WORKPLAY: A DESIGN FOR AN IDEATION SKETCHING TOOL

Malcolm Jones

M.A. 2008
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Introduction

visual language

It is designed to help you communicate ideas more effectively...

ideas

...so that others can fully appreciate the potential of your ideas.

compose

The workPlay software system helps you compose and test ideas that will support your idea.

act

Innovate in order to understand workPlay stories quickly and feel confident to act on what they mean.

layer

...with options to link layers of additional information that provide the reader with a rich learning environment.

workPlay

Making ideas actionable.
Introduction

This critical evaluation is concerned with the field of communication studies. It describes a study for the design of a digital sketching tool dedicated to the purpose of idea generation (ideation) and the communication of human experience. The tool is designed to provide a specific user group with a better means of communicating this type of information. The study set out to establish firm historical and contextual support for the development of such a tool, and to create and test designs for it.

The concept to develop an ideation sketching tool evolved from experience in the field of technology research and development, where, in the early stages of product development anticipating and communicating the end user experience is critical.

The tool has been given the name ‘workPlay’ because it provides benefits to a work environment through engagement in the act of ‘serious play’ (Schrage). WorkPlay is a software system that provides a workPlay author with the means to express value statements about products by describing the experiences of those who may use them. This is done through stories or scenarios. The means of expressing the stories consists of composing sequences of words and pictures in a format similar to that of a comic strip. As such, the study concerns itself with issues of graphic communication, narrative and visual language.

This study will show that within the technology sector there is no standard tool designed to facilitate the creative development of ideas and convey the user experience in a visual and narrative format.

It will further show that there are no recognized criteria for determining what is and what is not considered to be a ‘visual language’, and few agreed standards of grammar for what are claimed to be existing visual languages, but that these studies have led to a theory and hypothesis that might provide a means for a better understanding of both.

The project has been critically reviewed by an international panel of professionals, academics, and experts working in the fields of science, technology, design and education (see Appendix 1). Their responses to survey questionnaires in a series of expert reviews, and in particular
Chapter 1: Survey of literature

1.1. Definitions

1.1.1. Visual language

In certain quarters there is a great deal of debate and controversy over what qualifies as a ‘visual language’. It is a debate that has probably been fueled by recent increases in the volume, accessibility and use of imagery made possible by modern communications systems. Visual language is a subject of study in such diverse areas as human/computer interaction, and comics theory, both of which relate directly to this study.

This study concerns itself with issues of visual language from the perspective of constructing a system of communication. Language was identified as the most important element to study, as can be seen from the research methodology (see Appendix 4, Fig.2). The study did not set out to address or resolve wider philosophical issues of visual language. However, late in the study, the research led to the realization that, having developed what appears to be an acceptable design for a system of communication, the provision of some level of grammatical or narrative structure for telling stories would be necessary to provide a user with a complete communications solution. An in-depth analysis of this research and the findings are described in chapter 5.

1.1.2. Pictorial and textual narrative

With little agreement on what a ‘visual language’ is, titles for describing its various forms appear to be up for grabs. Will Eisner, a respected comics artist and author, has referred to the medium of comics as ‘sequential art’, and ‘visual narrative’ (Eisner). Bedenham refers to the comic strip as a ‘picture strip’ (Bedenham 1997, p.21), which has the effect of liberating the medium from its ‘comic’ heritage. They have also been referred to as ‘story strips’, and ‘strip stories’. In addition, the movie and advertising industries use the comic strip format to sketch scenes in preproduction video or film. These are called storyboards.

For the purposes of this critical evaluation, the term ‘pictorial and textual narrative’, a term in relatively wide use that is not limited to any particular genre, will be used to describe narrative expressed through sequential imagery and text.
1.1.3. Picture Space

Picture space refers to the perception of graphical elements and spatial dynamics within certain defined limits of a picture. This study looks at the development of these elements and the evolution of their use in order to inform the design of the workPlay picture space. The definition also includes the perception of space within the picture. As will be seen, plutocratic ‘space’ is perceived and experienced differently from ‘mimetic’ space. A detailed description of the development of the workPlay picture space can be found in chapter 3.

1.2. Survey of Literature

To fulfill the stated aims the research focus needed to identify new perspectives and unique combinations of theoretical and practical research. A critical design quality of the proposed system would be the determination of an appropriate level of graphical simplicity. This chapter shows how, steered by these two core design considerations, the survey of literature looked at theoretical support for the proposed design in the areas of comics theory, semiotics and linguistics. The survey of literature also looked at current designs for pictographic communication systems, identified key design features in the pictographic art of ancient Egypt and the middle ages, and considered the impact of a relatively recent trend towards mimetic art – art whose goal is to imitate nature. The findings of the survey of literature led to the formulation of a design hypothesis which was used to guide the design practice and the subsequent primary research.

1.2.1. Visual language theory

Since comics theory applies itself to a pictorial and textual narrative system similar to that proposed for workPlay, it may reasonably be considered applicable to the design practice.

Yuri Engelhardt has a PhD from the dept. of Cognitive Psychology at the University of Amsterdam. In his dissertation ‘The Language of Graphics’ (J. von Engelhardt, 2002) Engelhardt addresses issues of visual grammar, syntax and many other aspects of language. It is a thorough study that draws on a broad range of research and influences. It also appears to be well grounded in its practical application.

