information Technology & Tourism*, vol. 15, no. 3, pp. 233-252.
- Jung, T et al. 2015, 'The determinants of recommendations to use augmented reality technologies: The case of a Korean theme park', *Tourism Management*, vol. 39, pp. 75-86.

- Kang, M & Gretzel, U 2012 'Effects of Podcast Tours on Tourist Experiences in a National Park', *Tourism Management*, vol. 33, no. 2, pp. 440-55.
- Kim, N 2018, 'Testing a new reality for museum VR', Smithsonian Magazine online, accessed 10 February 2012, <https://www.smithsonianmag.com/blogs/smithsonian-american-art-museum/2018/12/11/testing-new-reality-museum-vr/>
- Kounavis, C et al. 2012, 'Enhancing the tourism experience through mobile augmented reality: Challenges and prospects', *International Journal of Engineering Business Management*, vol. 4, no. 10, pp. 1-6, <https://doi.org/10.5772/51644>
- Laughton, V 2020, *Creative Industries in the Legatus Region: Internship report*, Flinders University, Legatus Group.
- Lew, A 2017, 'Tourism planning and place making: place-making or placemaking?', *Tourism Geographies: An International Journal of Tourism Space, Place and Environment*, vol. 19, no. 3, pp. 448-466, <https://doi.org/10.1080/14616688.2017.1282007>
- March, R & Wilkinson, I 2009, 'Conceptual tools for evaluation tourism partnerships', *Tourism Management*, vol. 20, pp. 455-462.
- Markusen, S 2007, 'Targeting occupations in regional and community economic development', *Journal of American Planning Association*, vol. 70, no. 3, pp. 253-268, <https://doi.org/10.1080/01944360408976377>
- Martins, J et al. 2017, 'A Multisensory Virtual Experience Model for Thematic Tourism: A Port Wine Tourism Application Proposal', *Journal of Destination Marketing & Management*, vol. 6, no. 2, pp. 103-09, accessed 10 January 2021, <https://doi.org/10.1016/j.jdmm.2017.02.002>
- Meier, A 2017, 'An App Tells the Overlooked History of the Largest Slave Port in the Americas', Hyperallergic online, accessed 3 November 2020, <https://hyperallergic.com/397650/the-museum-of-yesterday-app/>
- Meyrick, J, Phiddian, R, Barnett, T 2018, *What matters?: talking value in Australian culture*, Monash University Press.
- Morgan, J 2014, 'A Simple Explanation of the Internet of Things', Forbes Magazine Online, Accessed 24 February 2021, <https://www.forbes.com/sites/jacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-understand/?sh=57ed74d51d09>
- Nagy, K 2012, 'Heritage tourism, thematic routes and possibilities for innovation', *Club of Economics in Miskolc*, vol. 8, no. 1, pp. 46-53, https://www.researchgate.net/publication/235753224_Heritage_Tourism_Thematic_Routes_and_Possibilities_for_Innovation
- National Trust (Australia), June 2018, *Next Steps: Australian Heritage Tourism Directions Paper*.
- National Trust (South Australia), July 2020, *The Silver 2 Sea Way Stage 1: Port Pirie to Peterborough Paper*.
- Navío-Marco, J et al. 2018, 'Progress in Information Technology and Tourism Management: 30 Years on and 20 Years after the Internet - Revisiting Buhalis & Law's Landmark Study about ETourism', *Tourism Management*, vol. 69, pp. 460-70, DOI : [10.1016/j.tourman.2018.06.002](https://doi.org/10.1016/j.tourman.2018.06.002)

