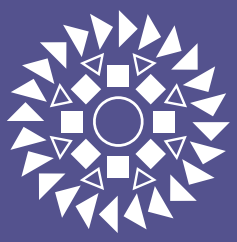
FRAMING IMMERSION

Stories from an emerging market



SOUTH WEST CREATIVE TECHNOLOGY NETWORK

FRAMING IMMERSION

Framing Immersion is a collection of personal testimonies on the evolution of an emerging market – an exploration of the challenges and opportunities in creating immersive experiences in a landscape where all parts of the value chain are still evolving at speed, whether production, distribution, audience engagement, business models or even the fundamental grammar of the form.

Commissioned by the South West Creative Technology Network (SWCTN), the report is derived from a series of conversations with content producers, including SWCTN fellows, across multiple disciplines, exploring their journeys towards experimentation with immersive technologies, and the value that these new platforms and possibilities deliver.

The intention is to capture insight from those who are actually the architects of the new market; experiences and opinions on how the potential of immersion might be fully realised in new products and content; and a roadmap on innovation combining creative development and digital technology which might help inform future strategic growth.

FORMAT

The case studies are in effect dispatches from the frontline of a rapidly developing field of innovation. They pick up themes of trust, community, standardisation (or lack of) and the challenge of balancing experimentation with economic sustainability.

The stories have been grouped under three headings which represent emergent forms of value, the underlying animating context for the exploration of immersive technologies:

VISUAL	The capacity for immersive technologies to reveal things you could not see previously, and the implications of that function
COMMERCIAL	The viability of generating an underpinning business model, and the challenges of balancing growth, scale and innovation
IMPACT	The opportunity for immersion to achieve affective impact, how relationships with audiences are being changed by new modes of interaction

It is worth noting that in all of the conversations, regardless of output or disciplines, there are a series of clear crosscutting principles:

Values and skills
The participants are very broad in their range of expertise but are all comfortable with risk and development with an uncertain end point - their creative curiosity drives a willingness to experiment.

Possible vs vision
For all, the limitations of the technology (and/or available budget) forces compromises, but they regard this as part of the territory of trying to push innovation towards an end goal.

Technology and impact
The producers are not driven by technology for technology's sake, they don't regard immersion as a delivery platform ("not VR") but a set of principles and the combination of appropriate tools seeking to achieve a specific impact.

What is also most striking is that despite many evident barriers, all are convinced and excited by the creative opportunities – they all believe in the future potential of immersive technologies, even though they can only realise a small part of their imagined ideal at present.

THINKBOX

Thinkbox is a collection of short reflections from our research team that respond to the evolution of this emerging market. Scattered throughout the publication, these stand alone pieces invite us to consider immersion from a range of different perspectives.

SOUTH WEST CREATIVE TECHNOLOGY NETWORK

The South West Creative Technology Network is a £6.5 million project to expand the use of creative technologies across the south west of England. Funded by Research England, the Network is led by the University of the West of England (UWE Bristol), in partnership with Watershed in Bristol, Kaleider in Exeter, Bath Spa University, the University of Plymouth and Falmouth University. The network is offering three one-year funded programmes around the themes of Immersion, Automation and Data.

The project is developing a new, networked model of Knowledge Exchange for creative technology innovation. It does this by harnessing the expertise in creative technology research across the south west region to deliver a series of interdisciplinary R&D programmes that grow the capabilities and connections between the participating universities and industry partners.

The collaboration invests in interdisciplinary R&D fellowships and prototype production across industrial challenge areas. Our focus on creative technology brings together arts, design, computer sciences, engineering and business development to deliver new products and services.

As a partnership we are excited about innovative uses of technologies that engage users in hybrid experiences that are ethical, promote wellbeing, connect us to one another and create value. The network is rooted in the creative industries but aims to make connections into other sectors. We will build creative capacity, generate shared knowledge and maximise potential for specific commercial impact.

WE ARE ALL ALREADY IMMERSIVE

Immersion is a slippery process. Right now it's one of those creative ideas that means different things to everyone. And that's great, because it's a space full of possibility. Its instability affords a utopian moment of potential. Trying to 'frame' immersion at this time is trying to capture a moving wave with many elements actively surging forward. And 'framing' as a photographic and cinematic metaphor is entirely inadequate to convey the promise of 360 degree multi-sensory immersion.

Currently, we can see two strands at work in the buzz about immersion. One is about a complete whole-body experience of being surrounded by content in, for instance, immersive theatre, art installations, and dance floors; the other where these kinds of wraparound sensory experiences are industrially re-constituted through various forms of technology – notably virtual reality, but also augmented and mixed realities. The design principle for the South West Creative Technology Network Immersion R&D theme has been that the industrial and creative development of the newly emergent platforms will be driven by talent with expertise in existing forms of immersion. We wanted to know how storytellers, theatre, film makers and artists might work with technologists to keep the field of immersion open and fresh; not stuck forever into a sweaty box attached to the front of your head.

From prehistoric cave art to gothic cathedrals, grand opera and classical cinema, humans are clearly drawn to immersive experiences in which our whole bodies and senses are enveloped in creative content. Ever since the 'Happenings' of the '60s, right through the history of rock and then dance music, the most enduring, popular, and productive form of immersive cultural experience has been the dance floor. This continuing practice of ritualised immersion in specially adapted environments has been accompanied, of late, by the development of cultural forms based on a hunger for experience, not screen-based interaction. So we see the growing popularity of large-scale art installations, like those of Yayoi Kasuma or James Turrel. We've also seen the rise of so-called 'immersive theatre' in the UK, particularly with the success of companies like Punchdrunk and Secret Cinema breaking out of the proscenium arch and the projected screen, to make the audience the centre of the mise-en-scène.

This apparent hunger for 360 degree cultural experience is concurrent with the increased screen-based mediation of 'everyday mixed realities'. Many of us are already always 'somewhere else' through our informational and social screen interactions. All these current interests in XR technologies seem to take this long-standing interest in the experiential, immersive and environmental art forms, and to industrialise them in new ways. In the rear view mirror of XR (extended reality, encompassing AR, VR, and MR) we can see that we have long histories of wanting to be immersed in storyworlds. The idea of being 'lost in a book' is typical of the new forms of attention that grew with mass literacy, producing a different understanding of immersion. In this definition immersion is more akin to intense concentration produced in, for instance, computer game play; this is a form of attention much prized by content producers and advertisers trying to hold their permanently distracted audiences in one place.