Neil Cohn is a student of Ray Jackendoff, an American linguist. Cohn has developed a number of linguistic theories that describe the grammatical structures of various aspects of pictorial and textual narrative, in particular, comics. Straddling the comics and academic cultures, Cohn strives to bring clarity to the hotly debated subject of ‘visual language’. In a series of columns for comixptalk.com, Cohn writes ‘on a theory that sequential images can actually be called a language -- a visual language -- which emerges along with text in comics’ (website 5), and comments on such topics as framing, visual poetry, and closure.

In order to complete his research on ‘The language of comics’, Bedenham considers several formulas that can be applied to narrative analysis, including one developed by Barthes before settling on Longacre. Bedenham explains the reasons for his choice as its ability to accommodate short story narratives, textual considerations, and its ability to include imagery as part of the formula.

Cohn and Bedenham both analyze comics from a linguistic perspective, and each claims that comics are a visual language. Engelhardt proposes that graphics are a visual language.

Suggestions of a connection between the grammar of texts and the grammar of images can be found in various studies. Uspenski suggests that certain visual design elements in art have equivalent linguistic partners, such as that between the duplication of pictorial elements and the grammatical number, plural (Uspensky 1971, p.14). But no studies appear to offer a complete, or even a comprehensive, system that might be comprehensible to anyone other than an academic or a practitioner of graphic communication.

1.2.2. Semiotics, linguistics and styles of thinking

The theory of semiotics, as developed by Charles Peirce (1839–1914), is conceived as a philosophical system of thought to facilitate understanding. The theory maps the relationships that connect objects, signs, and, through the interpretation of their meanings, people. Of significance to this study is the third branch of Peirce’s semiotic, speculative rhetoric, which concerns itself with the transmission and interpretation of information. In Peirce’s own words, ‘the science of the general conditions for the attainment of truth.’ (Peirce 1992, p.xxxix). Also of importance to this study is the concept of the triadic relationship, which supported the formulation of the trio of essential components that form the basis of the visual language hypothesis.

Roland Barthes (1915–1980) builds on the linguistic philosophies of Saussure, a structuralist who’s semiotic principals differ considerably from those of Peirce. In 1964, Barthes recognized the infancy of semiology and almost playfully began to map elements of its application to linguistics by turning Saussure’s ordering upside-down, considering semiology part of linguistics. He then proceeded to mold his theories like a sculptor working clay.

Barthes’ claim that ‘it appears increasingly more difficult to conceive a system of images and objects whose signfords can exist independently of language,’ (Barthes 1964, p.10) may be taken as the opinions of an over-zealous linguist, or as an alternative philosophy to those who believe that all thought relies on the visual. For Rudolph Arnheim (1904–2007), thought is dominated by the visual. He goes so far as to question whether one can think in words (Arnheim 2004, p.227).
Generally accepted opinion on visual thinking is that approximately 60 to 65% of people think visually, the highest proportion. Of these about 30% rely strongly on visual/spatial thinking. Only 25% of people think exclusively in words (website 4). These statistics indicate the dominance of visual/spatial thinking and supports the notion that a strongly visual communication system will ensure that it is comprehensible by a wide range of people. Considered relevant to the development of the workPlay software system, a critical study conducted on the role of imagery in computer program comprehension also supports the use of imagery (Navarro-Prieto).

When considering how a visual communication system will be perceived and learned, the work of Howard Gardner (1943 -) appears useful. In developing the Theory of Multiple Intelligences, Gardner sought to expand the accepted standards by which intelligence could be measured. The theory was intended for use in education, but in that sector it does not appear to have widespread support.

While Gardner’s ‘intelligences’ speak to different learning styles, Edward de Bono (1933 –) proposes a theory that maps different thinking strategies. De Bono is probably best known for developing theories of lateral thinking. He has, among other things, dabbled in language systems, devising a system that enables people to create new words by using numbers.

Support for the dominance of visual thinking, Gardner’s categories of intelligences and de Bono’s ‘6 thinking hats’ provided the theoretical basis on which workPlay’s multiple modalities were conceived and designed. This design approach sought to ensure that a wide range of people with different thinking styles can both author and read workPlay.

1.2.3. The use of pictograms today

Visual communication systems based on pictograms or ideograms are in wide use today. There are a range of forms that follow the traditional function of pictograms: from simple silhouette pictograms used in traffic signs that might be considered descendents of hieroglyphic writing, to infoGraphics used in airline safety cards and corporate communications which might be considered descendents of early pictorial art.

Examples of sign or symbol systems based on a pictographic approach, include Isotype, Full-English, and Apocalypso. Examples of pictorial systems based on the pictographic approach include instructional graphics, such as those seen on airline safety cards, and corporate and product infoGraphics that have, in recent years, been taken to a certain level of excellence by companies like XPlane.

Isotype was designed in the 1940’s by Otto Neurath (1882 -1994) and illustrated by Gerd Arntz (1900 -1988). The system is considered an important milestone in the evolution of graphic communication systems. Designed to illustrate educational texts, its influence is now more prevalent in public signage. Compared to the consistencies that this study will show in ancient and medieval pictographic art, the series of approximately 4,000 images created for the Isotype system reveal many inconsistencies (see Appendix 4, Fig.10). The pictograms use a range of representational styles from silhouette profiles to high contrast, three-quarter views. When seen individually, these variations may not be apparent to the reader or be of importance in communicating a concept, but, when several different themes are used in combination, the variations become evident suggesting unintended differences of meaning that have little, if anything, to do with the subject.

