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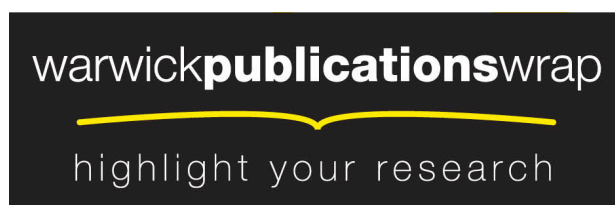
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Digital R&D Fund
for the Arts

HAPPENSTANCE REPORT

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Centre for Cultural Policy Studies
University of Warwick

December 2012

Centre
for Cultural
Policy
Studies

THE UNIVERSITY OF
WARWICK

HAPPENSTANCE REPORT

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Executive Summary

The Happenstance Project consisted of a series of creative technology residencies, placing three pairs of creative technologists into three arts organisations. The primary aim of the project was to consider how digital technology and creative uses of technology can become 'embedded' in arts organisations. The project was one of eight schemes selected for the pilot Digital R&D Fund for Arts and Culture, launched by Nesta, Arts Council England and the Arts and Humanities Research Council (AHRC) in autumn 2011.

The project took place over approximately 12 weeks from March 2012 to May 2012 at Site Gallery in Sheffield, at Lighthouse in Brighton and at Spike Island at Bristol. The six residents were given an open brief, required to initiate innovative digital projects in response to the challenges and opportunities they identified in each organisation.

The research aims of Happenstance can be summarised as follows:

- *Identify the cultural conditions which support or prevent short-term digital innovation becoming 'embedded' in the ongoing practice of an arts organisation.*
- *Identify differing attitudes, expectations and practices towards digital innovation between creative technologists and arts organisations (particularly attitudes to risk and failure, differing processes and methods).*
- *Identify a distinctive approach to innovation (R&D) in arts organisations.*
- *Identify outputs and outcomes of the residencies and evaluate the success of the project.*

Part One of the report examines the innovation process, describing a model for digital innovation in arts organisations we observed during the residencies. This model is based on a combination of a product-based manufacturing approach to innovation, and a more flexible, user-oriented approach typically applied in service industries. The Happenstance residencies connected these two approaches using 'agile' principles to bridge experimental product-based innovation by residents and a more adaptive approach to innovation by the arts organisations.

The report's key findings about innovation process are:

- 'Agile' principles, adapted from software development, provided a useful framework for managing digital innovation in arts organisations. The approach provided space for an open-ended, experimental approach to digital technology combined with a pragmatic, adaptive approach to project outcomes. This combination was essential to the Happenstance Project, encompassing the two criteria of 'novelty' and 'fitness for purpose' necessary for innovative outcomes.
- Agile principles and short time frames also encouraged technologists and arts organisations to take risks. Rapid prototyping ('build it fast, build it cheap') and prioritising people over planning ('innovate first, plan later') allowed an incremental approach to innovation, breaking down large projects into manageable steps. This avoids elaborate planning and evaluation procedures which can inhibit innovation and risk-taking. Agile principles allowed planning and innovation to proceed in parallel rather than as separate phases.

- The Happenstance Project encouraged participants (arts organisations and technologists) to reflect on the innovation process and to share ideas at a formative stage, using communication technologies to make these ideas visible and available.
- Regular face-to-face interaction was a good stimulus for developing and capitalising on innovative ideas. Because they draw upon specialist and individual skills, technology development and arts organisations both depend upon collaboration and networking.
- Technologists are good at solving the ‘how’ questions – finding more efficient, effective ways of solving problems. Arts organisations are good at answering and asking the ‘why’ questions – considering the value and purpose of an innovative idea. The Happenstance project combined these approaches through dialogue and mutual learning.
- Innovative outcomes can be triggered at one remove from the point of intervention. This ‘oblique innovation’ effect depended upon an open-minded, adaptive approach from the arts organisation, and a willingness to surrender or redirect creative impulses from the technologist.
- Despite an appearance of serendipity, Happenstance relied upon deliberate management of the innovation process. Arts organisations had to be prepared to sacrifice their strategic objectives, technologists had to recognise that novel solutions were not necessarily valuable. This mutual adjustment was needed to avoid charges of irrelevant gimmickry on the one hand or predictable micro-management on the other, and depended upon mutual trust. Building mutual trust and managing expectations was a critical management task. This role was fulfilled largely by Caper and by senior staff in the organisations, creating the conditions for innovation to occur. These conditions are considered in the second half of the report.

Part Two of the report describes the organisational interventions which lie behind the innovation process and which allow one-off experimentation to become embedded into longer-term organisational change. These are considered under two headings, ‘pre-production’ and ‘post-production’.

‘Pre-production’ describes the organisational assets which needed to be in place prior to the Happenstance Project, providing a ‘hidden’ base for innovative ideas to take root or take flight.

‘Post-production’ describes the organisational legacy of Happenstance for the organisation, from changes in behaviour and attitudes to the possibility of second generation innovations initiated by the organisation, in response to or adapted from the residencies.

Together these phases form an innovation cycle, from pre-production, to the Happenstance residencies themselves, to a post-production phase of adaptation and filtering, through to a second wave of innovative behaviour within each organisation. The latter lies largely outside the scope of this report, but some indicative examples of second generation innovation are briefly outlined.

At pre-production stage, the following 'organisational assets' were identified as critical to the success of the Happenstance Project:

- 'Visible leadership': senior managers who bought into the project at the start were able to involve and enthuse staff and build trust and consensus with the residents. This sometimes required a longer lead time, particularly for larger and more complex organisations.
- 'Digital curiosity': an openness to the possibilities of digital technology was more important than digital literacy (which tended to be unevenly distributed between and within the organisations).
- Managing expectations: the residencies had to be kept at arm's length from the organisation's strategic objectives and expectations of other stakeholders in order to avoid pre-empting the innovation process.
- Recruitment – residents needed to be 'organisationally literate' and attuned to the organisation's needs. This was at least as important as their technical expertise. 'Casting' the right technologists to the right organisation was a specialist task, managed in this instance by Caper.

At the post-production phase, the following approaches were applied to 'embed' innovation within the organisation:

- 'Selective retention' of innovative ideas – ensuring that novel ideas connect with the purposes and values of the organisation, based on an assessment of anticipated future needs and potential as well as current priorities.
- 'Glanceable' technologies – technological solutions which can be understood 'at a glance' and so easily absorbed into the organisation's operations. These 'glanceable' innovations would sometimes trigger changes in organisational behaviour beyond the original point of intervention.
- Digital literacy and confidence – the legacy of Happenstance was as much to do with changes in attitude and capability as technological innovations. All of the participating organisations felt better prepared to initiate and tackle future technological challenges as a result of the residencies.
- Reflecting on process – the Happenstance Project encouraged arts organisations to reflect on their organisational processes, recognising that innovation is not limited to the production and dissemination of art works but can also extend into administrative procedures including staff meetings, use of email or approaches to communication and project management.

- Outcomes (effects on behaviour and attitudes, sometimes referred to as ‘hidden innovation’) were at least as important to the legacy of Happenstance as outputs (quantifiable outputs including intellectual property).

The pre-production and post-production phases of Happenstance point to an iterative model of innovation within arts organisations through which externally initiated innovations (technological or otherwise) can become embedded in the organisation’s underlying culture and ethos, providing a basis for a second round of innovation beyond the initial stimulus. Whilst it is early to predict these future outcomes, there were sufficient indications of this oblique innovation effect during and immediately after Happenstance for us to conclude that the project was successful in its overall aim of ‘embedding’ digital innovation in arts organisations, not least in changing attitudes and behaviour.

From a cultural policy perspective, Happenstance demonstrated that the interaction between arts organisations and digital technologists can instigate cultural change, opening up new ways of collaborating and communicating within teams and new approaches to project management. This interaction is more likely to be productive if both sides are primed to adapt to the other, from senior management downwards, and if the pressure to produce quick results is balanced by a more open-ended expectation of incremental change on both sides. Some of the principles of Happenstance – short, focused residencies, an open brief to engage creatively with the organisation, focus on communication and collaboration – could be applied to any residency, not only to one involving digital technology.

From an innovation perspective, the Happenstance project has highlighted the importance of combining an ability to invent, experiment and take risks with an ability to adapt, compromise and engage. This can be achieved by opening up a conversation between arts organisations and creative technologists, or between organisations and freelance outsiders. Happenstance has also demonstrated that slower, less visible, incremental changes to organisations might be more valuable than visibly impressive, radically innovative project outcomes.

Introduction

i What is Happenstance?

The Happenstance¹ Project consisted of a series of creative technology residencies, placing three pairs of creative technologists into three arts organisations for approximately twelve weeks from March 2012 to June 2012. The project was conceived by Rachel Coldicutt at Caper, a digital agency with experience of running ‘hack days’, managing digital projects and devising digital strategies, and by Laura Sillars, co-director of Site Gallery in Sheffield.

The primary aim of the project was to consider *how digital technology and creative uses of technology can become ‘embedded’ in arts organisations*. The project was one of eight schemes selected for the pilot Digital R&D Fund for Arts and Culture, launched by Nesta, Arts Council England and the Arts and Humanities Research Council (AHRC) in autumn 2011. The Fund supports arts and cultural organisations to work with digital technology partners on research and development projects using digital technology to enhance audience reach and/or explore new business models. The funders recognised the contribution external researchers could make to understanding digital innovation in the arts, and as a result each pilot project was also paired with a research team.

Alongside Site Gallery, Lighthouse in Brighton was identified as a second arts organisation, and worked closely with Caper and Site during the project planning phase. The third arts organisation, Spike Island, was recruited in November 2011. The Warwick research team² also joined the project in November 2011.

The Happenstance methodology was influenced by Australia’s ‘Geek in Residence’³ programme supported by the Australia Council, which invited technologists (and ‘technologically confident artists’) to pursue innovative projects with arts organisations. The main difference was that the Happenstance residencies placed a greater emphasis on open-ended organisational change rather than on self-contained projects and specified outcomes.

Following some initial scoping of the aims of the project, Caper began to search for suitable technology residents and candidates were interviewed at Nesta’s offices in London in January 2012. The technologists included designers, developers, programmers, user experience designers, and combinations thereof; a few pairs applied jointly but most applied as individuals, and the three pairs eventually selected for Happenstance had not worked together previously. An induction day was held for the six selected ‘residents’ at their respective ‘host’ organisations in March 2012. Both the selection and induction process were conducted as ‘sandpit’ events, with rapid exchanges of ideas driving fast prototypes. This ‘agile’ approach to innovation was established by Caper as a working model for the project as a whole and will be discussed in Part 2 of this report. Whilst most of the residents were familiar with some of the principles of ‘agile’ innovation, the recruitment day was the first exposure to this approach for the arts organisation staff.

The residencies began the week after the induction, with residents expected to spend two to three days per week with their hosts. Each residency was broken into two five-week

¹ The name ‘Happenstance’ was devised by Ruth Leary at an initial project planning meeting in November 2011.

² The Warwick research team consists of Chris Bilton, Ruth Leary and Katherine Jewkes.

³ <http://www.australiacouncil.gov.au/grants/2013/geek-in-residence> - Australia Council continues to support the Geek in Residence programme. Creative Scotland recently launched its own ‘Geeks in Residence’ programme in partnership with Culture Hack Scotland and sync (<http://www.welcometosync.com/geeks/>)

‘sprints’, the first running 19th March to 20th April, the second running 23rd April to 25th May. The original intention was that the first sprint should be more ‘organisation-led’ and the second more ‘resident-led’. In practice the two sprints merged into one and the residents and organisations were allowed to develop their own method of collaboration over the ten week duration. Each ‘sprint’ ended with an open house session, inviting local arts organisations, digital enthusiasts and friends of the organisation to hear about work in progress on the Happenstance Project. The residencies also generated much discussion on the purpose and value of digital technology in arts organisations through postings on the Happenstance blog as well as regular conversations between residents and staff members. A final debrief with Caper took place approximately two months after the residencies finished.

The residents were: James Jefferies and Leila Johnston (Site): James Bridle and Natalia Buckley (Lighthouse); Kevin Walker and Linda Sandvik (Spike Island). The University of Warwick research team attached to the project consisted of Chris Bilton, Ruth Leary and Katherine Jewkes. For data collection purposes, each researcher took a lead role with one of the three arts organisations – Site Gallery (Bilton), Lighthouse (Leary) and Spike Island (Jewkes) – whilst also maintaining regular contact with each other and with Caper.