Our apparent desire for immersive experience, the quest for immersive forms and attention and the drive to build technologies that deliver together create what we might call the chimera of immersion. An illusory state of being so alluring that it is attracting significant amounts of speculation and investment. Nobody knows where this energy will go. It may be that in fifty years time, today's VR & AR headsets have become the forerunners of some other form of immersive staging that makes them look like the zoetrope or praxinoscope - those Victorian optical devices that we now understand as the precursors of cinema. And just as the pioneers of cinema at the end of the 19th Century could not foresee Hollywood, we don't know where immersion will go. But when Cinema did get there in the 1920s, it sucked in every kind of creative talent, from the whole world, to create an industry. Writers, musicians, designers, technicians, performers, investors; it took them all to build what we know recognise as cinema.

So our immersion research fellowship deliberately set out to see how these histories and forms could be newly mobilised in the production of immersive experience. We believe that, at this time, creatives and artists from lots of different traditions need to gather at the place called 'immersive' to define the future. Storytellers, theatre people, game makers, technologists, a dancer, and even a granite sculptor came together to produce new ideas for works that could take immersive forms. We already know how to be immersive. We need the full range of creative disciplines to engage with the field to make the South West an engine for original, new immersive products and experiences.

Jon Dovey
Professor of Screen Media Digital Cultures Research Centre UWE, Project Director SWCTN

THINKBOX 1

(EXTRACT FROM) ‘NO VANTAGE POINT: REFLECTIONS, EXPERIMENTS AND PROVOCATIONS FOR DESIGNING IMMERSION’

Immersion might mean looking outwards, listening outwards
Immersion might mean there is no vantage point on a situation.

From outside this might be seen as a way to map the territory
But the process of mapping has historically often involved some violence
From inside I’m trying to think about common lands, and about common words
There is a linguistic theory we can’t talk about something we don’t have a word for
You can have it in your head but you can’t get a firm grasp of it.

I’m looking for languages that we can share,
Languages through which we can exchange ideas, approaches, tensions
I want to try unpacking this word immersion, which recently seems to have become a shorthand for specific forms of media and performance
Immersion as some kind of cultural signifier
Immersion as a noun, or as a verb
It feels that everyone is leaning towards the act of immersing as a kind of cocooning,
Immersive media as a thing that wraps around us.

I want to think a little about immersion as something that already exists, something we all live with all the time
Immersion as a way of describing how we exist deep inside complex entangled ecologies
Immersion meaning there is no vantage point
And around this word, beyond it, underneath it, even woven within it, maybe we’ll find an agenda of care, of attending to the environments we inhabit.

If we are going to think about new approaches to the creation of immersion
we have an opportunity to start afresh
where we might find presence
acknowledgment
accountability
accusation
exposure
exposition
explanation
care.

Duncan Speakman SWCTN Immersion fellow
Duncan Speakman (UK 1976) is a composer and sound artist based at the Pervasive Media Studio in Bristol. He creates narrative sound led experiences that engage audiences in uncontrolled public and private space. His current research is in the relationship between locative urban audio experiences and contemporary ecology, wrapping the questions in melancholy and romance.

VISUAL

the capacity for immersive technologies to reveal things you cannot see, and the implications of that function

Key headlines from our conversations with content producers

Immersive technologies afford an opportunity to “see” things which were previously abstract and therefore enable a step change in the understanding of complexity.

The unique ability of immersion to reveal new perspectives extends to personal, human connections, generating empathy and insight.

In designing immersion constrain the process to deliver a specific solution for specific problem, match to the core need rather than be tempted to expand functionality (even if that is possible).

The opportunity to capture and visualise data can create speed and efficiency in representation which translates to impact, whether modeling spatial awareness or seeking commercial value.

CASE STUDY 1

MARK ROBERTS MCLAREN AUTOMOTIVE

Mark Roberts is a McLaren veteran having joined the company in 1990 as one of the founding members of the McLaren F1 Design Team. In his current role as Head of Design Operations, Mark is responsible for key Design Studio deliverables across all vehicle programmes.

For Mark Roberts at McLaren Automotive the exploration of immersion was driven by pressure from the business – a requirement to "design faster", driving a challenge to find tools which enable increased efficiency whilst still maximising creativity.

McLaren's Track 25 strategy is to deliver 18 new cars by 2025 – not just new iterations of previous models but many completely new designs. As Head of Design Operations, Mark Roberts was therefore confronted with a clear requirement to explore step change improvements in an already fast production process.

The traditional McLaren design pipeline started with thumbnail 2D concepts which were then narrowed down, with 4 designers working to 40% scale model themes.

After sketching in 2D, weeks were then spent with teams translating the ideas into 3D, a critical transition phase which very quickly revealed the potential of the design ideas (for good and bad). But if the designer could go straight into 3D, then a much more efficient selection and design narrowing process could potentially take place.

VECTOR SUITE

The spark was Tilt Brush – a 3D VR drawing tool experienced by Mark as "interesting but with no real substance for design".

It raised the idea of whether you could make a similar tool but with real content and data points. Mark could find no existing product for designers in VR, and in fact no association between design and VR as a potential tool.

Having sketched the idea, Mark worked with a games specialist, Neil Johnston, to build his vision. McLaren were already using Unreal in the business for visualisation, so developing a dedicated tool in Unreal would match to current practice.

The resulting product is Vector Suite, a 3D volume model creation tool focused on drawing and sketching (but not a replacement for CAD).

McLaren designers believe you should be able to describe a car in three lines, three sweeps or curves. Key to this is that a natural curve is drawn quickly, the speed gives a "snap" or flick out of the line. And in a digital tool this needs only one or two control points to fine tune it, not hundreds to manipulate - there is a purity which must be retained.

Vector Suite allows the designer to then "walk around" that volume model, covering it with a rudimentary "surface" and then rotating to understand light / shade / volume / shape - for the designer to be "in the room" with the car they are designing.