Sharon Spencer’s ‘Full-English’, a set of pictograms that reflect ‘Englishness’, is closely styled on Arntz’s work. As a consequence, it inherits many of the same stylistic inconsistencies. The high-contrast, three-quarter views in particular look dated and have a Continental European feel, like something one would expect to see in a 1950’s Graphis magazine (see Appendix 4, Fig.11). Interestingly, the silhouettes do not carry the same stylistic baggage, which leads one to wonder if the apparent difference has to do with their simplicity? Spencer’s work was conceived as a keyboard activated typeface, although after its creation she shows how it can be used in various ways, including narrative. But there appear to be few ‘grammatical’ rules available for doing so.

A purely typographic application of pictograms is the font Apocalypso designed by Jonathan Bambrook (see Appendix 4, Fig.12). Like Spencer’s work, there are stylistic variations, but here they are designed to communicate different types of concepts and are arranged in fonts. There is no pretense of providing a language, they are simply presented as pictorial and textual statements to be used in the service of communicating a message.

InfoGraphics have traditionally been considered by many in the illustration community as pedestrian, lacking opportunity for creative expression, ‘bread-and-butter’ work that is not worthy of inclusion in one’s portfolio. People like Dave Gray, founder of XPlane, a company that creates ‘information driven communications’ has done much to change that image. Gray’s instigation and active involvement in the vizThink community suggests an interest in raising the profile of infoGraphics to that of a science. XPlane is best known for its epic maps that show the inter-relationships of processes and services (see Appendix 4, Fig.7).

These examples show that the pictographic approach is still in use and that it has value in certain applications. It is interesting to note that the use has changed little since antiquity: it is used in situations where it is important to communicate often important information succinctly, and the primary medium chosen to achieve that is imagery.
1.2.4. The elements of pictographic art

The primary focus of this area of the study was the art of ancient Egypt. The purpose was to gain an understanding of the principal graphic devices that were used to convey information. The apparent simplicity of the system is of interest, as are the dynamics of the picture space (see also: section 3.1) and the use of minimal figurative poses. The understanding gained through this study provided design models for much of the work: Play graphical system and the means by which the value of various elements in it were assessed.

In Egyptian art, the pictorial system of figures, furniture and details of scenery are highly formalized (see Appendix 4, Fig.13). They rely heavily on qualities of shape or contour to convey much of their meaning -- a human perception that functions at a 'very high cognitive level' (Arnheim 2004, p.29). Robins refers to objects being shown in their 'characteristic form' (Robins 1994, p.3), conveying, what later became for Plato, modes of essence (Neiva 1999, p.79).

Uspenski provides some detailed observations of the picture space while establishing a theoretical basis for 'the semiotics of the Russian icon'. And again, Robins reminds us of the treatment of the flat picture space and the attention paid to creating a balanced design (Robins 1994, p.11). Uspenski also draws attention to the necessity of 'restrictions' within a system, and that it is by them that the reader is able to appreciate what is of importance and what is not (Uspensky 1971, p.32), an observation that supports the Design Methodology of this project.

The same concept of picture space and principals of design used in early Near Eastern art were still in use when the Bayeux tapestry was created in the 11th century. In this narrative depiction of the Battle of Hastings the rules of pictorial 'grammar' have evolved to become more complex and less formal, but still, the elegant integration of pictorial art, words, and the graphical framework of registers and borders into a cohesive narrative makes the narrative of the work easy to understand (see Appendix 4, Fig.14).

Uspenski establishes useful concepts for what he refers to as an 'inverted perspective' in medieval art (see Appendix 4, Fig.15), an illusion to which the viewer adds dynamic movement by changing their position. Gombrich refers to this as 'the roving eye' (Gombrich 1999, p.27). In 'Uses of images', Gombrich, clearly an advocate of the pictographic approach, examines its decline in the early part of the 16th century as it gives way to the growing influence of the principals of linear perspective. He links the reason to the perceived need to show more than just 'what' something is, but also the 'how' of an event (Gombrich 1999, p.19). The point is well made.

Mimetic art continues to the present day to be considered a benchmark by which a certain view of 'reality' is judged. Neiva reminds us that Plato 'abhorred perspective' (Neiva 1999, p.79), and provides ample evidence that today people are willfully duped by the appearance of mimetic imagery, just as the birds in the Greek tale of Zeuxis and Parrhasius were duped by Zeuxis' painting of grapes.

The Survey of Literature led to the formulation of a hypothesis that in turn formed the foundation for the design practice.

1.3. Design hypothesis

That a design for a unique system of visual communication dedicated to ideation sketching may be achieved by integrating the following two components:

1/ the adoption of design principals used in early pictographic art to the development of a visual communication system, and

2/ the development of a mode of use in this case, a software system (see Appendix 4, Fig.8), that will serve as the medium by which the visual communication system will be authored and through which communication will be achieved.

1.4. Methodology

To achieve the aims of the study several methodologies were developed and used in various parts of the project. The Project Methodology provided a spine from which other methodologies and systems branched (see Appendix 4, Fig.1). The Research Methodology was the most important methodology. It provided the means to contextualize the areas of research and to identify areas that would be of most importance to the study (see Appendix 4, Fig.2).