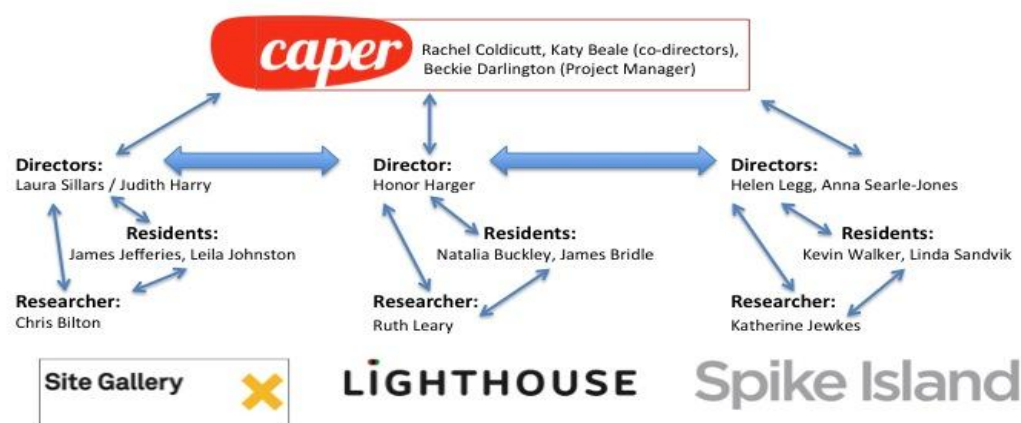


Figure 1 The Happenstance Project participants

ii Research aims

The specific aim of Happenstance was to explore different ways of working between arts organisation and technologists, and to discover how one-off technological innovation could become ‘embedded’ into the organisation at a deeper level. This ‘deeper level’ might include changing internal culture and processes, changing attitudes to technology, approaches to internal communication and external network or improving digital literacy. Technologists in residence were informed of the overall aims of Happenstance and some of the key issues confronting the host organisations. Within this framework, objectives for each

residency were left deliberately open-ended in order to allow different outcomes and objectives to emerge collaboratively through the duration of the project. Emphasis was placed on practical tasks and interventions, not on strategic orientation.

Happenstance was from the outset research-led, with the academic research team invited to follow through on some broad research aims built into the project design by Caper and the arts organisations. Research aims can be summarised as follows:

- *Identify the cultural conditions which support or prevent short-term digital innovation becoming 'embedded' in the ongoing practice of an arts organisation.*
- *Identify differing attitudes, expectations and practices towards digital innovation between creative technologists and arts organisations (particularly attitudes to risk and failure, differing processes and methods).*
- *Identify a distinctive approach to innovation (R&D) in arts organisations.*
- *Identify outputs and outcomes of the residencies and evaluate the success of the project.*

In relation to the objectives of the funders, these broad research aims related to the funders' interest in 'new business models' (in particular the organisational structures, cultures and processes through which any business model must be developed and applied) and to an improved understanding of the processes of 'R&D' employed by digital technologists and the arts.

To summarise the Happenstance project focuses on two key issues which are relevant to any interaction between arts organisations and digital R&D. These are documented in the two main parts of this report. In the first part we examine a distinctive approach to innovation which we believe combines the capabilities and cultures of arts organisations and of digital technologists. In the second part of our report we examine the organisational mechanisms and behaviours which allow this distinctive approach to innovation to occur. We believe these two themes are of particular relevance to the Digital R&D Fund, and more broadly to processes of innovation and technology adoption in arts organisations.

iii Research Process

The research project was divided into three phases, which correlate to the research aims noted above.

Phase One was an initial comparison of the three arts organisations, aiming to establish the starting point for the residencies in terms of expectations and initial conditions. This part of the research identified similarities and differences across the organisations in terms of organisational structure, attitudes to risk, attitudes to technology, and indications of commitment or resistance to the Happenstance Project among staff. These observations are incorporated into the second part of this report, where we identify the organisational conditions for innovation and highlight some key requirements for other organisations wishing to replicate or build upon the Happenstance experiment.

Phase Two was an observation of the residencies in action, aiming to document the innovation process and observe how innovative ideas are initiated and developed in the organisational setting. Two themes emerged here. Firstly, we observed how individual initiatives and projects can result in – and be fuelled by – broader organisational changes in behaviour, attitude, culture and capabilities. The second emergent theme was a clearer

understanding of the distinctive methods, attitudes and processes underpinning innovation among arts organisations and technologists respectively. These observations are incorporated into the first part of the report where we describe a model for digital innovation in arts organisations based on the Happenstance Project.

Phase Three of our research was an attempt to summarise the outputs and outcomes of Happenstance, drawing on interviews and reflections at the end of the residencies, and connecting these to broader reflections on implications and adaptations for future projects. A distinction was made between outputs (the achievements and results of each residency) and outcomes (the uses to which these outputs were directed). Outcomes also extended to cover secondary changes in the organisation, including changes in behaviour, culture or attitude. Rather than list these separately, we have incorporated project outcomes into the 'post-production' discussion in the final part of this report.

iv Research methods

Research was conducted through regular visits (roughly once per week) to each arts organisation by members of the research team, supplemented by occasional Skype or phone conversations if participants were not available on the day. One member of the research team was allocated to each arts organisation: Site Gallery (Chris Bilton); Lighthouse (Ruth Leary); Spike Island (Katherine Jewkes).

At each visit the researchers spoke to the residents and to the lead contact in the arts organisation (Judith Harry at Site, Honor Harger at Lighthouse, Anna Searle Jones at Spike Island). They also spoke to other members of staff outside the senior management team to gain a different perspective on the project. Additional interviews were conducted with the organisation's funders and board members and with the local mentors attached to the project, as well as with Caper (Rachel Coldicutt, Katie Beale, Beckie Darlington).

All notes and observations were collated through Evernote, a shared online notebook compatible with laptops and mobile devices, and were tagged using a series of hash tags agreed by the research team. This allowed researchers to cluster observations thematically from across all three arts organisations. Further details including the hash tags can be found in Appendix A.

v Overview of the residencies

This report does not aim to provide a detailed listing of all the activities undertaken in each of the Happenstance residencies. Before proceeding to consider Happenstance as a model for digital innovation in the arts, a brief overview of the principal activities and achievements as well as the organisational context is provided here:

Site Gallery: Site Gallery is a contemporary gallery in Sheffield with a staff of seven people, located close to a number of digital agencies. The building was previously home to photography darkrooms and studio spaces which have been converted into offices some of which are rented to local creative and media enterprises. The gallery features a regularly changing programme of exhibitions. The two residents, Leila Johnston and James Jefferies, were based in the main office, along with the two directors and with desk space for other

staff members when not working in the gallery or shop downstairs. The first two weeks of the residency were largely consumed by initial meetings and developing potential ideas, buying in equipment (Arduino kits) and trouble-shooting some technological problems for the organisation following the recent departure of their technical support manager. The principal achievement in the first 'sprint' was the development of two thermal receipt printers (similar to those on a cash till), nicknamed 'Cathy' and 'Heathcliff'. These were connected up to email, twitter and a phone line (with voicemail) allowing staff and visitors to interact with them and providing a mechanism for logging online interactions via the Site blog or twitter feed. The residents were invited to present work in progress at TedX in Sheffield and also spoke about Happenstance together with other residents at the Future Everything conference in Sheffield. The second sprint was more pragmatically focused on the organisation, with residents contributing to a branding workshop with external consultants, helping to redesign Site's website and discussing potential applications of technology in the gallery, including a possible 'curator app' in discussion with Site's artistic director.

Lighthouse Media: Lighthouse is a digital culture agency in Brighton with a gallery space, studios and office space. Lighthouse is heavily involved in promoting digital media culture in the Brighton area and was busy hosting the BFI Shorts film competition during the residency and planning its involvement in the Brighton Festival. The first project in the residency was 'Offbot', a virtual office gossip, which allowed staff to share ideas and projects and which then aggregated this material and made emerging ideas and hidden activities available across the organisation. Unlike more formal reporting mechanisms, Offbot captured spontaneous and immediate reflections on work in progress and cut across organisational hierarchies. In the second sprint the two residents, James Bridle and Natalia Buckley, developed some of these themes separately. James Bridle's next project was 'This Is a Working Shop', an attempt to explore the 'craft' of coding, making the rules, constraints and processes behind code more visible / tangible and foregrounding the unseen creative work behind websites and applications, a set of processes and products which we routinely take for granted. Meanwhile Natalia Buckley ran open lunchtime workshops on coding for staff and other users of the building and also introduced some 'agile' principles to office work such as stand-up meetings, and a temporary ban on email communication. The residents continued to work together on Offbot which emerged as a significant output from Happenstance with potential value for future projects.



Spike Island: Spike Island is a combination of gallery, artists' studios and rented space for artists, designers and associates in Bristol. The building is a former tea factory near the

Harbourside and was the largest and most dispersed of the three arts organisations, with around 500 users coming through the building every day. Spike Island was also the last arts organisation to join Happenstance, approximately three months after the other two. The two residents, Kevin Walker and Linda Sandvik, initially had trouble knowing where to locate themselves in the building and began by attempting to work in a 'public' space where they could interact with the diverse users of the building. However, it proved difficult to engage with the whole organisation in this way and by the time the second sprint started they had moved into the main open plan office. Kevin worked on a gallery project implanting digital information into artists' postcards, allowing users to access information and contacts with artists based in the building. Linda's first project was to invite users of the building to share photographs via email or Twitter using the hashtag #myspikeisland which were then fed into a small Polaroid printer working over Bluetooth. The residents continued to work on separate projects through the second sprint, with Kevin introducing digital skills and tools to the core staff team through a combination of workshops and one to one 'coaching' sessions, whilst Linda invited local designers and developers to a 'design jam' responding to the challenge 'how can we make a visit to an art gallery more compelling and rewarding?'

vi Limitations and parameters of the research

Our research aims to document the long-term effects of digital innovation on an arts organisation, as well as the underlying long-term causes which allow one-off digital innovation to become organisationally 'embedded'. In a research project spanning approximately six months, it was difficult to provide robust primary evidence of long-term causes and effects of innovation. We are therefore dependent on our assessment of future outcomes, supported by the observations and opinions of the participants in the projects. In documenting the Happenstance Project we have tried to capture the processes and behaviours before and after an innovative project occurs, rather than listing a series of outcomes. This is not because we regard the one as more important than the other, but because we want to understand the connections between them. Through this report we will argue that adoption of 'digital thinking' in an arts organisation or of more positive attitudes to technology are directly connected to successful project outcomes (and vice versa).

The three arts organisations featured in this report are not typical or representative, and this report does not claim to establish a template for other organisations to follow. The Happenstance Project was the consequence of a series of choices and actions which framed a series of innovative residencies. The residencies were carefully managed by Caper to avoid conflict and frustration and to 'embed' digital innovation in each arts organisation. We have attempted to capture these aspects of the project, and to show how planning and adaptation are a necessary part of the innovation process. The model of innovation presented in this report is therefore not perfect; it depends on a specific set of circumstances and would need to be adapted according to the unique character, scale, history and structure of each organisation. Nevertheless we believe that the Happenstance model represents a distinctive approach to managing innovation which can, with some adjustments, be effective in arts organisations.

Finally, this report does not claim to capture all of the outcomes or effects of the Happenstance Project since some of these are ongoing. Nor does it give a comprehensive description of all the activities undertaken in each of the residencies, beyond the brief overview above. Instead, in the first part of this report, we have tried to encapsulate a model of digital innovation in arts organisations based on the Happenstance residencies. In

the second part of the report, we have expanded this model to include the role of project design ('pre-production') and adaptation ('post-production') in the innovation process in order to show how digital innovation can become 'embedded' in competences, attitudes and processes of the organisation.

PART 1: The Innovation Process – using agile principles to bridge experimentation and adaptation

The first part of our report describes a model for digital innovation in arts organisations, based on our observations of the Happenstance residencies over a twelve week period. The second part of our report considers how the resulting innovation can become ‘embedded’ in the organisation, through a combination of project design and organisational adaptation.

Understanding how R&D works in arts organisations was a key concern for the funders of our project (Bakhshi and Throsby 2010, p. 11 – 13). Happenstance provides an opportunity to formulate an approach to innovation or ‘R&D’ in arts organisations, combining the input-driven approach of manufacturing industry with the more user-led approach of service industry innovation. Manufacturing industry invests in research as a core activity and there is a correlation between a systematic investment in R&D (dedicated staff time, physical infrastructure such as a research laboratories or product development units) and innovative outcomes. In service industries innovation is more often a response to users’ needs or the requirements of a specific project and is not confined to a separate R&D unit or laboratory. Innovative outcomes in a service industry setting thus result from project-based, sporadic problem-solving, and are often co-created with users, employees and partners (Bessant 2003, Sundbo 1998, Toivonen 2010).