- Perkins, R et al. 2020, 'Understanding the contribution of stakeholder collaboration towards regional destination branding: a systematic narrative literature review', *Journal of Hospitality and Tourism Management*, vol. 43, pp. 250-258.
- Pittock, M 2018, *The Scottish Heritage Partnership: Immersive experiences, Policy Report*, University of Glasgow, https://www.gla.ac.uk/media/Media_640683_smxx.pdf
- Prezenta, A, Del Chiappa, G & Sheehan L 2013, 'Residents' engagement and local tourism governance in maturing beach destinations: evidence from an Italian case study', *Journal of Destination Marketing & Management*, vol. 2, pp. 22-30.
- Rapprich, V, Lisec, M et al., 2017 'Application of Modern Technologies in Popularization of the Czech Volcanic Geoheritage', *Geoheritage* vol. 9, pp. 413–420, <https://doi.org/10.1007/s12371-016-0208-x>
- Ram, Y, Björk, P, Weidenfeld, A 2016, 'Authenticity and place attachment of major visitor attractions', *Tourism Management*, vol. 52, pp. 110-122, <https://doi.org/10.1016/j.tourman.2015.06.010>.
- Recupero, A et al. 2019, 'Bridging Museum Mission to Visitors' experience: activity, meanings, interactions, technology', *Frontiers in Psychology*, vol. 10, <https://doi.org/10.3389/fpsyg.2019.02092>
- Regional Development Australia and partners, 2018, *Regional Roadmap 2018-2028: Engineering Growth in the Yorke and Mid North*.
- Rehmet, J & Dinnie, K 2013 'Citizen brand ambassadors: Motivations and perceived effects', *Journal of Destination Marketing & Management*, vol. 2, no. 1, pp. 31-38, <https://doi.org/10.1016/j.jdmm.2013.02.001>
- Rogers, S 2020, 'How virtual reality could help the travel & tourism industry in the aftermath of the coronavirus outbreak', *Forbes Magazine*, March ed., accessed 23 September 2020, <https://www.forbes.com/sites/solrogers/2020/03/18/virtual-reality-and-tourism-whats-already-happening-is-it-the-future/?sh=48e068fe28a6>
- Schaffer, V et al. 2018 'VR Technology gives new meaning to "holidaying at home". But is it really a substitute for travel?', *The Conversation*, accessed 11 January 2021, <https://theconversation.com/vr-technology-gives-new-meaning-to-holidaying-at-home-but-is-it-really-a-substitute-for-travel-101258>
- South Australian Tourism Commission, 2019, *The South Australian Visitor Economy Sector Plan 2030*, Government of South Australia, accessed 18 January 2021, <https://tourism.sa.gov.au/strategies/strategies/tourism-plan-2030>
- South Australian Tourism Commission, 2020, *The value of Regional Tourism to South Australia 2019*, Government of South Australia, accessed 18 January 2021, https://tourism.sa.gov.au/media/jstovreu/satc_corporate-affairs_research-and-insights_the-value-of-tourism_june-2020_regional-sa.pdf
- South Australian Tourism Commission, The Value of Regional Tourism, regional statistics for Barossa, Flinders Ranges and Outback, Yorke Peninsula, Government of South Australia, accessed 18 January 2021, <https://tourism.sa.gov.au/insights/regional-statistics>
- Staiff, R 2003, 'Cultural and heritage tourism: whose agenda?' *Journal of Hospitality and Tourism Management*, vol. 10, no. 2, *Gale Academic OneFile*, accessed 11 February 2021, <https://link.gale.com/apps/doc/A108277268/AONE?u=flinders&sid=AONE&xid=6bb19b4c>.

- Szando, A 2021, 'What is the future of museums? 7 Predictions', Artnet online, accessed 10 February 2021, <https://news.artnet.com/art-world/future-of-museums-andras-szanto-1934142>
- Tabone, W 2020, 'The effectiveness of an augmented reality guiding system in an art museum', in Seychell, D & Dingli, A (eds.), *Rediscovering Heritage Through Technology: Studies in Computational Intelligence*, vol. 859, https://doi.org/10.1007.978-3-030-36107-5_10
- Tom Dieck, M. C. & Jung, T 2019, *Augmented Reality and Virtual Reality* (Progress in IS). Cham: Springer International Publishing AG.
- Tussyadiah, I et al., 2018, 'Embodiment of wearable augmented reality technology in tourism experiences', *Journal of Travel Research*, vol. 57, no. 5, pp597-611.
- Tussyadiah, I et al., 2017, 'Virtual reality, presence, and attitude change: Empirical evidence from tourism', *Tourism Management*, vol. 66, pp. 140-154.
- Van Krevelen D & Poelman, R 2010, 'A survey of augmented reality technologies, applications and limitations', *The International Journal of Virtual Reality*, vol. 9, no. 2, pp. 1-20, DOI: [10.20870/IJVR.2010.9.2.2767](https://doi.org/10.20870/IJVR.2010.9.2.2767)
- Williams, M & Yao, K & Nurse, J (2020). 'ToARist: Developing an Augmented Reality Tourism App through User-Centred Design (Extended Version)' *Proceedings of British HCI 2017 – Digital Make Believe*, https://www.researchgate.net/publication/338935124_Developing_an_Augmented_Reality_Tourism_App_through_User-Centred_Design_Extended_Version
- Yung, R & Khoo-Lattimore, C 2019, 'New realities: a systematic literature review on virtual reality and augmented reality in tourism research', *Current Issues in Tourism*, vol. 22, no. 17, pp. 2056–2081, <https://doi.org/10.1080/13683500.2017.1417359>