The Design Methodology was shaped by the requirement to develop a graphical system that can be authored by people who may have little or no training in art, design, or communications, and is therefore as simple as possible, both to use and to comprehend. It's one thing to state that a system needs to be simple, but how does one achieve simplicity? How simple can a graphical system or a graphical element be and still remain comprehensible? If a simplified representation and a highly detailed representation are at opposite ends of a continuum, at what point does the simplification of the representation begin to have a detrimental effect on the reader's comprehension? This 'tipping point' between clarity and ambiguity suggests a point where the message is communicated by the most economical means, a point where the means are just barely good-enough. A chart was created to help gain an understanding of this issue (see Appendix 4, Fig.9). This principal was applied throughout the design of the figurative system, the software system, and the graphical communication system.
To discover the tipping point, the design strategy took a bottom up approach. It first considering whether a graphical element is necessary. Then, it considered its most simple form. Levels of detail or complexity were added to the system only when it was necessary to ensure comprehension. In this way a balance between the needs of the author for a tool that is easy to use were weighed against the needs of the reader for a system that is easy to comprehend.

To create an environment that would encourage the development of new ideas, the Design Methodology included the implementation of a schedule of rapid product development, a strategy used in software development to accelerate production. The strategy stimulates ideation, encourages innovation, and creates an environment that favours model ‘surprise’ (Schrage 1999, p.126).

1.5. Summary
Several academics have studied comics theory and considered the grammar of visual language. Other research supports the idea that plausible comparisons can be made between spoken/written language and ‘visual language’.

Supporting the design practice, philosophical structures developed by Peirce, with their foundation in logic, mathematics and science provide a model for thinking about the importance of relationships at various levels. Barthes provides a good starting point for understanding the linguistic theories of narrative and grammar, as do Uspenski and Schapiro. Visual thinking, or thinking in pictures, is the most dominant form of thinking, suggesting that an equivalent reliance on imagery in the workPlay visual communication system will ensure that it is comprehensible by a broad range of readers. Furthermore, directing the design of the modal function of workPlay according to a reliable source of theoretical psychology appears to be a good strategy to fulfill the aims of making the authorship of the system broadly accessible and the communications broadly comprehensible.

Although pictograms are still in use today, there does not appear to be a modern equivalent of a multimodal, visual communication system with the same qualities as those seen in ancient Egypt. The qualities discovered in Egyptian art, and in more recent examples in medieval Europe, provide examples of easily comprehensible graphic principals that can be adapted to the design of the workPlay graphical system. It is through these studies that the value of a cohesive multimodal system, a system in which the modalities complement and support each other in conveying information, have been fully appreciated.
‘Sketches and prototypes provide shared points of reference against which we can compare or contrast other ideas.’ (Buxton 2007, p.412).

Whether the particular combination of ideas that will form the next BlackBerry or iPod can run the gauntlet of tests, analysts and accountants depends not just on the apparent validity of the ideas, but also on the ability of those who generated them to express their core values in terms that people can easily understand and communicate quickly and clearly to others. Various methods and tools are used to streamline this process: brainstorming helps people generate ideas, mindmapping helps people organize ideas, products like Microsoft Visio and iRise help people visualize ideas, and theories like TRIZ use algorithms to help people identify unique ideas.

As ideas begin to develop in this environment, more is invested in them. They are tested against appropriate metrics. Focus group tests are designed to find out what users think. Typically, information presented in focus group settings take the form of text-based scenarios – stories that describe the user experience. To construct ‘realistic’ scenarios that describe what typical users might do, companies develop profiles of stereotypical users, called personas, are used.

As a vehicle for communicating important information the value of storytelling is being recognized by organizations and corporations. ‘Author and storyteller, Steve Denning, works with the corporate world in an effort to bring the power of storytelling to knowledge management.’ (Wujec 2002, p.213). Individual stories may be specific to a particular culture, but according to Barthes narrative is ‘international, Trans-historical, Trans-cultural’ (Barthes 1977, p.79). Stories may be thought of as a universally acknowledged means of sharing human experience. Well-crafted stories have an ability to clearly convey a range of concepts with which people can identify, so that concepts that might otherwise be incomprehensible are made clear through analogy, and further through metaphor, simile and allegory.

The use of text as a format for developing stories and scenarios may be convenient but it has limitations. It’s ability to trigger conceptual images and thereby fix an idea in the reader’s mind is limited by the skill of the writer and the limits of the reader’s imagination. Things that have to be considered in the design of workPlay. The limitations of text can be an issue of particular importance when the subject of the story involves human activity, the subtle nuances of which can be difficult to explain.

‘The use of pictures to record, to instruct and to amuse is ancient and instinctive.’ (Gifford cited in Bedenham 1997, p.14).

Pictures are not linear, they may be read in a number of different ways. They also display information instantly and can provide the reader with an anchor for their thoughts. When pictures are used in combination with words, the communicative power of each appears to increase. Now multimodal, a dynamic interplay takes place between the ‘picture-meaning and text-meaning.’ (Pullman cited in Bedenham 1997, p.11).

‘Words and pictures belong together. Viewers need the help that words can provide.’ (Tufte 2001, p.180).

When a scenario script is combined with sequential imagery it takes on a familiar form, that of the comic strip or storyboard. The effect is almost cinematic. The term that will be used to refer to scenarios that have been illustrated will be ‘graphic scenarios’.

The key benefit of graphic scenarios is that, for the reader, they are quicker and easier to understand than text-based scenarios. In the technology sector, graphic scenarios have been used successfully in usability testing and high-end presentations. The key drawback for companies wishing to use graphic scenarios is authorship. Currently, the creation of the images and, often, the development of the final graphic scenario, can only be supplied by a graphic artist – someone to whom the work has to be outsourced. For technology companies and any organization that values their intellectual property (IP), one major drawback to this arrangement is the risk of disclosure. Others drawbacks to companies wishing to use graphic scenarios include: the inconvenience and risks involved in sourcing a supplier, loss of time, and costs.