Like a service industry company, the arts organisation’s approach to innovation is shaped by their relationship with users. Maintaining and nurturing relationships with audiences, artists and other stakeholders (including funders, other organisations in the sector) was a critical priority for the directors of Site Gallery, Lighthouse and Spike Island. In some instances, this could be voiced as anxiety or resistance over the value or purpose of new technology (this will be discussed further in Part 2 of this report). All of the managers had a keen sense of the needs of their users and sought to orient innovation towards valuable outcomes for particular projects or users. The technologists in residence had no such sense of responsibility; indeed the design of the Happenstance model deliberately distanced them from these pragmatic concerns.

The relationship between experimental innovation by the technologists in residence and adaptive innovation by the arts organisation combines elements of manufacturing and service-based innovation. Technologists were free to experiment with hardware and software, intervening in organisational routines and proposing alternatives. Much like an innovation lab in manufacturing or technology firms, the technologists’ approach was ‘input-driven’, undirected and experimental. The results of these experiments were then picked up and selectively adapted by the arts organisation based on their specific capabilities, and the needs of internal stakeholders and users. The managers’ responsive, adaptive approach is more typical of a service industry innovation model. These two models were combined in the Happenstance innovation process (Figure 1).

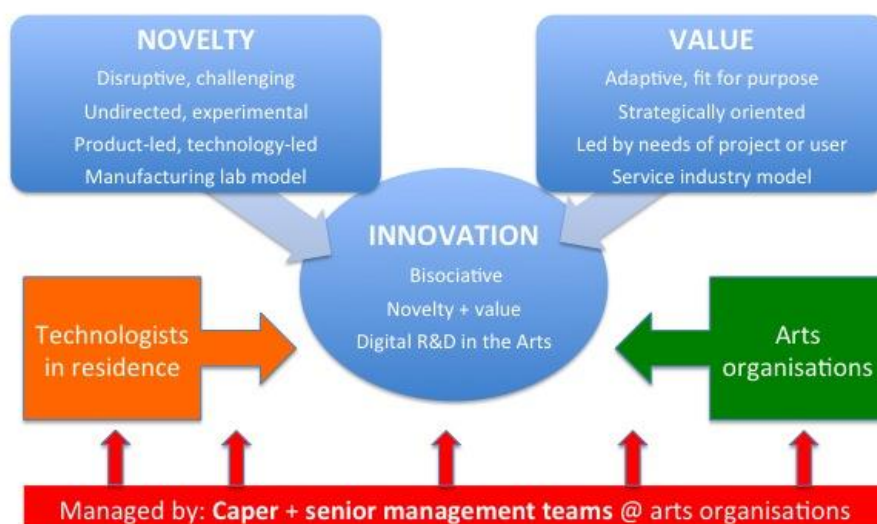


Figure 2 The Happenstance model of digital innovation in the arts

The innovation process in Happenstance can also be understood as a tension between experimental risk-taking (research) and organisational adaptation (development). This ‘R&D’ dualism correlates to processes of ideation or experimentation on the one hand and the application or adaptation of these ideas on the other (Kirton 1984). As Kirton indicates, the combination of these elements in innovation processes requires a social interaction between different competences and personality types.

A note of caution is needed here – any innovation process worthy of the name will of course combine both sides of this equation. Indeed the combination of ‘novelty’ and ‘value’ is fundamental to theories of creativity as a bisociative, multifunctional process (Bilton 2007; Boden 1994 75 – 76; Bilton and Cummings 2010). Arts organisations are certainly capable of disruptive, input-driven innovation. Indeed the part played in Happenstance by the technologists in residence would in other circumstances more typically be played by artists. Artists, like technologists, frequently come up with innovative ideas which jar against strategic and operational priorities of adaptive innovation in the organisation. Complaints about ‘gimmicky’ or ‘pointless’ technology are not dissimilar to complaints against ‘self-indulgent’ artists. The occasional friction we observed between technologists and arts organisations during Happenstance is inherent in the innovation process and managing these tensions is an essential task in any creative organisation.

The task of integrating different elements falls to the producer, who must reconcile different needs and expectations from different stakeholders in the project and broker relationships between the participants (Bilton and Leary 2002). This role was fulfilled by the team behind Happenstance, principally Caper and the partner arts organisations, who designed the

project within clear parameters (project duration, number of residents, recruitment, rules of engagement, methodology) – whilst leaving the outcomes open-ended. But it also required mutual adjustment from both technologists and arts organisations throughout the residencies – this project management function at times implicated members of the research team who continued to be in regular contact with the residents and organisations. We will consider how the innovation process was managed by Caper in the second part of the report. First we will examine the process of idea generation during the residencies, relating this to principles of ‘agile’ software development.

1.1. Introducing Agile

Happenstance’s distinctive solution to the tensions between ‘experimentation’ and ‘adaptation’ was to introduce a set of principles governing the innovation process. At the start of Happenstance, Caper introduced the idea of ‘agile’ development, a flexible approach to software development which emphasises collaborative, adaptive teamwork practices, efficient software engineering and quick design cycles through self-organising, explorative work (Aoyama 1998; Schwaber 2002) in an environment of mutual trust and respect (Agile Manifesto 2001). The key principles are flexible people, processes and technologies (Gunasekaran & Yusuf 2002) with a focus on ‘collaborative work, concrete results, delivering value and minimising waste’ (Shore 2007). This style of working allows for rapid prototyping and ‘shipping’ (Godin, 2010) and continuous development of outcomes and team interaction.

In the event, it was decided not to adopt a formal ‘agile’ process for the residencies. The arts organisations were uneasy with an unfamiliar methodology and the residents argued that the approach could not be transferred wholesale from software development to arts organisations. Nevertheless some of the principles behind an ‘agile’ philosophy remained. For example, the daily meetings (‘stand-ups’ or ‘scrums’) used to manage agile software development were difficult to apply in practice due to unavailability of senior managers; perhaps too the arts organisations were more familiar with lengthy staff meetings than with the short sharp ‘agile’ format and balked at this additional commitment. Despite this, the principle of capturing and reflecting on progress was retained, as was an emphasis on ‘face-to-face conversation’.

Other ‘agile principles’ also came into play and will be considered in more detail below. It should be emphasised that the agile principles were implicit rather than explicit, implicated both in a ‘digital thinking’ culture among the residents, and through the way Caper and the arts organisations had designed the residencies. It therefore provides a relevant framework for analysing Happenstance’s distinctive approach to the innovation process.



The Agile Manifesto (sort of) on display at Lighthouse during Happenstance (Photo: Natalia Buckley)

Innovate first, plan later

“Responding to change over following a plan” (*Agile Manifesto*).

In order to allow scope for the residents to step outside organisational routines and encourage an open-ended approach to innovation, Happenstance did not provide a defined brief to the residents. Instead each arts organisation identified a number of challenges and issues and allowed the residents autonomy in choosing how to respond to them. Many of the issues centred on concerns about communication, both internally (capturing and reflecting on ideas and resources within the organisation) and externally (communicating with audiences, organisational identity).

Although it had been emphasised that the residencies should not be tied to specific targets and outputs, anxieties over a lack of identifiable targets recurred throughout the project, both for the organisations and the residents. This tension between process and product reflects a two phase theory of innovation and the creative process, in which an initial phase of ideation and experimentation is followed by a phase of adaptation and application (Figure 2 above). Happenstance aimed to combine both these phases, protecting a space for innovation which is not constrained by organisational priorities, but then allowing the results of these innovations to be adopted selectively and incorporated into organisational resources, systems and processes. To put it bluntly: ‘innovate first, plan later’.

Caper related this approach to ‘agile’ methodologies which allow processes of planning, experimentation, adaptation and application to proceed in parallel rather than in a linear sequence. One method for achieving this was to divide the residency into two separate sprints, allowing one more ‘applied’ and one more ‘experimental’ phase in the residency. A second method was to allocate one day out of three each week for residents to work

separately from the organisation in order to generate ideas, then bring these back into the organisation. A third method was to require residents to continually make projects and ideas which could then be simultaneously adopted, adapted or rejected by the organisation.

In the end this parallel processing approach, combining experimentation and adaptation, was in our view the most successful – and the most ‘agile’. Splitting the residency between ‘experimental’ and ‘applied’ phases tended to provoke mutual frustration, reinforcing a perception that the former was self-indulgent and irrelevant to the organisation, and that the latter was unimaginative and irrelevant to the aims of Happenstance (and a waste of the residents’ special skills). The day release allowing residents to work off site was useful in allowing them some thinking time, but it also was sometimes seen to disconnect the residents from the organisation, reducing the already limited contact time available. The parallel processing approach followed the ‘agile’ principle of valuing ‘individuals and interactions over processes and tools’ – it depended on trust and conversations, and it valued ‘responding to change over following a plan’.

Agile principles also introduced a different attitude to risk and failure. Technologists are used to ‘fast failing’, indeed there has been much discussion of the fetishisation of failure among technologists who regard failure as a learning opportunity. This is manifest in the building of low-cost experimental prototypes to find out what works, not as an end in itself but in order to learn for the next version. The arts organisations’ attitude to risk tended to be constrained by resources and by relationships with external stakeholders. Commissioning an exhibition, for example, involves a substantial investment of time, money and reputation; such projects carry substantial risks which also implicate the organisation’s relationships with funders, artists and audiences. In these circumstances failure is not an option – and fear of failure – both within the organisation and among its stakeholders – can have a chilling effect on innovation.

The ‘agile’ solution to this problem is to break projects down into smaller components and address each operational challenge as it occurs, rather than attempting to pre-empt anxieties about ‘success’ or ‘failure’ through strategic planning. In an agile methodology, success and failure are only relative terms – progress may be blocked on one part of the project, but outright failure is almost impossible. There is almost always another potential direction or solution available. Provided the organisation is not too heavily invested (literally and metaphorically) in one particular pathway, it should be possible to learn from difficulties, address them and move rapidly on to another solution. This is the principle behind the daily ‘scrum’ meeting, and whilst not all of the organisations adopted this methodology, some of the underlying ‘digital attitude’ was apparent – fast prototyping, trying and discarding methods until something works, adapting quickly to setbacks and working around them. In the words of one resident, ‘just because you don’t know how to do something doesn’t mean it’s difficult’.

One practical example of this was the use of a software tool called ‘Trello’ by residents in the Site Gallery residency. ‘Trello’ provides a ‘trellis’ framework for ideas and projects, depicted on a grid which can be accessed online by invited members. Each project during the Site Gallery residency was thus broken down into component parts which could be prioritised, completed, blocked or paused depending on progress and status on the Trello grid. Trello is also an open source planning tool which allows all participants to update progress or reorder priorities, and so to organise each day’s activities efficiently. This ‘agile’ approach to planning proved popular with the gallery staff and was introduced as an alternative method to more formal reporting and planning in staff meetings. ‘Plan’ was here utilised as a verb

(an active process) rather than as a noun (a blueprint to be followed), and objectives were continually recalibrated and reordered in response to progress.

Reflecting on progress

“At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.” (*Agile Manifesto*).

The approach to planning described above requires an ability to reflect on progress. One of the emergent themes of Happenstance was a desire to make internal processes visible or transparent, both to the members of the organisation and to users and visitors. Both the arts organisations and the residents were required to reflect regularly on the process of innovation, not just on the outcomes. The residents contributed to a weekly Happenstance blog and met regularly both with the research team and with external mentors. The arts organisations were in regular contact with each other and with Caper via telephone, Skype and email. The reporting requirements on the residents especially were onerous and occasionally frustrating – residents expressed anxiety that they seemed to be spending more time talking about the work than on the residencies themselves.

However, the time spent on reflection was in the end no less productive than the time spent on making things. Simply by their presence in the building (apart from the first few weeks at Spike Island, all the residents were in a shared office space with core staff) there was a continual cross-fertilisation of ideas between residents and organisations. Staff in the organisation were able to witness not only project outcomes and solutions, but the process through which problems were solved. This was an important opportunity for learning and familiarisation. Similarly the residents were able to pick up on concerns and attitudes among the staff. Some of the most innovative projects to come out of the residencies emerged from these mutual observations in the open plan office. For the arts organisations, familiarisation and conversation resulted in an increasingly confident attitude towards technology, not just a transfer of skills.