ENGINEERING

This immersive process allows a fast track towards a single theme selection for the car design and the next stage of the process – full size clay models which get into the detail, incorporating a further 9 months of design, engineering and aerodynamic input.

Here the use of Vector Suite delivers another key additional benefit. There is a balance between designing to make the car beautiful and accommodating the clear "hard-points" of engineering e.g. Where are the radiators? How do the surfaces manage airflow over, under and through the car?

With Vector Suite, McLaren is able to input a skeleton (engine, suspension etc.) in order to ensure the design vision and engineering hard-points are aligned at a very early stage.

PRODUCT

Vector Suite is now a stand-alone business (owned by the developer Neil Johnston) and a standard tool across all McLaren designers, part of their basic desktop toolkit with virtual reality headsets.

Key to its usefulness is a deliberate constraint to stick to what it does really well. The brief was "simple intuitive volume sketch tool" with an end point vision that it should be evocative of pen and paper – low tech, something that anyone can pick up.

Vector Suite is a product of setting a hard target – how to deliver 18 cars very quickly? The driver was how to improve design processes in order to make that target achievable. And by employing a combination of immersive technologies, it delivers a key efficiency in creating a fast track to visualising a design in 3D, whilst simultaneously empowering the designer.

Photographs: McLaren

CASE STUDY 2

BEN DUNKS
SWCTN IMMERSION FELLOW

Ben Dunks is a performer, maker, teacher exploring everything to do with the creative and moving body. Through motion capture and accelerometry he is investigating the moving body in health and education settings.

Renaissance SWCTN Prototype is an immersive falls prevention programme, designed for vulnerable older people living in Sheltered Accommodation.

CAMERA is the Centre for the Analysis of Motion, Entertainment Research and Applications based at Bath University.

Immersion has afforded Ben Dunks an ability to validate 15 years of practice, to track fundamental value in a way not possible before by visualising complex movement data.

With a background in physical theatre and contemporary dance, Ben has more recently focused his experience on creative movement programmes in educational settings, with a concentration on inclusion. His work in schools, in particular with boys, has generated tangible impact – change happens, with a positive effect on the engagement and attainment of his participants across the rest of their school curriculum.

But whilst there appeared to be a correlation between complex movement and cognitive learning this impact was hard to measure, the outcomes too complicated or nuanced to identify a direct causation effect.

Ben could see the change but couldn't validate it, so he sought new models to capture data and draw a picture of the results.

Photograph: DuoDigital

TECH

Working in primary schools with accelerometers, Ben sought to understand and measure the dynamic between working memory and complex physical action. In a similar vein he bought the cheapest available motion capture suit (£1.5k) to try to extend the research, engaging young people with the movement of abstracted avatars rather images of themselves.

A step change in this research came through a chance meeting and the idea of working with a group of older women. These women, aged between 70 and 85, talked often about their fear of falling. In response Ben designed a targeted programme of movement which would improve balance, and mitigate the risk of falling, whilst simultaneously generating a clear measurement of positive change over time - using motion capture input to see and visualise that change.

Better measurement of the impact of his activity with the older women through the data captured is a fundamental step forward. And interestingly the women have embraced the principles of using technology because of the transparency of use and result.

PROTOTYPE

For his SWCTN prototype project Ben will extend the principles of this work to generate a more formalised and transferable model. Partnering with Bath University's CAMERA unit they will take 3 women from Ben's Plymouth participants through a creative movement programme in a full body motion capture environment.

The data captured will afford an ability to accurately measure change against the key fall prevention mechanics: three-dimensional multi-limb activity, time spent on a reduced base (balancing) and variation in levels of movement.

The end goal is to use the prototype process to design a manual to train non-specialists in the techniques and fundamentals of a movement plan, and to spread the benefits by licensing the resulting toolkit to housing associations across the country - accurately matched to audience, environment and need.

And that vision of risk reduction has real world outcomes. Ben is now working with Plymouth Community Homes and Sheltered Housing whose residents are those most vulnerable to falling - an acute problem in health terms, as a bad fall could result in the necessity to move to a care home environment.

With falls costing the NHS upwards of £2 billion per year, a validated and easily applied falls prevention programme for this audience will deliver both positive health outcomes and substantial savings. The application of immersive technologies to the problem, and ability to visualise the previously "unseeable", is key to delivering this innovation.

CASE STUDY 3

JANE GAUNTLETT SWCTN IMMERSION FELLOW

Jane Gauntlett is a SWCTN Immersion fellow exploring the impact of storytelling, shared experience and human connection. She works as a writer, director, producer and lecturer in interactive audio, interactive theatre, game, 360 film, VR, MR.

Jane Gauntlett's immersive work has a core central theme derived from a desire to deliver personal narratives and perspectives (both her own and others), not necessarily designing for empathy but more about generating a human connection; visualisations which provoke a different layer of thought and understanding.

In common with many of the SWCTN fellows, Jane's introduction to immersion was through theatre, specifically linked to Battersea Arts Centre and the experimentation of Shunt Vaults, Coney and Punchdrunk. Combined with a personal coping mechanism to deal with aphasia brought on by a brain injury in 2007 – pre-recording her own side of personal conversations and arguments – she created what became a series of works, "In My Shoes", as explorations of interactive story-telling and immersion.

Using a pair of donated Vuzix video goggles, and for a budget of around £50, Jane sought to recreate in vivid detail her experience of an epileptic seizure on a train from Oxford to London. The participant is given items to place them as "Jane", including her pen, bag and notebook, with other props creating the environment e.g. the smell of the train, the coolness of the window, the metallic taste of water.

Whilst quickly and cheaply made the work delivered huge impact, with its power specifically in showing a perspective which had not been seen before.

This piece has been widely shown, including in Parliament and at the UN, and is still touring now. Importantly it also reflected her personal view back into a medical environment, altering her therapeutic relationships to become more collaborative rather than consultant / patient.

A second linked In My Shoes project recreated her experience of an epileptic seizure in a restaurant. Much more about a social environment, rather than the physical environment of the train, this was in many ways an experiment in public interaction.

Again, the work has delivered impact at a global level, being experienced by more than 18,000 people, from pharmaceutical conferences to passing kids in a café in Sheffield during DocFest – who were moved by their own familial link to epilepsy.