Attesting to the effectiveness of pictorial and textual narrative, Kevin Cheng uses a traditional comics approach to help enterprises ‘focus on the users’ experience and determine the story around how users will interact with a product.’ (Cheng cited in Spool ‘Jared’ (2007) website 2). In collaboration with Bill Buxton, Principal researcher at Microsoft and a pioneer in human-computer interaction, Cheng tested the effectiveness of the comics approach against traditional ‘wireframe’ presentations. The response was ‘overwhelmingly positive’ (Cheng cited in Spool, 2007) (website 2).

One of the reasons for making a distinction between graphic scenarios and comics or storyboards, is style. Comics have a ‘comic’ tradition based on humor of which Cheng’s work may be considered a typical example.

A comment made by a Technology Panel member suggests that the style used in rendering the imagery can effect the ‘reading’ of the information in an adverse way.

‘...when I used this technique with the Europeans, the feedback I received was that the cartoons trivialized the problem and the proposed solution. The same images were well received in US/Canada.’ (Tina Groves, Canada).
2.3. Summary

In the process of ideation within the technology sector there are many 'formal' tools that provide a limited ability to visualize certain types of information. However, none convey the user experience in a visual way or offer a creative environment within which ideas can incubate and evolve. Within this environment there is value in storytelling and visualization through the use of imagery. There is value in an appropriate medium within which ideas are allowed to float and form around stories. Graphic scenarios are recognized as having value for certain tasks, but outsourcing the artwork component causes issues of accessibility, timing, and IP protection, issues that the workPlay design seeks to address.

Research suggests that people’s perceptions of the graphical styling used in an ideation sketching system needs to be considered in the design. Precedences for self-authoring pictorial and textual tools are identified in comicMakers and in Storyboard Quick. Both support certain design directions that have been taken in the development of the workPlay software system.

2.2. The software system

The workPlay software consists of two separate components: a software engine that enables the author to write scenarios, create personas, compose scenes, and manage multiple scenarios; and graphics libraries that provide the author with sets of styled clothing and props to make the imagery in the scenarios presentable in different styles (see Appendix 4, Fig.8). There is a commercial product on the market, the pictorial and textual narrative format and software architecture of which is identical to that developed for workPlay. Storyboard Quick is a software program that enables self-authoring of storyboards (website 7). The similarities between Storyboard Quick and workPlay confirm the integrity of the workPlay software design, and it confirms that there is a level of market acceptance for ideation tools. Storyboard Quick and workPlay are dedicated to different tasks in different markets, consequently the visual communication systems have evolved along significantly different trajectories (see comparison study, Appendix 4, Fig.4).

(see comparison chart, Appendix 4, Fig.9). Self-authorship of comics is accessible through online software applications called comicMakers. Those reviewed in the research were found to be designed for the purpose of amusement. Many are promotional supplements for characters made popular in other entertainment media, such as Dr. Who, Futurama, and Garfield. A few are quasi-educational. One, provides graphics that appear to adhere to the principal of being just barely good enough. The simplified, pictographic environment is not unlike the one proposed for workPlay (website 3). A comparison study of comicMakers was conducted and included in a product comparison study (see Appendix 4, Fig.3).

Easy access to comicMakers does not make everyone who uses them a comic author. The ability to tell a good story eludes most people who have an inclination to create comics or, for that matter, write great novels. The fact that it might elude authors of workPlay has been pointed out by more than one reviewer.

'The real question is can people easily use workPlay [to] create their own scenarios in the various roles.' (Ron Pinder, Analyst, Canadian Border Services Agency)

'The key learning aspect here would not be how to use the software but how to design effective workPlay scenarios.' (Melanie Reddy, R&D Training Manager, Avecia Limited)

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This issue initiated further research into the theoretical basis for textual and visual languages which led to the theory described in Chapter 5.
This re-reading of the research led to the hypothesis that there might be a direct conceptual connection between the use of framing, the perception of space within the frame, and the notion of time.

Could the goal of graphical simplicity extend to a design that does not use a frame? Schapiro establishes the role of the frame as fulfilling a need for clarity (Schapiro 1973, p.11). Would clarity be lost with the absence of a frame?

Other devices that might help to define the space for the reader and supplement the absence of a frame were investigated. Influenced by the positioning of text in the Bayeux tapestry, it was found that the placement of narrative text and keywords above the picture space helped to define the picture space without the need for a formal, rendered frame (see Appendix 4, Fig.19). Also, the introduction of a ground line, a device used in Egyptian art and the Bayeux tapestry, was found to play a dual role of providing a base for the main figurative elements in a scene, and for marking the lower limits of the picture space. The remaining scenarios used in the research were successfully presented in this way. When asked how well these features worked, in separate presentations the two expert review panels rated the feature at 85% and 86% successful.

Several other graphic devices were adapted to the workPlay graphical system from the research on pictographic art, including: the grid, the ground line, the register, and conventions related to scale.

Schmandt-Besserat asserts that, around 3,000 B.C., marks used in notations for commerce were adopted by art as ground-lines and registers. Acting as ‘organizing principals’ (Schmandt-Besserat 2007, p.1), registers greatly increased the narrative scope of the art leading to its ability to convey narrative. WorkPlay uses a system of ground lines and registers to help define and sub-divide the picture space (see Appendix 4, Fig.20).