The slow percolation of confidence, skills and knowledge within each organisation was difficult to evaluate but in the words of the director of Lighthouse, the residencies had been ‘more effective than a year’s worth of conferences and seminars’. This was especially valuable for Lighthouse as it sought to inhabit its role as a digital culture agency.

The residencies were also an opportunity to reflect on internal processes within each organisation. One consequence was to strengthen collaborative partnerships between the organisations, but also to rethink attitudes to risk and failure. As one of the directors pointed out, Happenstance provided them with a safe mechanism for talking about failure as, “We’re very bad at doing this – it’s perceived as a threat to our relationships with stakeholders.” In the words of one resident, “They have become a more reflexive organisation. They are thinking more about how they do stuff.” Directors found themselves conducting lengthy conference calls on their experiences and concerns, and the mere presence of the technologists forced the organisations to become more articulate and aware about their internal systems.

Reflecting on the innovation process extended further, to take in ideas and projects which preceded the residencies. The residents were resourceful in recycling old ideas and

technologies; some of the projects they took on were based on ideas that the organisation had already floated but had been unable to capitalise on, and the residents had the tools to put these speculative ideas into practice. Similarly some of the technologies introduced by the residents were not in themselves innovative (using Kinect motion sensors to capture physical movement, for example) but became innovative as they took on a fresh purpose in the arts organisation. In an agile methodology, rather than simply beta testing ideas and approving or rejecting them, it is possible to accumulate a range of products and tools which can be retrieved for a variety of current and future projects. Some residents were explicit in their desire to leave behind a legacy of ideas and methods which the organisation could then tap into for future purposes. This accumulation of possibilities is very different from a straightforward problem-solving approach.

The communication technologies discussed in the next section of this report provided a mechanism for capturing and sharing fragments of ideas between projects and individuals and filling gaps in the institutional memory. Digital technologies make collecting and storing data for future retrieval relatively straightforward. By contrast the project-based nature of arts organisations makes them more likely to discard half-formed ideas which are not immediately fit for purpose. Some staff members commented that arts organisations are not always good at capturing and exploiting intangible assets. The residents were able to demonstrate how agile communication and data capture tools can address this deficiency.

Communication and visibility

“Business people and developers must work together daily throughout the project... [...]...The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.” (*Agile Manifesto*).

Reflective practice depends upon a further agile principle, the importance of regular communication, preferably face-to-face. A theme cutting across several projects was the potential for digital technologies to capture and communicate intangible processes and half-formed ideas. This had applications both for internal efficiencies and for engagement of audiences. For audiences digital tools can enrich the user experience by capturing the ideas and interactions before and behind an exhibit and making these available. At Spike Island, the technologists were able to connect static objects to the artists who made them by embedding digital information in postcards. The same principles could also be used to enrich and extend internal communication. At Lighthouse the residents piloted ‘Offbot’, a virtual office robot who invited staff to talk about their current activity, and made visible the collective patterns which emerged from their individual voices. The project encouraged staff members to revisit and re-evaluate apparently trivial or disposable information, extending beyond the more cursory, goal-oriented communication of email and more formal reporting of activities.

One of the residents at Lighthouse, having observed the library quiet that reigned in the open plan office, introduced the Agile Manifesto to the team as a wall poster in order to encourage more face-to-face interaction. Prior to this, staff tended to email rather than cross the room to talk to one another. This led to a week-long ban on emails and confessions from team members that they too had been disturbed by the eerily quiet office and were now relieved to have been given permission to talk to one another by the resident’s intervention. This was an example of how the residencies brought about changes which

were not only technological but social. Rather than applying agile principles directly to project management, the resident in this example took a more oblique approach, borrowing from the principles in order to change the way the team interacted with each other. Whilst the residents did introduce some new communication technologies into the arts organisations, their real transformative effect may have been to encourage a more reflexive approach to internal communication.

Communication was also a way of making digital technologies more visible, tangible – and accessible. At Lighthouse, one of the residents introduced a project called ‘This Is A Working Shop’ which involved him sitting in a public space in the building, writing computer code, with the code projected on screen as he wrote it. The idea was to make visible the practical, tangible elements of writing code and to promote the idea of coding as a craft. Normally coding, like electricity, is invisible. The process behind the product is rarely acknowledged or understood. ‘This Is A Working Shop’ made observers recognise the everyday practice behind digital technology and the craft behind the coder’s art. Alongside ‘This Is A Working Shop’, the other Lighthouse resident began a lunchtime coding workshop in the main office. The two residents worked in tandem, steering the Lighthouse staff and other users of the building towards a different way of thinking about digital technology, making it less mysterious, more visible, tangible and accessible.

Many of the innovations introduced through Happenstance were essentially concerned with communication technology, using digital tools to capture informal conversations and make them visible (Offbot at Lighthouse), building a conversation between artists and gallery visitors (the Spike Island digital postcard project) or aggregating digital chatter and relaying that back into the organisation (using the networked thermal printers at Site Gallery). Yet as with many other aspects of ‘agile’ innovation in Happenstance, ‘agile communication’ was as much about introducing social processes as it was about introducing digital tools. Regular communication between the residents and the organisations not only laid the basis for other Happenstance projects but also fostered a greater internal awareness and reflexivity within and between the arts organisations. This reinforced a further principle of agile working that innovation should be ‘co-creative’, allowing clients, users and other staff members access to the innovation process.

People over process: networking

“Individuals and interactions over processes and tools.” (*Agile Manifesto*)

The Agile Manifesto prioritises the social interactions which drive technology over the technology itself. In the context of Happenstance, building trust and confidence between technologists and organisations took precedence over building hardware and software – in the sense that the former needed to be in place to facilitate the latter. The agile faith in the power of interaction translated into a faith in human potential. In the words of one of the arts organisation directors, ‘if you put brilliant people together, brilliant things will happen’. This trust in an open-ended process was one of the preconditions for Happenstance which will be discussed in Part 2 of this report. For now we can make two observations about the innovation process.

First of all, the everyday interaction between the residents and the organisations was essential to the germination and realisation of innovative ideas and projects. One of the curators at Spike Island noted the way an open plan office allows staff members to ‘tune in

and tune out' office conversations. Several of the projects already highlighted in this report – Offbot, the lunchtime coding sessions at Lighthouse, thermal receipt printers at Site Gallery, digital postcards at Spike Island – were both a product and reflection of office conversations. The residents were most effective when they were located in the main workspace. At Spike Island it was initially difficult to identify a suitable location for the residents because the building lacks an obvious focal point (there are several different entrances and several different constituencies and communities occupying different parts of the building); only during the second 'sprint' was this problem solved by moving the residents into the main office. Not surprisingly the residents were most effective when embedded in everyday routines, visibly present in the organisation and joining in the daily life of the organisation (including socialising in the café or pub). At Site Gallery one resident even relocated from London to Sheffield as a result of her involvement in Happenstance. But other residents demonstrated that it was also possible to build a routine intimacy even when commuting from a different city, provided there was sufficient engagement and buy-in to the life of the organisation.

The other significant interaction was between residents and a wider network including the local 'digital community' and personal contacts scattered across the UK. The technologists in residence were intuitively collaborative. When one of them hit a technical problem or simply needed a new suggestion, their first instinct was to get in touch with a colleague or contact. This networking was partly pragmatic – in order to share ideas and resources or to learn new skills – but also tapped into the arts organisations' strategic aim to build profile and credibility in the digital sphere, locally and nationally.

The residents' tendency to consult colleagues and share ideas demonstrated an 'open innovation' approach where expertise and ideas could be freely exchanged internally and externally. All of the software the residents developed, and much of the software they drew upon was open source. This collaborative approach was not in itself new to arts organisations; what was new was the realisation that this collaborative, social approach to innovation could be applied to technology development in their organisation. One organisation in particular had previously experienced the polar opposite of open source technology, employing an IT specialist who jealously guarded technological expertise and resources, even locking other staff members out of some parts of the website. Seeing the residents exchanging ideas, calling up friends for advice and sharing their knowledge with staff members was little short of revelatory. When the new technology manager was appointed midway through the residency, she enthusiastically embraced this more open style, working alongside the residents, learning from them, and working collaboratively with colleagues, so that technology became an extension of everyday problem-solving, not a separate specialism.

At the local level, each residency featured two 'open house' events at the end of each 'sprint', providing an opportunity for informal reflection between residents, mentors, arts organisations and local users and contacts. Residents spoke about their experiences at the Future Everything conference in Manchester, at TedX in Sheffield, and in James Bridle's contribution to the monthly talks programme at Lighthouse. They were also regularly blogging on the Happenstance website as well as in personal blogs. All of these activities helped to embed both Happenstance itself and the arts organisations in the consciousness of the local digital community and built their credibility with digital technologists, locally and nationally.

The collaborative process of project development demonstrated by the residents highlighted the possibilities for 'open innovation' through collaboration with others, especially with technology providers; the legacy of contacts and networks they instigated provided a mechanism for putting this model into practice.

Keep it simple

"Simplicity – the art of maximizing the amount of work not done – is essential." (*Agile Manifesto*).

The residents were continually looking for smarter, faster ways of working. Software development has a culture of 'fast failing' – breaking projects down into small steps which if unsuccessful can be retraced and redirected. As noted above, this 'agile' approach to risk management provides an alternative way of tackling the large-scale risky projects which characterised many of the arts organisations. The experimental attitude of the technologists was inherent in their 'hacker' mentality, a DIY culture which saw them playing around with old bits of kit (thermal printers, Kinect sensors) and adapting them to the needs of the moment. The attitude was 'build it fast and build it cheap' – and if it doesn't work try something different.

As will be discussed in the next part of this report, the 'just do it' mentality of the hacker is not necessarily going to be applicable or appropriate in arts organisations. As with the 'open innovation' model alluded to above, experimentation and 'fast failing' are not the exclusive property of technologists; many artists work in much the same way and this approach was not unfamiliar to those curating exhibitions or working with artists. Again what was refreshing and challenging here was the realisation that *technology* could be quick and pragmatic, and that strategic thinking need not precede or delay an innovative idea. Seeing the residents working in this way had a particularly galvanising effect on the administrative and technical staff, those working in the shop or in technical support roles, and on 'non-artistic' tasks such as overhauling the website or running a staff meeting.

Agile principles focus on the 'how' of innovation rather than the 'why'. There is a satisfaction in designing a slicker, faster or more efficient process regardless of the outcome. This could also be a limitation of agile methodology as will be discussed below. But 'simplicity' in processes was a useful principle, allowing the residents to be highly productive in a limited time and providing a stimulus, not so much for artistic innovation as for improvements in organisational efficiency and everyday tasks.

Trust: no pressure to be innovative

"Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done." (*Agile Manifesto*).

The Happenstance project was a deliberately open-ended project in which outcomes and objectives could be recalibrated in response to changing circumstances and emergent opportunities. There was no brief or blueprint. At the same time residents and organisations were aware that this was a significant project supported by public money. The expectation was that out of this open-ended project some productive outcomes would eventually emerge. On the other hand it was not clear what these outcomes might be, or how they

would be measured. The residents and organisations needed to embrace change, accept failure and weave together unexpected outputs and outcomes into an ongoing project.

The regular reporting mechanisms including blog posts, open house meetings and ‘show and tell’ sessions within each organisation, meetings with mentors, and researchers were highlighted earlier in this report. The project generated interest among the digital community and in the press, and residents were aware of being publicly exposed to external scrutiny by their peers as well as subtle competitive pressures from each other every time one of them unveiled a new technology or project. For some of the residents the opportunity to work outside their more regulated employment created its own self-imposed pressure and performance anxiety. In this context, it required a certain amount of courage and mutual trust to simply allow the mutual learning between technologists and arts organisations to unfold at its own pace.

A long-term legacy of resources, digital tools and changing attitudes is harder to evaluate than some clever, eye-catching innovations in the gallery or workspace. Finding an approach to evaluation which does not overburden the participants and protects an open-ended process was a key challenge for this project and for any similar projects in the future. Part of the problem was an understandable anxiety amongst the residents, fuelled by a feeling that they needed to make the best of a rare opportunity, despite the best efforts of the arts organisations and Caper to play down the ‘monitoring and evaluation’ aspect of the open house meetings and other interactions. Apart from reassuring the residents as to the value of incremental change and intangible outcomes, it was necessary to remind residents that they were *not* required to deliver specific, measurable outputs and that a legacy of changed attitudes and capabilities might be more valuable than a new digital tool or bespoke technology. This reassurance required a collective effort from senior management teams, and from Caper and the project mentors, to manage expectations and provide clear guidance on the project aims whilst preserving autonomy around process. The management of innovation, as opposed to the process of innovation, will be considered further below, and in the second half of this report.