Jane's current project, TrueLove, shifts the exploration of personal connection from factual to fictional; from facilitating and representing existing stories to an original creative process.

TrueLove is a dark comedy about the diversity of human interaction and the impact of technology on future relationships. The work uses story, touch, taste, smell, interactive theatre and Magic Leap mixed reality headsets. Participants become the protagonists exploring the dynamics of their personal connections, guided through a series of virtual environments, interactive visuals, directional audio and live performance.

Whilst working with the latest technology Jane's starting point remains with audio and experience. Having defined the narrative her next decision is which is the "best platform" to deliver, and if designing a VR or CGI project, being able to answer the question of "why use this format"?

As demonstrated by her work, Jane regards immersion as about audience experience - not a technology or delivery platform. Immersion is a human connection it is about total engagement and focus, creating insight, empathy and understanding through a personal relationship.

Photographs:
Jane Gauntlett, TrueLove

THINKBOX 2

INVITING CAPTAIN KIRK AND FLORENCE NIGHTINGALE TO TEA

Developing content for Augmented Reality (AR) is currently a challenge. Phone-based AR has little visual impact, while AR headsets are still mostly in a commercial beta phase and their gestural interfaces are far from intuitive. Nonetheless, the inherent fourth wall of screen-based media is being eroded, and AR is poised on the brink of a paradigm shift. Emergent forms of AR are therefore beginning to challenge definitions of immersion. Once AR occupies your full visual field (rather than a small window), and groups of people can interact with each other in Augmented real space, a host of different applications and opportunities become possible. AR offers a very different type of immersive experience to VR. Instead of being visually sealed off from the actual space you are in, AR places computer-generated objects, texts and sound within the immediate space you occupy. The transparent visor also means you can see other people, making it potentially a more fully social experience than VR. The potential for creating a different experiential texture of immersion is exciting.

Blending the virtual with the real in a perceptually seamless way has many interpretational applications. Museums might use AR headsets to bring to life their objects: a bottle dredged up from a wreck off the Cornish coast could then be seen as it once was placed on the table in the captain's cabin. A ghost story might take place in your own house: a ghostly figures drifts through your lounge asking you to solve the mystery of their death and put their soul to rest. Mapped overlaid images of cellular activity in plants might allow you to see how expiration works. A portrait of an 18th century landowner could be overlaid with a historical 'backstory', a slave coming forward out of the background of a painting to tell you their story.

The value of AR lies in locatedness: the technology constantly maps the space that the wearer is in, placing computer-generated imagery in perspective and in relation to the real objects in that space. This means Captain Kirk and Florence Nightingale can stand in your lounge with their arms resting on your mantelpiece.

The skills needed for AR design are those of the set designer and environmental storyteller, as well as those of scriptwriters, 3D modellers, animators and audio designers. While interfaces are still currently clumsy, it is nonetheless easy for designers to use. They can place digital objects, texts and textures in real space far more immediately and simply than VR – making the job of AR content design less technical than might be imagined. Alongside the ability to engage multiple people in a shared experience, AR tools offer artists and designers possibilities to transcend some of the rules of space and time. Used well, AR technology has the capacity to generate interpretational richness and depth. It will enable storytelling that goes under the surface to bring out hidden meanings and narratives.

Tanya Krzywinska
Professor of Digital Games at Falmouth University

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COMMERCIAL

the viability of generating an underpinning business model, and the challenges of balancing growth, scale and innovation

Key headlines from our conversations with content producers

Producers tend to approach immersion organically, excited by the possibilities and potential, and often driven to generate experiences through working with organisations with an appetite to explore digital.

Sustainable businesses need to be agile, generating production efficiencies to create margin in tight budgets and looking at IP development to create returning product revenues and move beyond a 100% service model.

Trust is a key factor in any client relationship. A demonstrable track record and delivery experience engenders trust in an experimental form where the project outcome is not guaranteed and the risk is high.

There is a core challenge in finding a business model in a fast moving environment and the dynamic balance between securing commercial revenues and pursuing creative experimentation is hard to achieve.

The immersive market is still in its early stages of evolution as hardware / software / processes improve and platforms become dominant forms – we are still learning the grammar and the applicable skills ("the 10,000 hours").

CASE STUDY 1

ROBIN MCNICHOLAS MARSHMALLOW LASER FEAST

Robin McNicholas is the Creative Director of Marshmallow Laser Feast, one of the world's leading immersive art collectives.

For Founder and Creative Director of the award winning creative studio Marshmallow Laser Feast, Robin McNicholas, the driver is future vision – where immersive tech might go rather than where it is now. The key is to be nimble and adaptable in building business fundamentals which enable the future creation of cutting edge experiences.

The emergence of MLF is very much about organic development. Building on their network from the arts and film worlds they have partnered with organisations looking to experiment with digital experiences which would allow them to adapt and attract new audiences.

IP

This dynamic of seeking impact and innovation, and in many ways pushing at the unknown, creates an obvious issue. The creation of IP assets in an emerging market requires significant investment and above all, belief. And whilst the UK is in a better position than many countries due to the availability of R&D catalyst funding, development in this space requires an ability to be adaptable on the journey from idea to fruition and to trust in the process. For MLF the producer's key role is to hold on to the vision and values whilst still being adaptable and able to compromise.

As an example, MLF's new project, Sweet Dreams, has had a two year development journey to achieve a vision of a multisensory dining experience.

Photograph: Marshmallow Laser Feast, Sweet dreams

Initially MLF secured Innovate UK R&D support to explore tracking deformable objects, to make VR more tactile. But subsequent British Film Institute involvement added a desire to explore the narrative elements of the idea in much greater detail – it became a multisensory story rather than just experience.

The prototype trailer was shown at Sundance in January 2019 as part of the New Frontier, with the aim of raising investment to generate a full 90 minute experience involving eating, drinking, VR and narrative. Sweet Dreams is envisaged as a ticketed experience – but it will be expensive and so needs to develop a coherent pricing and touring model.