This re-reading of the research led to the hypothesis that there might be a direct conceptual connection between the use of framing, the perception of space within the frame, and the notion of time.

Chapter 3: Design practice

This chapter describes how aspects of the design processes were shaped by primary and secondary research. In doing so, it addresses the second aim of the project, namely, to develop a comprehensive plan for a graphical system that enables a user who has little or no artistic training to convey concepts related to dynamic human activities and communicate them effectively to others.

3.1. Picture space

As has been mentioned, ancient Egyptian art was instrumental in helping to establish the formal framing and subdivision of the picture space. Those principals now appear to be deeply entrenched in the modern psyche. Framing of the picture space is a convention that is used in many of the models on which this project is based, including: storyboards, graphic scenarios, and comics. The design directive for this project, that of creating a system that, for users, is as simple as possible, demanded that each element under consideration for inclusion in the system be evaluated for its impact on the complexity of the system and its value in facilitating user comprehension, and, that each element accepted into the system be user tested.

Research on Chinese scroll paintings and the Bayeux tapestry suggest that the absence of a frame enhances continuity from scene to scene. This concept was implemented in the design of the first pilot survey – Star Trek Generations: a 51-frame storyboard. The results of the survey suggest that the design was generally acceptable (see Appendix 1). The design also appeared to be well suited to the subject, adding to the impression of space and time.

On re-reading Bochi, a connection was made between her observations and the results of the recent survey.

‘..figures typically occupied a space that was ill-defined, which imparted a neither-here-nor-there quality to the scenes, hence, by analogy, a space free from time.’ (Bochi 2003, p.55).
In Egyptian art the composition of pictorial elements followed rules of placement, size and orientation through which the importance or rank of figures and scenic elements are clearly indicated by a code that appears, even to the illiterate, as self evident (Schapiro 1973, p.16 and Schmandt-Besserat 2007, p.1, 59). Following this convention, workPlay uses size to denote importance. Figurative elements central to the story sit on the ground line. Elements that play a supporting role are represented smaller and, as mentioned, are located at a fixed point above the ground line. In addition to these two scales of size, a third and smaller scale of size uses pictograms or icons to support the narrative (see Appendix 4, Fig. 21). The concept for these, again, has been derived from the Egyptian pictographic arrangement where hieroglyphic writing is arranged around the main pictorial elements of the scene.

3.2. Text

‘pieces of text, then, can simplify, complicate, elaborate, amplify, confirm, contradict, deny, restate or help to define different sorts of meanings when they interact with images...’ (Hall 2007, p.96).

WorkPlay uses text in three different forms: narrative story line, dialog, and keywords. The convention of using a combination of narrative story line and dialog is standard to comics, storyboards and graphic scenarios. The idea to study the use of keywords was influenced by a workshop presentation made at vizThink, a special interest group, meeting in a demonstration of how a paragraph of writing can be read in a few seconds by emphasizing certain keywords throughout the text. Could the same effect of layering the communicative elements of a message be achieved with an integration of keywords and imagery? Studies of the Bayeux tapestry reinforced the value of keywords or key phrases and provided an example of how to integrate them with pictorial art. The concept was tested in the second pilot survey, ‘Jamie and the Rosetta Stone’ (see Appendix 3). In the expert review; ‘Introduction to workPlay’, when asked to rank the use of keywords, the average response was 78% good.

‘I thought the combination of the figurative system and key words was used very effectively to aid understanding’ (Melanie Reddy, R&D Training Manager, Avecia Limited)

The position of the narrative text was explored. It was found that in the case of a simple story, one where the picture conveys much of the message, the narrative text works well below the image where it serves to confirm and support the pictorial action. In the case of a complex story, narrative text positioned above the image serves to introduce and explain the scene.

When asked to rate how well the narrative text worked positioned above the image the Technology Panel response was 87% positive.

‘Unless deliberate obscurity is sought, avoid surrounding words by little boxes, which activate negative white spaces between words and boxes.’ (Tufte 1990, p.62).

The principal of not using a frame around each scene was logically extended and applied to the dialog text, a treatment that can be found in some comics. The absence of a dialog box limits the text to areas of the composition that are free from any pictorial elements, a limitation for designing a composition but one that ensures that the design remains flat and simple to comprehend.

3.3. Figure

The limited range of movement and formal poses used to depict figures in Egyptian art suggested that any figurative system based on it would be relatively easy to author. Also, although limited in its ability to represent a wide range of dynamic movement, the style would lend itself to being used in a modular (reuse and interchangeability of parts) way, an important consideration for this project.

The Design Methodology used to ensure that the figurative system was as simple as possible followed the same bottom-up approach used elsewhere, keeping the number of poses and body parts to an optimum number that was just-barely-good enough. From the initial set of adult male poses, sets of female poses, Asian figures, and then sets depicting five key age groups in each gender were created as needed (see Appendix 4, Fig. 22).

3.4. Colour

Early designs for the personas used in the first pilot survey were rendered in a full range of colour, including natural skin tones and clothing that was faithful to the original. It was evident that the use of full colour prevented clear identification of one persona from another. On the subject of the use of colour in graphics, Tufte has this advice: ‘Above all, do no harm.’ (Tufte 1990, p.81).