1.2 Beyond Agile: managing the innovation process

‘Agile’ development is an approach geared to software development. Its principles and methods are adapted primarily to manufacturing industry. The methodology is comparable to ‘kaizen’ principles pioneered by Toyota in the Japanese car industry, or ‘lean’ manufacturing principles used in the construction industry. The aim of ‘agile’ development is to maintain a steady flow of innovative products at a sustainable pace.

This was not the primary aim of the Happenstance. Happenstance was after all not a software development project. The primary aim of Happenstance was to ‘embed’ digital innovation in arts organisations. As noted previously Happenstance was an attempt to combine a product-led manufacturing approach to innovation (using some ‘agile’ principles) with a more adaptive, user-oriented approach closer to service-based innovation. This combination of some agile principles with a more adaptive, strategic approach to innovation is, we argue, especially resonant to arts organisations. Achieving the right balance between experimentation and adaptation remained a fundamental challenge throughout the project.

Technologists had to be sensitive to the ‘mood music’ inside the organisation. Whilst it was their job to initiate change, they had to be sensitive to the context in which these changes

would occur. Arts organisations had to be open and flexible in their response – an idea which initially seemed inappropriate might contain future possibilities. Arts organisations had to be ‘digitally curious’ if not digitally literate. Similarly, technologists had to be organisationally literate, or at least sensitive and curious about the organisations they were adapted to.

When this process of mutual adjustment went wrong, problems started to occur with the residencies. The digital technologists in residence might become too enthused by the possibilities of the technology to observe the organisational context in which they were working. Organisations might become too preoccupied with the strategic end game to allow space for unexpected interventions and alternatives.

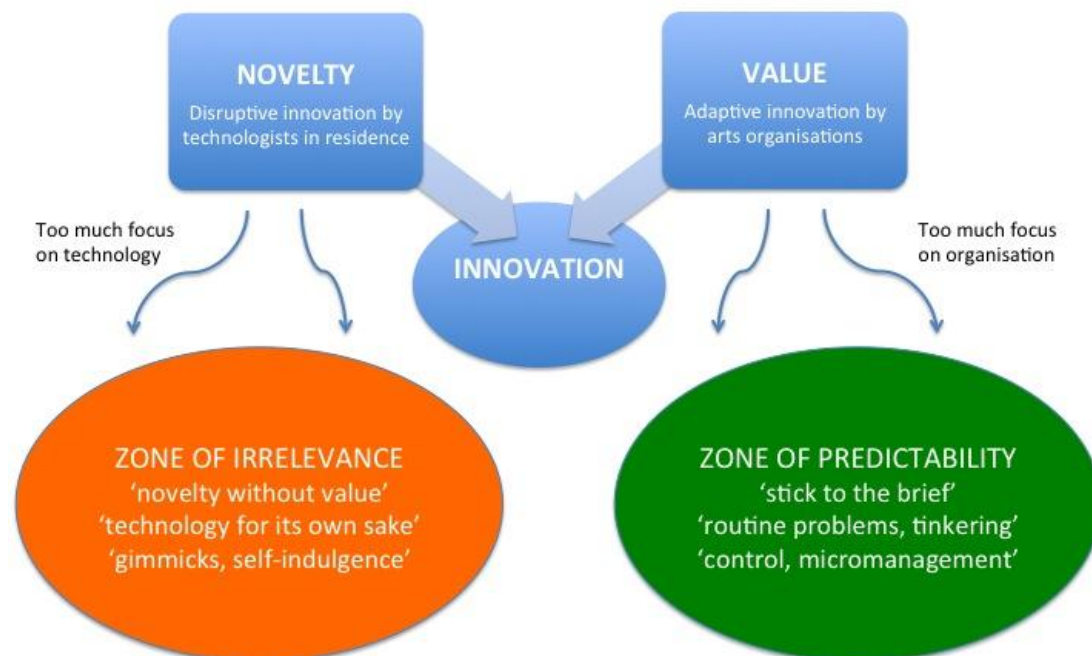


Figure 3 Happenstance: zone of irrelevance, zone of predictability

When the technologists dipped into the ‘zone of irrelevance’, it was often because they had become enthusiastic about a new piece of software or hardware. Their enthusiasm could be overpowering. One arts manager confided that arts organisations are ‘almost allergic’ to ‘technology without a purpose’ and complained of an occasional tendency for residents to resort to ‘gimmickry’ without asking themselves the critical question, ‘how is this going to impact the organisation?’

Equally, there were occasional complaints that organisations were using the technologists in residence to sort out routine IT problems, or were attempting to impose a ‘brief’ on the residents rather than allowing them space to come up with solutions and identify problems as part of the innovation process. This was frustrating and distracting given the limited time available.

Such tensions are of course not limited to digital technology projects. Many of the complaints being directed at 'self-indulgent' or 'pointless' digital innovation could equally be directed at work by artists. Managing such tensions is fundamental to the expertise of arts managers. It was also a fundamental aspect of the Happenstance process. In order for Happenstance to succeed, it was critical that digital innovation was actively managed, firstly by Caper and secondly by the arts managers themselves. In an innovation process, coming up with ideas is not enough. Any theory of innovation will also encompass some notion of applying or directing innovative ideas towards organisational purposes and solutions. Coming up with too many undirected ideas may cause more problems than solutions. Managing the innovation process on Happenstance meant directing energies towards the centre (see Figure 3 above) rather than allowing them to spin off into a 'zone of irrelevance' or 'zone of predictability'.

We observed this process of adjustment during the innovation process. At Spike Island, after a period of misdirection and mutual disconnection, the technologists were in the second stage of the residency able to take a more adaptive approach, working more closely with the staff and introducing successful projects such as the 'design jam' and one-to-one coaching. This followed ongoing conversations between residents, Caper and senior management, with the residents gradually refocusing their efforts inward onto the core staff rather than other users of the building (the technologists at the same time relocated into the main office space). Secondly at Site Gallery, the technologists produced two thermal receipt printers which were wired to connect with mobile phones and servers, allowing them to respond to tweets, emails, texts and phone calls and print out the resulting interaction on a spool of paper (see picture below).



Thermal printer prototype connected to Arduino at Site Gallery (Photo: Chris Bilton)

The initial reaction to this from gallery staff was (polite) bemusement. Technically connecting together several different communication technologies was impressive, but what was the point? In the end the gallery was able to find a purpose for this technology, using it to link to an art exhibit in the gallery. The two printers also took on a longer-term purpose. Nicknamed 'Cathy' and Heathcliff', they acquired personalities, went on trips together into the local countryside, read out sections of 'Wuthering Heights' to callers on a dedicated phone number. They were also included in everyday office chat, providing an entertaining way of connecting staff with each other, with gallery visitors and outsiders accessing them remotely, sparking conversation and interaction. What we saw here was a managed innovation process through which the organisation and the technology teams were able to adjust to each other, discovering unexpected purposes, changing direction and adapting the technology to fit the needs of the organisation. The tipping point came when the arts organisation was able to incorporate Cathy and Heathcliff into a schools project based on a Bill Drummond exhibition. The schoolchildren enthusiastically tweeted to Cathy and Heathcliff and were delighted to see their recreation of Drummond's work spooling off the printers. The project also captured the imagination of Site's staff, showing how the residents could add value to the core activities of the organisation.

At the other extreme, Site's residents later introduced another technology, a 'polarograph' – a robotic arm which could draw in response to codes transmitted from a remote location. In the end it was not possible to identify a purpose or application for the organisation. Rather than pursue the project into the 'zone of irrelevance' the project was shelved. Here we saw the residents adapting in a different way, recognising that just because something was technically innovative did not mean it was organisationally useful.

These examples of mutual adaptation leads us into the second part of the report where we will consider in more detail how the organisations and the technologists involved in Happenstance were able to 'embed' innovation.

PART 2: Embedding Innovation – from one-off initiative to long-term impact

The second part of this report examines the transition between relatively short-term, experimental innovations and solutions and longer-term effects on organisational strategy, processes and culture. These cultural effects represent a form of ‘hidden’ innovation in the creative industries, encompassing the kind of changes in organisational structure, management and strategy noted by Miles and Green (2008, 72). The capacity for an organisation to absorb and respond to interventions and initiatives also represents a form of structural ‘capital’ in each organisation, which precedes one-off innovation, reflecting the time, resources and expertise invested by the arts organisations in the Happenstance Project. Collectively this cluster of organisational assets both precede and follow the moment of innovation; assets are both invested in the residencies, and are accumulated as a result.

In this section of the report we will therefore consider the intangible assets the organisations invested in the project as well as the intangible benefits which they accrued. Because these assets and benefits are intangible (leadership, culture, attitude), they cannot be measured with any precision. Nevertheless in this part of the report we plan to demonstrate three important aspects of the Happenstance project:

- Firstly, for an innovation process to work effectively, certain assets need to be in place (including for example trust, leadership, and commitment). These organisational assets provide the hidden base for innovative ideas to take root or take flight.
- Secondly, one-off innovations trigger secondary innovations in organisational behaviour, culture and attitude which may amount to significant assets for the organisation and lay the groundwork for a second round of innovations in the future.
- Thirdly, innovation is an iterative process in which experimental interventions and organisational change are mutually supportive.

We are therefore focusing here on the organisational behaviours which both precede and follow the ‘innovation process’ described in the first part of this report. These can be described as ‘cultural conditions’ necessary for the residencies to be successful, and ‘cultural consequences’ resulting from the residencies. We have also highlighted examples of the reciprocal action between ‘experimental innovation’ and ‘organisational change’ alluded to in the first part of this report.

Together these phases form an innovation cycle, from pre-production, to the Happenstance residencies themselves, to a post-production phase of adaptation and filtering, through to a second wave of innovative behaviour within each organisation (Figure 4).



Figure 4 Happenstance – the innovation cycle

The innovation cycle described here was observable within the residencies, as one-off projects triggered longer-term cultural changes in the organisation. We termed this effect ‘oblique innovation’ where an innovation in one part of the organisation (for example a new piece of hardware or software) triggers other innovations elsewhere (for example a different way of working or communicating). These oblique effects were often unplanned or unintended.

Likewise as the projects progressed the reciprocal effect operated in the other direction too. As the organisation became more familiar with the people and the technologies involved in the residencies, it became easier for the residents to initiate new ideas and to gain support for them. They were thus able to add to their stock of ‘structural capital’ through the residencies and trigger the next round of innovations. Some of the residents made explicit reference to a ‘legacy’ effect, empowering the organisation to initiate new projects beyond the lifetime of the Happenstance residencies.

Familiarisation and reflection before, during and after each residency or ‘sprint’ supported this oblique innovation effect. The original intention to hold a full pre-production induction week with each organisation was dropped for pragmatic reasons (it would have placed greater demands on the organisations, as well as cutting into the available budget). However, there was a regular informal interaction between residents and the lead contact in each arts organisation, as well as with external mentors, and the open house meetings at the end of each residency provided an opportunity to take stock and reflect on progress. Despite the lack of a formal debrief at the end of the residency, the residencies did follow the Agile Manifesto’s recommendation that a development team meet ‘at regular intervals’ in order to ‘tune and adjust its behaviour’.

2.1 Embedding innovation: a three-phase process

We can conceptualise the relationship between digital innovation and organisational adaptation through the Happenstance Project as a three-phase process. In the first phase, the three arts organisations and Caper invested time and resources in planning and designing the project; we describe this as a ‘pre-production’ phase, establishing the ‘structural capital’ which would allow the residencies to operate effectively. The second phase, ‘production’ refers to the residencies themselves, encompassing the innovation process outlined in the first part of this report. The final phase, ‘post-production’, refers to the aftermath of the residencies through which the organisations absorb and respond to the innovation process, translating innovative inputs into longer-term competencies and assets for the organisation, and thereby completing the innovation cycle (Figure 4).

Each phase of this process raised some different challenges which were managed by one of the three principal participants in the Happenstance Project (Figure 5). During the pre-production phase, Caper was the lead partner, establishing the ground rules for the residencies, identifying and recruiting the residents, building trust between residents and organisations and managing expectations. In the production phase the residents took the lead, although as described in the first part of this report, they were also working closely with the arts organisations. In the post-production phase, the baton passes to senior management in the arts organisations, as they processed the outcomes of the residencies and identified new sources of value and laid the groundwork for the next round of innovation in their respective organisations.