Investment on this scale, however, generally requires a track record of demonstrable delivery backed up with hard business evidence. MLF has used its Ocean of Air VR installation at the Saatchi Gallery to try to capture this type of information – the learning analytics and data from audience interaction. And by definition the public demand which drove an extension from a planned 6 week run to a 6 month installation validates a vision of a scale audience for an immersive experience.

TOOLS

Another part of the MLF evolution is a goal to generate tools and assets which can be used in the future to make interactive 3D / immersive world production more efficient - and therefore profitable. The necessity to develop robust business models is a major challenge in a fast evolving space.

MLF uses internal finance and some external R&D funding to develop hardware and systems which can be adapted in development, making production more turnkey and more flexible (as an example, the Ocean of Air project build underpins the development of tech for new idea Sweet Dreams).

MLF is bootstrapped to drive this development, taking standard commercial direction jobs between their experiential installations in order to return the profit generated to the longer term strategy of immersive tools development.

MOVING TARGET

But this emerging immersive market place is in some senses a moving target. For, Robin the technology is still in its infancy, so the future creative possibilities always outweigh the immediately available production values ("still in the B&W TV stage").

In this environment there is a risk of competing dynamics – creating IP and tools to commercially exploit current projects versus the necessity to continuously expand content development and update process to match to new opportunities (for example 5G, new hardware, improved markerless capture and movement recognition etc).

Nevertheless MLF regard themselves as a "tenacious" group in "a very rich playground for ideas", and importantly, part of a wider collaborative community with a shared passion and interest in a better immersive future.

CASE STUDY 2

ANTHONY ROWE SQUIDSOUP SWCTN PROTOTYPE

Anthony Rowe is a media artist, designer and researcher. He founded digital arts group Squidsoup in 1997. As a SWCTN Immersion fellow he is investigating the idea of liminal materiality.

Squidsoup is a UK-based international group of artists, researchers, technologists and designers working with digital and interactive media experiences.

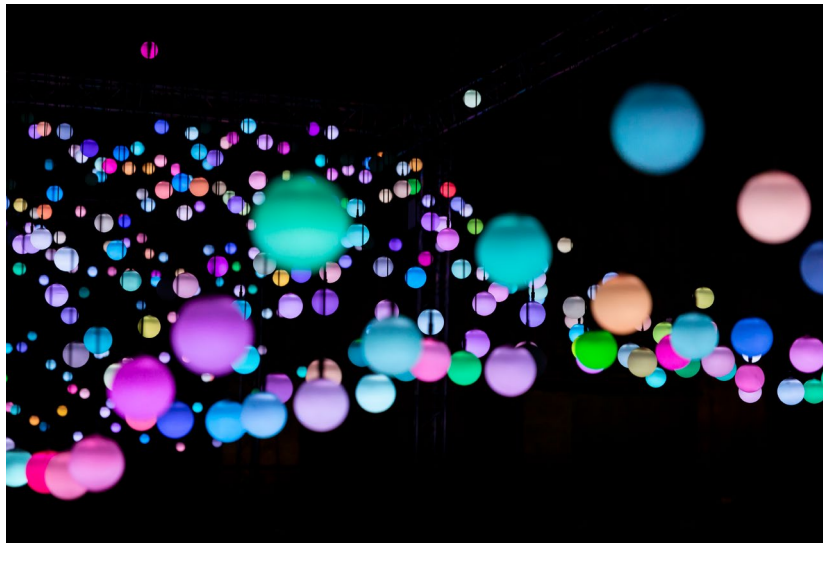
AudioWAVE SWCTN Prototype is a spatialised immersive audio system prototype that can be used in theatres, galleries and other social spaces.

For Anthony and Squidsoup the shift towards immersive was a conceptually deliberate jump away from the screen, a desire to create an affective experience rather than analytical.

Originally focused on digital arts and interaction design, Squidsoup became increasingly frustrated by the screen as a boundary or barrier between them and their audience – the "one finger interface".

Their vision was to create experiences which were more immediate and emotional – to feel, rather than analyse in real time. First experiments used 3D or large scale projection, but this merely indicated that they needed to make environments, not objects, to achieve the desired experience. And by definition this required a leap from virtual spaces to augmented physical spaces –, and therefore a move to an entirely different discipline, with a requirement for a very different set of skills.

In some senses this progression is indicative of Squidsoup's development of immersive environments over the past decade. Their model has been one of purposeful trial and error, an iterative process towards an end vision: – see what works, build on that experience, innovate the next step, repeat.



For Anthony this process is always limited by the available technology but the key is to minimise compromises, to find the practical implementation which makes the idea work as best it can whilst having a clear vision of the future goal.

MODEL

Core to Squidsoup's capacity to take this patient approach has been their ability to generate revenues from the prototype steps on the way.

First shown in 2013, the start point for Submergence was a desire to have a floating grid of light points in space – clearly impossible. The necessary compromise for wiring then became part of the installation, ultimately ending with a "product" which has been toured to over 50 locations worldwide.

Their next project, Wave (2018), displays this iterative approach in detail. Starting again from scratch the development process takes the tech as far as it can go in pursuit of the end vision, and then loops back.

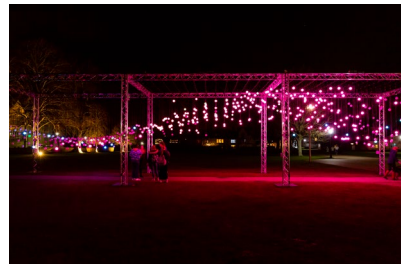
Wave progressed through at least three forms from its start point:

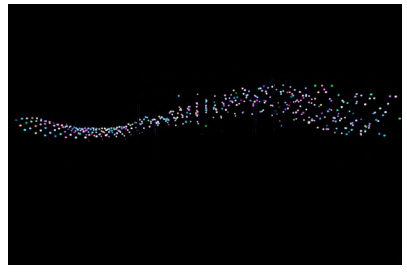
1. Light array (Field 2015)
2. Light and sound scape (Bloom 2016)
3. Light array, more sophisticated audio model and 3D form (Wave 2018)

Whilst they hadn't set out to make another tourable product, Wave has now been installed in five locations, including the Burning Man festival.

Continuing the iterative development format within their SWCTN prototype, Squidsoup is developing AudioWAVE, a flexible, easy-to-use spatialised immersive audio system for social spaces.