It was decided to test tinting the figures, and several colour schemes were tried. The outcome was to implement a two-tiered system of tinting: a primary tint applied to an entire figure to identify it with a certain group, and an optional secondary tint applied to certain parts of the clothing to denote differences within the group, in the case of the Star Trek storyboard, rank (see Appendix 4, Fig. 23). Tinting grayscale figures became a graphic standard throughout the project.

One of the benefits realized by limiting the colour palette to tints was that it left the spectrum of more saturated colours available for the resolution of design issues that would arise later, the depiction of emotion being a point in case (see Appendix 4, Fig. 24).
3.5. Summary
With the goal of finding design solutions that for the user are simple to understand, and with the directive to use a bottom-up approach in order to do so, elements identified in the research on pictographic art are analyzed and considered for adoption into the workPlay system. In this way, the picture space, the texts, the figurative system, and colour palettes are defined, tested and refined to form the basis of the graphical standards of the workPlay system.

Chapter 4: Design Findings
This chapter presents design findings that address Aim3 of the Program of Study. The findings are divided into two sections: those that address the requirement to provide an environment for holistic and creative thinking, and those that address the requirement to provide information that readers with different learning styles can comprehend.

4.1. An environment for holistic and creative thinking
4.1.1. Sketching
The essence of workPlay is to provide a means to sketch ideas. Ideas can be fleeting, hard to pin down, and sometimes even harder to express. The speed with which ideas can be expressed by a given media effects the author’s ability to form or reshape them on-the-fly. All current, analog sketching media accommodate this need to respond to the flow of ideas. A pencil sketch can be modified on-the-fly to respond to changes in the way the author is considering the concept. Can workPlay respond fluidly to the expression of ideas in a similar way?

As has been mentioned, the workPlay software system consists of two primary components, a core engine and plug-in graphics libraries (see section 2.2). Research on technology industry standards that was being conducted in preparation for the series of expert reviews touched on the need to develop classes of users as an important step in defining use cases (website 1). The concept of persona classes and how they might be used to offer workPlay authors various authoring options emerged. The original design for the process of developing a scenario involved the author creating a cast of personas by linking to various graphics libraries, then working with them to compose scenes for scenarios. The new concept involved the author using only the core software engine component and the set of figure manikins that it provides. With them the author can sketch scenes quickly without concern for the finer details that might be needed to present the story. When the author is satisfied with the basic scenario it can be ‘dressed up’ by connecting it to any one of the available graphics libraries.

The value of providing workPlay with this capability was tested by describing the process in the last scenario presented to the Technology
panel. When asked if the quick sketching capability added any value, the response was 100% yes, with the following comments:

‘It allows the user to quickly try out ideas’

‘To be able to sketch different scenarios quickly, to try out different ideas and send for review electronically, is a real strength - decreasing development time and reworking. You can get the essence of the message before adding the higher level of graphics. I think it makes a great storyboarding tool.’

4.1.2. Seamless Integration of information
The observation that workPlay was capable of presenting different types of information in a seamless experience was made during tests of an early version of the ‘Introduction to workPlay’ presentation (see Appendix 3). It was unexpected. The regime of creating and refining designs on a schedule of rapid development enabled the observation to be tested in the next iteration. The following synopsis describes the process of discovery.

The presentations used in the first two pilot surveys used narrative to convey information. They were stories from beginning to end. The ‘Introduction to workPlay’ scenario was different. It used a mixture of narrative and diagrammatic information. Typically, when these two types of information are used in the same presentation there are rendered in different styles, often because the visual material in presentations is cobbled together quickly from different sources. These types of inconsistencies throughout the presentation of information cause the reader to continually adjust to what Gombrich refers to in reference to a similar and related conflict of styles, require a different way of looking:

‘...decoration, sequential narrative, and dynamic evocation each demand a different way of looking.’ (Gombrich 1999, p.38).

This imposition to change ones ‘way of looking’ from scene to scene did not occur in the workPlay presentation (see ‘Introduction to workPlay’, Appendix 3). The narrative and diagrammatic information flowed smoothly as if it they were of the same ‘language’, which indeed they are.

A satisfactory analysis of how workPlay achieves this level of integration, apart from the obvious continuity of pictographic style was not evident until, by chance, a connection was made with research being conducted on the framing of imagery. It was observed that diagrams are never cropped, and rarely need a graphic frame to contain them. Narrative scenes in workPlay do not employ frames or cropping either. It is hypothesized that the similarities in the use of these very basic compositional principals, in combination with the consistency of style, accounts for the phenomena of seamless integration. After noting the effect, the next version of the questionnaire asked the respondents to rank its value. It was rated 73% good.

4.2. An environment that readers with different learning styles can comprehend.
4.2.1. Native modalities
The native modalities of the workPlay system include: imagery, words, and inter activity. According to Gardner’s theory of Multiple Intelligences each of these modalities addresses a different intelligence (see section 1.2.2.). Gardner claims that imagery accommodates visual-spatial; words accommodate verbal-linguistic; and inter activity accommodates bodily-kinesthetic. For workPlay, the addition of sound, animation, and media have been considered because they would extend the spectrum of comprehensible media, and by doing so accommodate a broader range of users with different thinking/learning styles.