Pre-Production	Production	Post-Production
Led by Caper (working with leaders of arts organisations)	Led by residents (working with arts organisation staff)	Led by arts organisations (supported by Caper)
Establishing ground rules and commitment, investing structural capital	‘Glanceable’ innovation triggering organisational consequences	Adapting and embedding innovation, building structural capital

Figure 5 Embedding innovation: a three-phase process

The three phases described here correspond to a theory of creativity as a multidimensional process. The best known model is probably the sequence described by the 19th century mathematician Henri Poincaré and later popularised by the British psychologist Graham Wallas: preparation > incubation > illumination > verification (Bilton 2007). Other similar models have also been proposed by Howkins (2001, 16-17): RIDER - Review, Incubation, Dreams, Excitement, Reality checks. With all of these models it is important to emphasise that the sequence is not strictly linear – the phases overlap and loop back over each other. Similarly in Happenstance, ‘pre-production’, ‘production’ and ‘post-production’ phases were frequently overlapping, iterative or simultaneous. The arts organisations did not wait until the end of the project before reacting to and processing the innovative inputs by the residents, and Caper’s role of managing expectations and relationships was not confined to the pre-production phase. However, for the purposes of this report we will treat each phase

in the project separately. Specifically in this part of the report we will focus especially on the 'pre-production' and 'post-production' phases, in order to highlight the importance of active management of the innovation process by Caper, and 'embedding' of innovation by the arts organisations. We will conclude by revisiting some of specific examples of innovations during the Happenstance residencies, showing how these connected forwards and backwards to the pre-production and post-production work by Caper and by the leaders of each arts organisation.

2.2 Pre-Production

As the preceding discussion makes clear, innovation does not happen at random. Planning and preparation create the conditions within which innovation can occur, and innovation is part of a strategic process, not outside it (Bilton and Cummings 2010). In this part of the report we will highlight some of the strategic inputs and initial conditions which preceded the Happenstance residencies. During this pre-production phase from October 2011 to March 2012, Caper worked closely with the organisations to manage expectations and ensure a common understanding of the Happenstance process. The structure and purpose of the residences and the recruitment criteria were established. Caper was the lead partner during this phase, supported by the senior managers of the arts organisations, and from April 2012 as the residencies got under way, by the locally-based mentors Caper had identified for each residency.

Visible leadership

All three senior management teams had, to varying degrees, bought into the Happenstance Project had mobilised the support and enthusiasm of their staff and saw the project as an opportunity to enhance their profile and build links with the digital community outside the organisation. 'Visible' support from senior management has been identified as a necessary precondition for technology adoption in cultural organisations⁴.

The directors of Site Gallery and Lighthouse had been involved in planning Happenstance with Caper from August/September 2011. Spike Island joined the project in November 2011, shortly before Caper began planning recruitment of the residents. Spike Island's director had a shorter lead time to identify the value of Happenstance and to sell the benefits internally. This was compounded by the scale and structure of the organisation. Whereas both Lighthouse and Site Gallery are relatively compact architecturally and organisationally, with a small staff team working in close physical proximity, Spike Island is more dispersed. Artist studios, Spike Associates, tenants, gallery staff, visitors and clients are based in different parts of the building, representing a variety of needs and interests. Around 500 people pass through the building each day, using different entrances. Architecturally and organisationally it was harder for Spike Island to identify a focal point for the residencies. It became much harder for Spike Island to ensure 'buy-in' across the entirety of the organisation and so to provide 'visible leadership'. At first there was some doubt about where physically the two residents should be based in the building and whom they should be working with - curatorial staff, artists, tenants and associates, gallery visitors. Indeed this diversity was one of the key themes Spike Island's director hoped that the residencies might address; but it was also an obstacle to the residents becoming embedded in the organisation in the first place. No doubt some of these difficulties could have been overcome with a longer lead time; but we can also conclude that short, open-ended residencies work best in small, compact organisations with a clear leadership structure that covers all aspects of the organisation. The lack of visible leadership in the lead up to the residencies at Spike Island compounded these difficulties.

Digital curiosity

⁴ Kirsten Drotner has described 'invisible leadership' as a barrier to digital technologies in arts organisations. If new technology development is delegated to (or driven by) junior staff it is less likely to be embraced by the organisation. (Kirsten Drotner, speaking at *Museum Mediation in Transition* conference, M - Museum Leuven, 10th October 2012)

Each of the three organisations was 'digitally literate' to varying degrees. Whilst at least some staff members understood the language of digital technology, there was a tendency to view digital technology in relation to IT infrastructure or to artistic work in the gallery rather than as something integral to everyday processes. Ranging along a spectrum of digital literacy, Lighthouse was possibly the furthest advanced describing itself as a 'digital culture agency', hosting Brighton University's MA in Digital Media Arts and engaging public debate about digital culture in its monthly talks. Spike Island's director admitted to being relatively unfamiliar with digital technology. Site Gallery positioned itself somewhere between these extremes, with a digital presence through some of the exhibited work and through their relationships with the local digital community, but lacking a strong digital capability within the core staff team⁵.

Digital literacy was in the end less significant than 'digital curiosity'. By signing up to the Happenstance Project, all three arts organisations had indicated a desire to explore digital applications and processes even if some individuals lacked expertise. The pre-production phase gave the organisations an opportunity to articulate their concerns and interests. The fact that these organisations were already working with digital technology, especially in a curatorial context, should not be seen as an essential criterion for participating in Happenstance. Having some curiosity about digital technologies and space and time to engage with the possibilities of digital technology in other parts of the organisation, especially in administrative and management contexts, was much more important.

Caper was able to pre-sell some of the possibilities of digital technology in organisational settings and build anticipation and enthusiasm for the residencies. Caper also planned an 'immersion day' and an induction week before the project, but this was compressed into a single induction day primarily due to constraints on time and commitment within the organisations. Some further familiarisation and prompting for ideas should, according to Caper's original plan, have preceded the residencies, allowing the residents to hit the ground running from day one. Instead, part of the residency was initially used up in exploratory meetings and conversation. Whilst an additional pre-production phase would have been more expensive and resource-intensive for the organisations, we concur with the view expressed by some of the residents that a pre-production week would have established a clear framework of possibilities, allowing them to be more efficient for the duration of the residencies.

Managing expectations

For the organisations, self-restraint was needed not to impose their own priorities, procedures or expectations too directly on the residencies. The organisations were expected to defer judgement on the value of the work rather than pre-empting the innovation process with preconceived aims or a prescriptive 'brief'. They also had to protect the autonomy of the residents by managing the expectations of a diverse range of users including artists, associates, tenants, funders and stakeholders. The residents were not expected to provide consultancy services or deliver on a specific brief, they were given a free role and asked only to respond creatively to the organisation and come up with new ideas and projects.

This level of autonomy around process is essential to the creative process, but was particularly challenging in the context of expectations around Happenstance itself and of

⁵ Site's technology manager left shortly before the start of the residencies and was only replaced in the third week of the residency. As a result residents spent some time in the first few weeks providing basic technical support.

these three arts organisations. All three organisations had relatively new leaders and had either recently undergone or were undergoing reviews of management structure, brand identity or operations. There was a strong expectation, particularly from funders, that the leaders of these three arts organisations would either initiate or consolidate significant changes in their organisation, and that in turn they would provide leadership for developments in the city and surrounding region. For the arts organisations then, Happenstance was a highly visible project in which their reputation, brand and relationships with other stakeholders were at stake. This might easily have translated into a desire to micro-manage the residencies and channel them into core management priorities with clear and predictable outcomes.

When we spoke to senior managers immediately before the residencies, there was a remarkable degree of equanimity about the potential success or failure of the projects. This is testimony to the pre-production work both by Caper and by the respective leaders of each organisation in managing both their own expectations and ensuring buy-in from colleagues and stakeholders. They continued to allow the residents a free hand in spite of pressures towards delivering their own strategic objectives.

Maintaining autonomy around process also set the tone for project evaluation. Evaluating an open-ended project with no clear objectives is challenging because there is no obvious measure of success. Furthermore evaluation and monitoring can have a chilling effect on innovation (Amabile 1999). The residencies were exposed to a good deal of scrutiny in the form of blogs, open house events, meetings with researchers as well as public talks by the residents. However, Caper and the arts organisations maintained an informal approach through these exchanges. Both residents and arts organisations were open about successes and problems. There was not a sense of measuring outputs against objectives but of a more reflective process of assessing and building on strengths and circumventing difficulties. Again the 'pre-production' phase helped to manage expectations in the build-up to the residencies. This in turn set up a more open, less prescriptive approach to evaluation as well.

Recruitment

At recruitment stage, Caper was able to reassure the organisations on the suitability and competence of the candidates and engineer a good fit both between resident and organisation and between each of the two residents. Happenstance required a combination of technical and personal skills. Whilst residents were expected to initiate change, they were also expected to be 'organisationally literate'. They needed to be sensitive to organisational constraints and to see beyond their own enthusiasms. They needed the self-confidence and imagination to initiate projects, but also the sensitivity and self-awareness to respond creatively to the needs of the organisation. They required a degree of self-confidence *not* to initiate projects and to recognise that the juxtaposition of their ideas and skills within the organisation was potentially just as 'useful' as designing a piece of software.

Whilst pre-production was largely concerned with laying the groundwork in each organisation for the residencies, it was also important not only to identify and recruit the right kind of digital technologists, but also to manage *their* expectations as well. The adaptation between organisations and technologists was a two-way process. Technologists had to question their assumptions and routine processes no less than staff in the arts organisations, to be prepared to learn as well as to teach.

Caper worked hard to attract and recruit residents with the right blend of technical skills, organisational experience and personal qualities; in particular they made it clear that technological innovation would not be sufficient, and that residents would have to negotiate their own role within the project. Caper was able to reassure the organisations that all the candidates for the residencies had the requisite technical and creative skills, leaving the organisations free to focus on organisational fit. Some candidates were rejected not because they lacked in ability, but because they seemed less able to communicate outside their expertise, or more interested in pursuing their own projects than in adapting to and attending to the needs of the organisation. Secondly Caper also attempted to match the technologists with each other (none of the pairs had worked together before), providing mutual support and a sounding board for ideas.

Once residents were recruited, Caper had to manage and reassure the residents much as they had to manage expectations among the arts organisations. The freedom to create imposed its own pressure on some residents. Without a clear brief to follow, residents were still expected to generate ideas and projects quickly and to connect these to the values and purposes of the organisation. With the organisations consciously holding back from imposing their own targets and priorities, residents also had to avoid imposing their own pet projects onto the organisation. All of this required a level of maturity and experience. It was useful for residents to have some experience of working in organisations, some awareness of user experience and design in addition to more technical aspects such as programming or coding, and some interest in the work of the organisations they were attached to.

These criteria were addressed partly through the recruitment process and project design. Secondly the pairing of two residents with different but complementary skills provided mutual support and encouraged greater confidence in the project's aims and in themselves. Finally, Caper identified local mentors from neighbouring digital enterprises. They worked with the residents to reassure them on the value and purpose of the residencies, and also helped to connect both residents and arts organisations into a wider local digital community.

Through their work with the residents and the arts organisations, Caper invested in the stock of 'structural capital' necessary to sustain the residencies and to provide a fertile background for innovation. We will now consider the other end of the process, the 'post-production' phase in which one-off initiatives during the residencies could be embedded in organisational attitudes, behaviour and culture.

2.3 Post-Production

The avowed aim of Happenstance was to move beyond one-off digital innovation towards embedding digital thinking in the arts organisation's culture, attitudes and behaviour. In this part of the report we will consider the arts organisations as active participants in the innovation process as co-creators, adapters and curators of innovative ideas. Secondly we will consider the longer-term consequences of the Happenstance residencies on digital literacy, confidence and organisational learning.

Connecting novelty with value

Having ideas is only part of the innovation process – ideas must be developed and applied. During the Happenstance Project, the residents were regularly coming up with innovative ideas, new pieces of technology and new ways of communicating or connecting people. The arts organisations were not passive recipients in this process. Their role was to recognise the value of potentially useful ideas and connect them into the everyday practices of the organisation.

For the arts organisations this interaction was comparable to curating artists in residence. Whilst protecting the artist from external pressures and distractions, the host organisation also provides a sounding board for ideas and a framework of possibilities. With Happenstance, the residents' impulse to make innovative products was framed by the organisation's ability to make incremental tweaks to processes, knowledge and resources. The overall interaction was between the technologists' ability to come up with new solutions and the organisations' ability to provide a purposeful frame for these innovations in order to acquire value and direction. We summarise this as an exchange between 'research' and 'development', between 'novelty' and 'value', between technologists asking 'how?' and arts organisations asking 'why?' (see Figure 2 at the start of this report). The residents gained a renewed sense of value and purpose in their work; from the arts organisations' perspective there was an opportunity to rethink everyday processes and routines.