Anthony describes Squidsoup's focus as cutting edge exploration which then becomes mainstream over time - they are "motivated by discovery and challenge". Although money is not the primary driver, they have become more adept at managing the particular challenge of relentless innovation versus commercial sustainability finding revenue models which allow their iterative experimentation process to become purposeful product development rather than hopeful R&D.





Photographs:
Rikard Österlund, Wave

CASE STUDY 3

GREG FURBER REWIND

Greg Furber is the Senior Creative / XR Director of REWIND, a multi-award winning immersive content production studio with a passion for VR, AR, MR, and beyond.

REWIND's success derives in part from its ability to explore the balance between "hasn't been done before" and "can't be done" - an adaptability in delivering a vision and then crucially managing client expectation.

Brands and agencies are often early adopters of new technology-driven experience activity, requiring companies like Rewind to display core attributes of ambition, flexibility, pragmatism, and creative / technical curiosity.

The difficulty is to communicate that mix of ambition and pragmatism through to the end client - a dialogue between the client "ask" and REWIND's definition of the deliverable experience, whilst still retaining the "wow factor".

REWIND brings expertise in the creative execution and experience of delivery but also demonstrates a crucial understanding that the client requires specific outcomes – defined KPI's and activation impact. The team's track record both "buys trust" and also demonstrates an understanding of the key client values which need to underpin a project.

Photograph: REWIND, Home

Although Greg also adds another personal metric, "even if I hadn't made it, I would still be excited by it".

REWIND's recent work for mobile network Three is a good example. The start point was a desire to use a specific design and the Magic Leap headset to deliver an easy to describe, but hard to achieve experience - the "world's first 5G fashion show".

Given that a very limited number of people were able to be both in the audience and in a headset, the extended narrative was key – how to convey the excitement of the innovation at scale? The original experience was backed up with online content and a social media campaign, with these secondary outputs effectively generating the main impact drivers and marketing ROI for Three.

DIVERSIFYING REVENUES

In common with many content creation studios REWIND is exploring how to diversify revenues away from a dependence on external marketing budgets to developing its own commercial products – seeking returning revenues rather than remaining a 100% client service model.

The first of these products is called Salesdrive. It delivers real-time, customised VR presentations for the automotive industry. Whilst initially aimed at dealers, the use cases suggest much broader applications.

Even as one of the most visible immersive businesses, REWIND still encounters the difficulties of an emerging market. Whilst technology and production values are improving, the industry is still at an early stage in its evolution. There is a rolling understanding of what immersive actually means and REWIND, like everyone else, is still learning the "grammar" of the form – and that makes commercial success challenging, whether service or product based.

Photographs: REWIND, Hack Hostel

THINKBOX 3
FORGET THE BOOK

I recently took part in a two-day workshop on immersive theatre and storytelling where, during one of the group discussions, one of the workshop leaders mentioned 'the problem of the book'. Turns out the 'problem of the book' is that the book is a long-established immersive technology; the problem is that, as far as the book goes, there is no problem.

As my colleague, Ian Gadd stated in a recent lecture, The Ambient Book, 'Good reading forgets the book in the act of reading.' A reader can lose herself in a book in a way that few other art forms can achieve, apart from, perhaps, computer games; research has shown that reading engages the brain in ways that other art forms do not. As Prof Gadd went on to say, readers have a 'learned intimacy' as well as a 'haptic knowledge' of books; we begin to acquire this intimacy and knowledge as soon as someone reads to us, as soon as we learn to read ourselves. In other words, over the past several centuries, as printed books and, more recently, paperbacks have become more and more readily available, we have learned how to be immersed in a book to such a degree that the technology - the book itself – disappears. The book is not a technological barrier to our immersion in the story.

As we begin to inhabit and explore the virtual spaces and augmented layers of reality created by new storytelling technologies and platforms, we find ourselves having to learn, once again, how to be immersed. The uncomfortable VR headset, the AR goggles with their surprisingly narrow field of vision, the tech that makes you unsure of what to do with your body, the tech that prevents you from seeing other bodies in shared spaces – currently, these factors remain barriers to immersion. Although remarkable and beautiful works are now delivered via immersive technologies, the technology is still too cumbersome to forget, too clunky to be truly ambient. This is not to suggest that this won't happen sometime soon; again, it's likely to happen first in gaming.

We want stories that immerse us; we want stories that take us into other worlds, other lives. We'll get there, and we'll get there soon.

Kate Pullinger
Professor of Creative Writing and Digital Media, Director of the Centre for Cultural and Creative Industries at Bath Spa University

IMPACT

the opportunity for immersion to achieve affective impact, the relationship with an audience being changed by a new mode of interaction

Key headlines from our conversations with content producers

Immersion provides the potential for an entirely new dialogue with an audience, whether to an individual or as a group.

Immersive technology becomes part of an ever-evolving toolkit for content producers to extend the potential of the experience they are creating, to make affective and visceral.

The emerging nature of the technology allows producers to play with the form, and to experiment with the limits of the possible. In this they can seek to make audiences both comfortable and uncomfortable.

The impact of immersion, especially for new audiences, generates a requirement to manage the experience, both as a duty of care and as a responsibility to represent the potential of a new medium.

CASE STUDY 1

AMY ROSE ANAGRAM SWCTN PROTOTYPE

Amy Rose and **May Adballa** are the core of Anagram, a multi-award-winning female-led creative company, specialising in interactive storytelling and immersive experience design.

Realtime Stagemaker Toolkit SWCTN Prototype is a Unity plug-in which will enable a more streamlined production process for creating dynamic and nuanced narrative experiences.

Anagram has an ongoing interest in interactive storytelling and affecting how we understand the world. Their approach to immersive asks simply what does this technology offer? What can you do with it? What is VR apart from a 360 screen?

For Amy, and partner at Anagram, May Abdalla, the entry point to immersive technologies was effectively an evolution. Originally both filmmakers, Anagram is known for having a particular method of approaching narrative, focused conceptually on emotional impact and affecting how the audience understands the world around them.

Increasingly they were asked by other producers to act as consultants on immersive projects exploring the role of the participant and what they were being asked to "feel" or "do" within the experience.

As Amy was already thinking about principles based in theatre or interactive games, in her words "the creation of strange experiences", there appeared to be a natural extension for them to play with this emergent platform too.

Photograph: Anagram, Inside the Collider

IMMERSION AND ISOLATION

A project like Door in the Dark, an immersive documentary experienced in total blackout and guided by triggered binaural audio, is an exemplar of their trajectory of incremental experimentation. But within this the technology remains a tool, not the driver. Crafting encounters for an audience is the core exploration but the tech facilitates a curiosity of effect – what does this input achieve? what new possibilities are created?

And interestingly for Anagram, part of the opportunity for new interaction comes from exploring the limitations of the tech. Their observation is that most projects made for VR don't acknowledge anything else that is happening in the room and imagine that an audience is always ready to make the leap of imagination, to let go. But the audience often feels a dislocation, does not want to submit to an unfamiliar immersion. Anagram has a desire to accommodate and acknowledge this isolation, to play with a sense of a fourth wall.

This contradiction sits at the heart of their current project The Collider, a two person experience its focus is in sculpting an interaction which plays with separation and connection, moving in and out of immersion, to highlight personal relationships with power.

TOOLKIT

By definition the creation of these multilayered theatrical immersive pieces is a collaborative, iterative process with multiple team members inputting to achieve a sum of parts (especially in physical environments).

Anagram's work within the SWCTN prototype programme is a product of their frustration in building projects within existing immersive technology platforms.

For example, working with Unity funnels the build through the hands of a developer, creating both a bottleneck and a requirement for everyone involved to be very good at communicating clearly. There is a limitation on the ability of others to directly input – the platform behaves like a coder not a creative.

The vision of Anagram's planned prototype "toolkit" is a rudimentary way of placing elements within a VR environment, an inclusive collaborative blocking tool. "Do & show" as you would within a physical environment, rather than back and forth communicate / edit / render / amend.

The core principle is to attempt to input standard theatre practice, collaborative creativity, into a games engine environment.

This toolkit is part of the continuing evolution of Anagram, simultaneously developing both the collaborative software and the conceptual thinking involved in delivering powerful sensory experiences. A process of engagement with the tools of making immersion – tools in the widest sense, knowledge as well as instruments.

CASE STUDY 2

SHARON CLARK RAUCOUS SWCTN IMMERSION FELLOW

Sharon Clark is a Lecturer in Writing for Theatre & Digital Platforms at Bath Spa University and Creative Director of Raucous, an immersive theatre company that fuses performance and creative technology. As a SWCTN fellow she is exploring how creative digital technology can deliver anticipation and recall for an audience in an immersive theatre narrative.

As a writer and immersive Theatre maker, Sharon Clark is driven by the ambition to "whisper directly into the audience's ear", so adding a layer of technology extends the art of the possible for her in telling the story.

For Sharon, the entry point to using technology was a desire to achieve a specific vision of audience impact, but having to think differently about how that was deliverable – elements like projection or mixed reality have subsequently become part of an extended production tool box.

Raucous' work built around creating a personalised dialogue between the playwright and audience, a "visceral" experience of the story where the audience has the ability to move within the space. The writer is now in the room with the viewer, extending the narrative through multiple touchpoints, not at the back of the theatre "pointing people at a square at the front".

Giving the audience agency affords the opportunity for a different type of engagement, a personal choice on viewpoint or interaction within a communal experience.

Photograph:
Jack Offord, Ice Road

SAFE SPACE

Sharon has a desire to move beyond the traditional audience for immersive works, democratising drama from a belief that creative curiosity is not limited to a specific demographic.

But that aim of a broad audience can also create a tension when incorporating technology and interaction - the key experience must be one of awe and wonder, not alienation. Audience members may not want to be exposed or asked to perform or join in if they don't understand the rules or the technology (not "digitally native"). So immersion in this instance must be allowed to be more passive than active – the participants are following a story, not interacting to alter that narrative.

A key technique for Raucous has been the use of "totems" within performances. The audience is often carrying or holding an object, and their physicality makes these items comfortable and approachable as they become part of the experience. When the totems react or do something unexpected the audience move safely into that space – they become "portals to another world".

EXPANDED UNIVERSE

Immersive technology creates an exciting expanded universe of artistic possibility for companies like Raucous, with the key challenge being the practical and financial realities of achieving that vision.

The shift in focus of the technology companies, looking towards theatre as they realise that experience and storytelling in the immersive space requires a different insight, has created some opportunity - but for Sharon, this phase is not about inventing new technology, but about inventing what to do with it.

And as the immersive process is still emergent and undefined, with no given rules, it gives the creatives "much more power than we imagine".

Photograph:
Raucous, The Stick House

CASE STUDY 3

CATHERINE ALLEN LIMINA IMMERSIVE

Catherine Allen is a BAFTA-winning immersive media specialist and the founder and CEO of Limina Immersive, the VR exhibition company behind the UK's first dedicated VR Theatre.

The genesis of Limina Immersive was a frustration at the lack of a channel to a sustained and identified audience –. there was a need to build a new audience every time, for every project. And for those who were interested to get into VR there was no model to actually access or experience new content.

Seeing the audience response to her VR piece "Easter Rising: Voice of a Rebel" was positive for Catherine but raised the tangible challenge above – her solution was the Limina Immersive concept, a venue based VR Theatre model to connect audiences to content within a communal exhibition environment.

The vision for Limina's VR Theatre is to create and retain an audience. Providing a new way to experience creative content in a cultural context and to build a community around a new artform. And importantly, to generate revenue.

"SOMETHING AT STAKE"

The fact that the VR Theatre has paying customers creates a fundamental point of difference (to exhibition at a film festival, for example), the audience has "something at stake" and therefore Limina has a core responsibility for the quality of the experience.

Photograph: Limina Immersive

Their response to that dynamic is in part based on Catherine's personal experience of feeling anxious and isolated in early VR experiences, an awareness of the potential to feel embarrassed by not understanding the interaction.

The VR Theatre is therefore designed as an inclusive end-to-end experience to make the audience comfortable, which allows them to get mentally and spatially lost in the content – and crucially does justice to the content. As 75% of the current customers are first-timers in VR the, Limina "hosts" feel a strong duty of care, they are "sherpas to a new experience".