The core of this process was the selection, retention and reapplication of promising ideas within the organisation. Selective retention of ideas connects with a Darwinian model of innovation (Simonton 1999) in which a diversity of inputs are selectively retained and absorbed into a continuously evolving system – in this case, the evolving system being the arts organisation's ability to make creative use of digital technology. Not all of the interventions proposed by the residents were useful or relevant. The residents would at times be excited by a particular technology (thermal printers, virtual drawing machines, tweeting kettles), but it was up to the managers to identify the value of these ideas and either accept or reject them. Often the value came through the interaction and exchange of ideas rather than the technology itself. Staff in Site Gallery were able to learn how to use their own resources (the online shop, the website) through their interactions with the residents. The technology (Arduino kits, thermal printers, robotics, playing with kinect motion sensors) were a stimulus to internal confidence and creativity, not an end in themselves. At other times the residents' enthusiasm for technology was not shared by their hosts, as in the earlier example of the 'polargraph' drawing machine at Site. Very often the most transferable ideas were the simplest – a lunchtime coding workshop at Lighthouse, a 'design jam' at Spike Island, redesigning the online shop at Site Gallery. And very often the transformative effect came through the communication around the technology rather than the technology itself.

We observed some instances where a pure R&D process generates ideas and technologies which are of no obvious use to the arts organisation, or where the arts organisation lacks the time and resources to capitalise on a potentially promising idea. On the whole though, the Happenstance Project provided a collaborative context in which random innovation could be applied and tested, and where half-formed ideas could be retained and developed. In essence we observed technology being used to address the 'how' questions of process and method, and the arts organisations addressing the 'why' questions of purpose and value.

Oblique innovation/glanceable technologies

This reframing of ideas and incremental adding value connects with the notion of 'oblique innovation' referred to earlier in this report. Oblique innovation occurred when an innovation in one part of the organisation triggered a secondary innovation in another part, across and sideways from the original intervention. The adoption of Trello by the directors of Site Gallery as a project management tool was one example of this. For the residents Trello was simply a useful way of mapping and managing their tasks; for the arts organisations it offered a more open approach to communication and planning. Through the residents' presence in the building as well as through specific workshops and open sessions working with staff, technology was made more readable and accessible. The arts organisations became more confident, more likely to look for a technological solution to a problem, more willing to treat digital tools as something to work with (or play with!) rather than as obstacles. All of these changes are best described as implicit and oblique effects on organisational culture rather than direct, project outputs.

Caper referred to 'glanceable' technologies, meaning a simple idea which can be understood 'at a glance' and absorbed into practice by users, without lengthy discussion and explanation. Such glanceable innovations fit with the process we have termed 'oblique innovation'. They also fit with the preceding observation that the most effective innovations were often the least spectacular. Simple unplanned interactions, mending a broken connection or showing somebody how to use a piece of software, were cited by staff as not only 'useful' but also as subtly empowering, allowing them to understand and take control of technologies which would normally have been delegated to a specialist technician. 'Being useful' was a route to 'being innovative', not in the sense of generating new ideas but in nurturing a different organisational culture and contributing to 'hidden innovation' in the working methods and competences of staff members.

Digital literacy and confidence

Having considered the contribution of the arts organisations to the innovation process, by providing a purposeful frame for random innovations to acquire purpose and value, the remainder of this report will reflect on the organisational consequences of innovation. First and most obviously, the arts organisations acquired an ability to 'read' technology and greater confidence in both using technology for their own purposes and also deciding when not to use it.

In Lighthouse, the suggestion to ban email was a 'glanceable' idea, easy to understand and implement. The idea behind the suggestion was guided by the Agile Manifesto's emphasis on people over processes and on face-to-face communication (indeed displaying the Agile Manifesto on the office wall was another 'glanceable' idea). One resident was running

workshops in coding using 'XRay Goggles' to pull apart websites and read and rewrite the underlying code. Meanwhile her colleague was running 'This Is A Working Shop' to display the physical activity of writing code, challenging the view of coding as a specialist, arcane activity. Finally the two residents were together collaborating on 'Offbot', a virtual 'robot' designed to facilitate informal communication and sharing ideas within the office.

The net effect of all these activities at Lighthouse was to challenge the way staff communicated with each other, and especially to bypass our daily interaction with screens, via email or web browsing, towards an understanding of the exchanges of ideas which lie behind the screen. The learning here was more about acquiring a 'digital attitude' than a straightforward acquisition of technical skills.

At Site Gallery, one of the directors described her response to seeing the residents solving technical problems, by looking things up on Google or talking to friends and contacts. She began to realise that the expertise of the residents lay not in knowing the answers, but in knowing the right questions – and knowing where to direct them. Technology development was no longer a secret language of bits and bytes, it was a series of messy conversations. Having seen the residents in action, she felt the confidence to initiate her own conversations with developers and designers; and as a result of the residencies she had acquired some contacts of her own to draw on in solving future problems.

At Spike Island, the 'Design Jam' at which local developers and designers were invited to 'hack' the organisation and come up with new solutions and suggestions had a similar effect, demystifying technology and opening up new channels of communication with the local digital community. Meanwhile one of the Spike Island residents was running one-to-one consultations with staff on technology; his experience as a journalist and teacher allowed him to present technology in an accessible, user-friendly language. Indeed staff members were clearly reassured by the fact that he arrived at meetings with a small leather-bound notebook and pencil rather than a laptop!

In some instances the Happenstance residencies equipped the arts organisations with technical skills. As noted above many of the arts organisation already had a good level of digital literacy, but this tended to be concentrated in a few individuals or specialisms, not distributed across the organisation as a whole. More significantly, Happenstance communicated a 'digital attitude', a confidence in dealing with technological problems and people, and an ability to understand the human challenges and transformational potential within a piece of software or hardware. This makes possible a second generation of 'oblique innovation' as the organisations apply this new digital confidence to future projects. Anticipating these future projects goes beyond the scope of this report, but the resources and ambition for such developments are an important part of the Happenstance legacy.

Reflection and organisational learning

Beyond the acquisition of technical skills and renewed confidence, the Happenstance Project encouraged the arts organisations to reflect more broadly on their internal processes and organisational culture. The Happenstance residents were not only technologists, they also came into the arts organisations as curious outsiders. Indeed this outsider status was no less significant than their technical and imaginative input.

'Disruptive' technologies are so called because they break up organisational routines and challenge accepted priorities and practices. As freelance individuals, many of the residents were unfamiliar with the routines of organisational life. Their engagement was occasionally 'disruptive'. At times the freelance technologist's lack of accountability could come across as uncommitted or even negligent. Sometimes the ideas they developed outside the organisation failed to mesh with internal routines and priorities. Debates about timekeeping and physical presence indicated a continuing uncertainty around the status and role of the residents as internal outsiders. There was an ongoing debate about what they should be called – 'creative technologist' seemed too grandiose, 'geek in residence' too pejorative, they emphatically denied that they were 'artists'. In the end 'residents' was the simplest and least controversial term. But perhaps 'innovator in residence' would have been a more accurate and more transferable term than 'technologist in residence'.

The residents' 'outsider' status allowed them to question routine assumptions and processes (for example the amount of time spent in meetings or discussing decisions). One resident commented that some of the issues they observed and wanted to challenge would probably have been evident to any outsider; the fact that they proposed digital solutions to some of these challenges was less important than their ability to see the organisation from a different perspective. The resident's trusted status of an invited outsider threw cultural values and practices into relief, and allowed the resident to propose cultural change under the reassuring guise of introducing new technological tools. Another resident spoke of 'using technology as a Trojan horse for catalysing all kinds of change'.

The privileged outsider status of the residents granted them a free role in the organisation, able to engage with different constituencies. They could link up discussions of strategy and branding with practical suggestions for company websites and internal communications. They could work with curators and artists, but also with front of house staff and technicians. This in turn provided a catalyst for internal communication. In the lunchtime coding sessions at Lighthouse for example, the director and senior staff worked alongside associates and students.

A recurrent theme across Happenstance was making processes visible, whether these processes were technological ('This Is A Working Shop' showing the process of coding), or artistic (digital postcards at Spike Island). More broadly, the Happenstance Project exposed the internal workings of each arts organisation, reflecting routines and habits through the outside eye of the residents or capturing them digitally through the virtual conversations on Offbot at Lighthouse or in the printouts from the 'Cathy and Heathcliff' printers at Site Gallery. The reflection on internal routines and processes was one of several 'intangible' outcomes from the Happenstance to which we now turn.

Intellectual Property: outputs and outcomes

When we sat down to evaluate Happenstance at the end of the residencies, one of the arts organisations made a useful distinction between outputs (the achievements and results of each residency) and outcomes (the uses to which these outputs were directed within each organisation). Outcomes also extended to cover secondary changes in the organisation, including changes in behaviour, culture or attitude. Given the overall aims of Happenstance these less tangible organisational changes are clearly important.

There was of course a direct correlation between ‘outputs’ and ‘outcomes’. During the course of the residencies, ‘outputs’ provided quick wins which boosted confidence and trust in the Happenstance process and made residents and organisations more likely to learn from each other. Primary achievements (outputs) sparked secondary benefits (outcomes). For example, when the residents solved a technical problem for a staff member, they also shared some of their problem-solving methodology. When they initiated a new project, they also demonstrated some of their project management tools and software. They also made these underlying technologies more available and transferable through specific workshops or one-to-one sessions with staff. In turn, the less tangible outcomes (increased digital literacy and confidence with digital tools, changing attitudes to technology, cultural changes in attitudes to risk and innovation) provided a fertile context for the processing and adoption of tangible outputs (recognising the value of new ideas and projects).

Whereas outputs tended to be technology focused, outcomes tended to be more behavioural or cultural. Indeed one behavioural outcome of the residencies was to reduce rather than increase reliance on technology. Following ‘agile’ principles the residents tended to value face-to-face communication over email, people over processes, progress over targets.

The tangible outputs from the residencies also tended to be more short term, whereas intangible outcomes had greater potential for transferring into future projects. For example, ‘Offbot’ has potential value as a communication tool for other organisations (not just arts organisations); might this be developed as a marketable product? Offbot was a prime example of an innovation that is developed in public view on an open source platform (Github) where the code is freely available to anyone to download and use. Most of the software used by the residents was open source; residents would then ‘hack it a bit’ to customise it for their own purposes. The residents clearly expected that any intellectual property assets arising from the residencies would be similarly available for others to use and hack. At present there are no plans to market Offbot as a technology; what is being offered instead is an idea with potential for other organisations to adapt to their own ends.

The transferable aspect of Offbot was not the IP contained in the software, but the social exchange of ideas which made it possible. From our point of view, Offbot’s innovation was not so much technological as social. The residents brought with them a set of digital tools and skills, but they also brought with them a sense of a different, ‘digital’ culture: a commitment to fast prototyping, experimentation, efficient and rapid processes, a desire to connect outwards and share ideas rather than owning them. These cultural behaviours were at least as transformative as any technical capabilities. Attempting to own the outputs of the residencies as ‘IP’ might inhibit the wider adoption of the outcomes of the residencies as an approach to innovation.

There is evidence of high demand in the arts and cultural sector for digital R&D⁶; what might be the implications of Happenstance for other similar projects in the future? From a cultural policy perspective, there is considerable interest in the possibilities of digital technologies for developing new hybrid products and services, and for finding new ways to engage with users and audiences (Bakhshi and Throsby, 2010). The Happenstance Project points to a third possibility, that the interaction between arts organisations and digital technologists can also instigate cultural change, opening up new ways of collaborating and communicating within teams and new approaches to project management.

⁶ NESTA and the Arts Council received an ‘overwhelming response’ to the Digital R&D Fund for Arts and Culture with 494 applications from arts and cultural organisations of which 393 seeking a total of £24 million were deemed eligible. (Bakhshi & Pugh, 2011)

2.4 Closing the loop: an iterative process

As described through the pre-production and post-production phases above, the innovation process of Happenstance was reflexive and iterative throughout – there was an ongoing dialogue between possible solutions and potential applications – and the sharing of knowledge and ideas between residents and organisations was integral to the innovation process.

A key element in the exchange of ideas was the role of Caper in managing the relationships between the technologists in residence and the arts organisations, as discussed in Part 1 of this report. A second element was the opportunity for reflection and interaction provided by induction, mentoring and debrief sessions planned into the project. The induction sessions with the residents were, as noted above, curtailed due to difficulties in committing time and resources from the arts organisations; this was offset by the lengthy planning period involving Caper and the leaders of Site Gallery and Lighthouse prior to recruitment of the residents.