Limina allows space afterwards – a decompression zone – specifically for those new to the medium to cope with the novelty of being in VR for a long period, to re-ground themselves, to mentally process what just happened.

For example, the Limina curated award winning documentary strand is very powerful and moving – "tissues are on hand" and headsets need regular cleaning. Immersion in this form is not just another film screening, the audience may "lose their evening" to the impact and enduring effect.

CONTENT FEEDBACK LOOP

This exposure of content to a broad (and in many cases brand new) audience generates hard data and insight – a live laboratory to evaluate impact, and a feedback loop of what "works".

Again the transactional nature of the VR Theatre has an interesting effect on the metrics of "what is good". Is it how the participants feel afterwards (qualitative)? Or whether they re-book (quantitative)? Is it profound or is it, entertainment, or is it both? And are future audience numbers the ultimate guide?

In practice this translates to Limina's programming. They have to respect the fact that the audience has paid to have a "different" experience and deliver on that promise. This is likely to be their first exposure to VR, so the key requirement is to show them something that another medium can't do.

And whilst the strategic vision for Limina Immersive is to generate a sustained audience, they currently need to be tuned to bringing new people through the VR Theatre, and by definition to the medium itself, rather than exclusively market to the already converted. As an immersive "culture" establishes, a key function is to share learning with the production community, creating a feedback loop on the content that the market, buying tickets, wants now.

But in an emerging form is being this audience-centric a "radical position"? What the content producer sees as cutting edge may be very different to what the public actually wants to do and feels comfortable with. In this Limina's duty of care in the experience appears fundamental, allowing a continuous push at the potential of the art form whilst taking a growing audience with you.

THINKBOX 4
WONDERFUL INSTABILITIES

Let's be honest, if we wanted to make the kinds of immersive experiences we dream of, we wouldn't have built these clunky technologies. In most cases they are an accident of history and a stuttering step along an evolutionary path. The kinds of immersive experiences we dream of are not fettered by resolution, frame rates and compression codecs, let alone the tethered isolation of an HMD. We are witnessing the emergence of something, not the culmination or a fixed and steady state. And this emergence has been a long time coming, from ancient domed architectures, a peek into the spherical heavens of the Flammarion, the globes of Gottorf and Wyld, Nagy's Vision in Motion, the domes of Zeiss and Fuller, and the breath taking submersive immersion of Davies' Osmose, all baby steps on the path to total immersion.

Such a long history and yet it seems so new and shiny. This collective cultural amnesia was probably ignited somewhere in the early 15th century when Alberti threw a major spanner in the works. His Della pittura radically reduced our field of view and constrained our outlook by squeezing everything into a rectangle. A perspectival shift that placed us here and the world somewhere over there, totally unimmersed. He ignored the spherical world, the dome of the cosmos overhead, and the sphere of the eye, even, over time, the circular lens became constricted by the rectangle of the photographic plate.

This persistence of a particular type of vision became entrenched through the forms of Cinema and Television and lingers into the mindset of VR production. The hegemony of the culture of the eye has been framed by the Albertian window at the cost of things outside our normal frame of reference (the micro and the macro and the small far away) and technologies that simply don't fit. Although predating perspective, immersive experiences and the technologies that enable them provide a new unstable perspective on the world.

This instability requires new practices intertwined with new technologies. They allow creatives to embrace lensless digital imaging technologies that provide access to a photon from the edge of the universe and the atomic forces that bind the molecular substrate, a whole new vocabulary for articulating the world. Pure data from Atomic Force Microscopes, Scanning Electron Microscopes, X-ray computed tomography and Radio telescopes open up new immersive experiences, as more dimensions are unveiled, more realities are modelled and more truths envisioned. There are more things in heaven and earth than currently understood in our media philosophy.

Immersion is the George Kaplan of media forms, a Macguffin of ubiquitous proportions, something so dominating to the plot that it isn't really there. So, which came first the experience, the audience, the creative practice or the technology? You can't make immersive media without breaking some forms. What this wonderful instability does is spark new production pathways, new tools, new practices, new work, new experiences, new distribution platforms, new license models, new audiences and new histories to be rediscovered. We can all now sit at the centre of our own shared spherical umwelt, inside something rather than once removed. It's curtains for the Albertian window.

Mike Phillips
Professor of Interdisciplinary Arts at Plymouth University, the Director of Research at i-DAT

CONCLUSION

The case studies here tell a set of stories about creative innovation with emerging technologies across a very broad spectrum, from functional utility to designed disorientation.

But what they also highlight is the complexity of framing an emerging market.

Depending on how we classify the immersive technology sector, from content platforms to enterprise uses such as healthcare or training, estimates of potential value vary wildly between $100bn - $200bn in the next three years. We've been through a first wave of massive investments (Oculus, Magic Leap) based on anticipation rather than actuals.

And yet the position looks very different from the perspective of our participants. Our subjects are the pioneers, the pathfinders through the fog of hype and inflated expectations who are working hard to conceptualise and to deliver quality experiences and positive impacts for users.

They are creating work which is recognised as pushing at the potential of these technologies, yet all are struggling with the identification of business models, effective production tools and compelling scale use cases – the fundamentals of a mature industry.

In this snapshot there are some emergent roadmaps for business development:

- Stay very close to your users to develop a tightly focused market segment (and trust)
- Generate tools that you can reuse or license. This builds the capital base of your enterprise and potentially broadens your business from a reliance on talent led service delivery
- Look for 'spill over' applications in, for instance, health or manufacturing, where users have particular needs for the visual or impact affordances of immersive experiences

Our case study subjects are uniformly uncomfortable with the increasingly accepted shorthand of VR / AR / MR / XR as "immersive technologies". For them immersion is about experience and impact, not about a tech delivery platform. "Immersive tech" is not a given - immersion is designed for, the "tech" part is an appropriate tool which serves the vision not defines it.

Vision is an appropriate place to end. Despite the challenges of framing immersion and the compromises and constraints of limited budget and evolving technologies, our participants are all completely convinced of the enormous opportunity of this environment and the future potential to deliver impactful immersive experiences – experiences which make people see, feel, think and work differently.

FRAMING IMMERSION

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