Mentoring was undertaken by local technology specialists⁷ whose primary role was to support the residents, build connections with the local digital community and provide a sounding board for ideas. What the mentors were not able to do was mediate between residents and the arts organisations – this role continued to be undertaken by Caper. In the one instance where a resident was not working effectively with the arts organisation, Caper and the mentor worked together to repair the relationship so that by the second sprint both residents were better integrated with the staff team. A temporary project manager at Caper was also appointed to work across all three organisations for the duration of the residencies. Neither the project manager nor the mentors had the same level of access to the arts organisations as Caper's directors. Some of the residents suggested they would have preferred to work more closely with Caper during the residencies; however, this might have proved logistically difficult given that Caper consists of just two permanent staff and would also have added to the cost of the project.

One of the arts organisation directors noted that the project management function had been 'skewed a bit' by the central involvement of the research team – and in another organisation the director commented on the mediating role played by the Warwick researcher as a communication channel between staff and residents.

A formal 'debrief week' was planned to allow residents and participants to take stock of what they had learned from the project, though much like the induction week, this proved difficult to organise in practice. In the end there was a separate debrief involving Caper and the residents which was no doubt useful for Caper's own future project planning and for the personal development of the residencies. The reluctance from the arts organisations to commit additional time to the project after the residencies was understandable, given other pressing demands on staff time as well as external commitments for the residents. Each organisation had already hosted two open house sessions to reflect on work in progress, and also participated in an event organised by Caper at Nesta three months after the residencies completed. But a more formal debrief involving the residents and staff of each organisation would have been a worthwhile opportunity to review what had happened and consider next steps in a more formal, 'client service' context within each organisation.

⁷ The mentors were Matt Locke (for Lighthouse), Claire Reddington (for Spike Island) and James Boardwell (for Site Gallery).

It is possible too that the lack of a more formal debrief session reflected differing expectations from the residents and the arts organisations around project evaluation. The arts organisations were familiar with an evaluation model which measures successful outcomes against prior objectives. The Happenstance model was premised on a more open ended, 'agile' approach to evaluation in which participants reflect on progress and use this to plan next steps. This more iterative approach to evaluation and planning had, as noted above, been integral to the management of Happenstance and to the research process, and was built into the project design. Perhaps a justifiable reluctance to engage in formal project evaluation prevented a more open reflection on the Happenstance project within each organisation, which might have generated some valuable next steps. As it was, this reflective review has been undertaken to some extent by Caper and by this research report.

Taken together, the pre-production phase and the post-production phases of Happenstance were integral to the innovation process. The project planning phase set up the relationships and expectations behind the scenes which allowed the residents to work effectively during the relatively short residency itself. The process of reflection and adaptation during and after the residencies represents a 'long tail' of innovation during which ideas could be adapted and made fit for purpose (Kirton 1984) and one-off initiatives could become embedded into the organisational culture (Knell 2004, 20). Cultural change in turn becomes the starting point for 'second generation' innovation, as implicit knowledge from the projects is absorbed into the structural capital of the organisation to inform future projects (Grabher 1994; Nonaka and Takeuchi 1995). Happenstance attempted to address this by investing not only in project-based innovation (the residencies) but in the relationships, trust and management engagement which makes innovation possible⁸. This 'hidden innovation' is perhaps the most significant legacy of the Happenstance model, closing the loop between innovative projects and organisational development.

To conclude, some of the significant outcomes and outputs are highlighted in figure 6 below, noting the connections between pre-production, post-production and 'glanceable innovation'.

⁸ Other national programmes have specifically set out to address capacity building for digital technology in the arts. For example the AmbITion programme in Scotland, aims to enable arts organisation to 'grow in their capability, capacity, creativity and confidence to make the most of the opportunities of digital technologies' (<http://www.getambition.com/>).

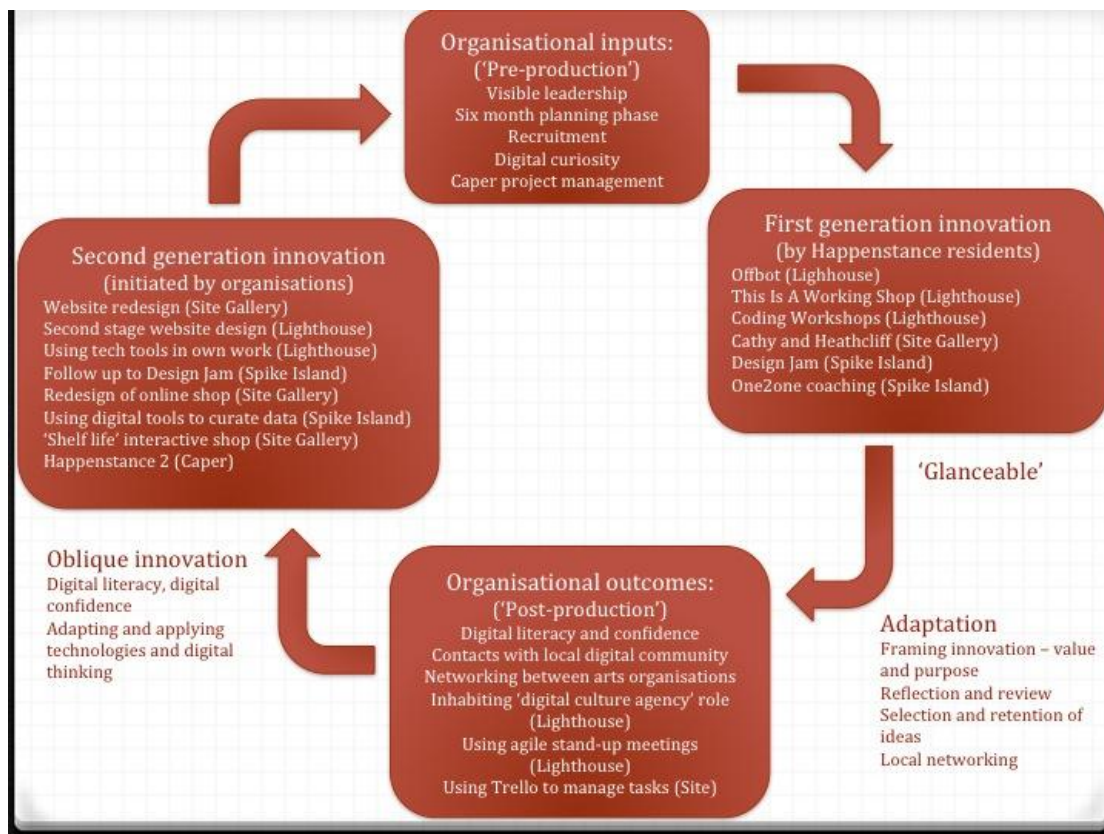


Figure 6 Closing the loop: the innovation cycle and future outcomes of Happenstance

It should be acknowledged that the final stage in the circuit, the ‘second generation’ innovations by arts organisations remains somewhat speculative at this stage and this report has necessarily focused on the earlier stages of pre-production, residency and post-production. Nevertheless a project like ‘Shelf life’ at Site Gallery gives a good indication of the potential for spinning-off second generation innovations from the original residencies. ‘Shelf life’ was a collaboration between Site and Folksy, an online community of 35,000 makers in Sheffield, inspired by Clay Shirky’s concept of aggregating surplus value in online communities. Shelf Life featured a limited number of craft objects for a limited period on a real shelf in the Site Gallery shop, and also allowed the objects to ‘talk’ to visitors and for these virtual ‘conversations’ to be relayed through a thermal receipt printer. Not only did the project reuse the Happenstance ‘Cathy and Heathcliff’ printer technology, it built on the collaborative approach which lay at the heart of Happenstance. Folksy’s James Boardwell had been one of the local mentors to the two Happenstance residents.

Meanwhile in London, Caper is currently planning to launch a second generation of Happenstance residencies. The scope for each residency to trigger a further cycle of innovation, through a legacy of shared knowledge, tools, contacts and energy, from Offbot to Design Jam to Shelf Life, was at the heart of Happenstance. Above all, the residents were alert to the human interactions behind the technology, referred to by one resident as ‘an internet of people’. It seems apt to allow her the final word:

“We hope they’ll be inspired by our enthusiasm, and that the things we make and the pleasure of making will stay in the system. We want to leave them with a frozen Megatron to be reverse engineered into new ideas, not a replicant, with planned obsolescence.” (Leila Johnston, Site Gallery resident.)

Conclusion: Happenstance as a model for digital innovation in the arts?

The benefits of integrating digital technologies into the everyday working culture of the arts organisation include better internal communication, greater tolerance for risk and failure (because when technology fails, it doesn't signal the end of the project) and a more collaborative, open culture. The other benefit is the brokering of relationships with a wider community of collaborators, including other creative technologists but extending to others as well (because digital technology is inherently iterative and social).

Some of the principles of Happenstance – short, focused residencies, an open brief to engage creatively with the organisation, focus on communication and collaboration – could be applied to any residency, not only to one involving digital technology. One of the effects of a residency is to open an organisation up and inject some new ideas and perspectives from outside the organisational culture. For cultural policymakers, the challenge will be to find the time and space to support this type of engagement, and also the tolerance to allow arts organisations to experiment with no certain outcome.

From an innovation perspective, the Happenstance Project has highlighted the importance of combining an ability to invent, experiment and take risks with an ability to adapt, compromise and engage. In the context of Happenstance, the freelance technologists were better placed to experiment and come up with novel ideas and solutions; the arts organisations were more concerned with developing, integrating and adapting these ideas, and with finding value in the novel idea. Arts organisations were asked to find a space for dedicated, input-based 'R&D' within their everyday routines; technologists were asked to become more adaptive and more attuned to the value systems of the organisation.

There may be other methods for achieving this interaction. For example, arts organisations could negotiate a day release exchange with locally-based technology companies on a mutual 'pro bono' basis. Arts organisations in turn could send staff in the other direction on short-term placements with technology companies. Based on the experience of Happenstance there is sufficient mutual benefit to make this attractive to both sides. However, it would be important to retain the 'brokering' function alluded to above in order to get maximum benefit from such an exchange. It would also be desirable to retain the energy and focus of a time-limited engagement (from ten weeks in this case, to longer projects of six months in the Australian 'Geeks in Residence' model) which might be dissipated through an ongoing partnership.

The outcomes described in the final part of this report comprise an impressive list of achievements for six people working in three organisations over a ten-week period. The less visible, incremental changes to organisations ran alongside the more identifiable outcomes. In the end this cultural change provides a potential for continuing innovation in the future, a continuing process not a set of products.

Finally there is a challenge here for evaluation. There are without doubt exciting possibilities for digital technology in the arts, manifest not only in Happenstance but in other projects supported by the Digital R&D Fund. If arts organisations are to take advantage of opportunities for new forms of digital production and new forms of audience engagement, they will also need to weigh up the challenges (and opportunities) of this broader cultural interaction between two different ways of thinking and working (Unitt 2012). The

Happenstance experience suggests that this interaction is more likely to be productive if both sides are primed to adapt to the other, from senior management downwards, and if the pressure to produce quick results is balanced by a more open-ended expectation of incremental change on both sides. The latter requires an approach to evaluation that is open-ended and non-judgemental, prepared to wait for results of an unplanned interaction rather than pre-empting the process with a prescribed list of targets.

Appedix: Evernote Tags

The research team used Evernote software to share observations from the three arts organisations and collated these notes under a series of 'tags' to allow easy cross-reference. The tags are listed below and give an indication of the research themes which emerged before and during the residencies:

- Agile: examples of 'agile' process or vocabulary, positive or negative attitudes to this way of working (scrum, etc.).
- Buy-in: indications of enthusiasm, motivation, level of support from arts organisation towards the residencies (the opposite of 'resistance').
- Collaboration: examples of collaboration between residents and others to create a project or prototype.
- New idea: discovery, new departure against expectations, etc.
- Organisational change – orgchange for short: wider ripple effect on the organisation beyond the immediate solution / objective.
- Personal: individual / emotional issues which affect the work.
- Problems: different from resistance – practical or technical difficulties, things going wrong and how these are dealt with.
- Process: how ideas emerge, how ideas get put into action, the adaptive process beyond the initial discovery.
- Resistance: against the adoption of an idea, against process, etc., coming from either the residents or the organisation – differences in value and expectations.
- Reflection: referring back to past expectation, previous events / experience
- Technology: glitches, solutions, kit.
- Other: any important observation which doesn't fit any of the above categories.

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