4.2.2. Layered learning
The potential benefits of ‘layered learning’ were discovered in the early stages of primary research. A survey had been developed with the purpose of identifying an optimum level of graphical detail for the visual communication system. The survey involved the presentation of a scenario three times. With each reading of the scenario the level of detail increased and the respondent was asked to provide feedback on their ability to comprehend the story (see Appendix 3: ‘Jamie and the Rosetta Stone’). The following response triggered the idea to test the use of the format for another purpose:

‘It’s very interesting in that I preferred the first version because it stimulated interest by being more obscure than the second. On the other hand the second left much less to the imagination so was more boring but more affirmative and educational.’ (Mike Pickard, Research Fellow, University of Sunderland)

This led to the hypothesis that when a reader is provided with a minimal level of narrative information it engages their imagination more fully than when they are provided with an abundance of narrative information. By engaging the imagination, does the reader becomes experientially and therefore more deeply involved with the material? Does the additional narrative information provided to the reader thereafter then, either confirm or refute their initial concepts? This approach appears to heighten a reader’s interest in gaining knowledge.

The hypothesis was tested a second time. The following is a synopsis of the feedback from the respondents.

After the first viewing of the story, reader comprehension appears to be remarkably high. The core value of the story appears to have been...
conveyed through the provision of very little information. From the similarity of the brief descriptions of what people thought the story was about, it is clear that much of the story can be conveyed with very little information (see 'Jamie and the Rosetta Stone Appendix 3).

4.3. Summary
Findings that address Aim 3 of the Program of Study have been discussed. Studies conducted in order to prepare scenarios for the series of expert reviews led to the discovery that the two main components of workPlay can be configured in several different ways. One such configuration enables the author to quickly sketch scenarios using manikins, a capability that is considered valuable by the expert review panel members.

A phenomena is observed, that in the workPlay system different types of information—narrative and diagrammatic, appear to be completely integrated when combined in a scenario.

To address a wider range of learning styles, the existing, native modalities of the system may be expanded to include others, such as sound, animation, and media.

In layered learning, a potentially valuable approach for presenting information is discovered while conducting a test to determine optimum levels of graphic complexity. A hypothesis is put forward, tested, and through primary research partially confirmed.

Chapter 5: Analysis of research practice
This chapter shows the extent to which the research practice has been altered or confirmed by the process of conducting primary research and by the analysis of design findings.

Primary research informed the design and research practice in many ways. Primary examples have been discussed in Chapter 4. However, the most significant influence on the research practice saw the design hypothesis, which had been devised to achieve the development of designs for the ideation sketching system by integrating two essential systems, evolve to encompass a third essential system and be re-purposed to establish a theory regarding visual language.

Several comments received during the series of expert reviews expressed concerns that regardless of the simplicity of the workPlay system, a workPlay author may not be able to convey their ideas effectively.

‘The key learning aspect here would not be how to use the software but how to design effective workPlay scenarios.’ (Melanie Reddy, R&D Training Manager, Avecia Limited)

This raised an issue that was outside the scope of the Research Methodology and the design hypothesis, but one who’s resolution would benefit workPlay, and one that showed promise for future studies.

By way of a rationale for the Research Methodology and design hypothesis, the nature of the work experience from which the concept for workPlay grew was consultant work providing skills and services in the communication of information, not in the development of the content being communicated. The design hypothesis for this study, therefore, anticipated providing the mechanical means for communicating stories but not the narrative structure with which to compose them.

The issue of authorship identified by the primary research made it clear that for workPlay to provide a complete ideation solution, some form of grammatical structure or set of narrative standards were needed. Research that touched on language and grammar, in particular Barthes, and Bedenham, who’s thesis ‘The language of comics’ makes a passing case for comics as a language, came to mind, ‘...the successful application...’
Hypothesis

For a visual language of discourse there must be three inter-dependent components:

1. a multimodal communication system with the capacity to convey a wide range of conceptual information in a range of forms, let’s call it the ‘language’;

2. a graphical framework and media that ‘carries’ the language and enables ubiquitous authorship (equivalent to a pencil and paper or speech), let’s call it the ‘medium’; and

3. a grammatical structure – a set of rules – which governs the language and is comprehensive enough to provide self-evident governance; let’s call it the ‘grammar’.

If this hypothesis proves true, it could be used as a benchmark to place various types of visual languages into context.

Examples.

• Comics are not a visual language of discourse, but they may be considered a visual language of communication. They qualify on items 1 and 3, but not on item 2, where the graphical framework to author the language, to engage in discourse through it, resides on one end of the equation only, not on both.

• ComicMakers might be considered a rudimentary visual language of discourse. They qualify on item 2. Item 3 is dubious but perhaps allowable, and they fall short on providing a wide enough range of elements in item 1 to be able to address a wide range of subjects.

• infoGraphics are not a visual language of discourse, for the same reasons that comics are not.

• Storyboard Quick is not a visual language of discourse. It qualifies on item 2, provides little, if any guidance on item 3, and as is the case with ComicMakers, is not flexible enough in its offering on item 1.

WorkPlay is a designed visual language. The designs for items 1 and 2 anticipate the needs of a broad range of users and a broad range of uses. With the addition of a grammar is would have all the components of a visual language of discourse.

Unique products come from unique processes; commodity products come from commodity processes.” (PC Designer cited in Schrage 1999, p.29).
Conclusion

This study set out to achieve certain aims and by doing so establish design specifications for an ideation sketching tool targeted for use in the area of technology research and development. The extent to which the aims have been fulfilled follow, but it is important to note here that much of this study has been about a search for value. To be specific, new value. To discover something innovative that provides people with a capability they did not previously have. The Research and Design Methodologies were designed to maximize opportunities for discovering the new. Discoveries were made and it was possible to test some of them. But the study is peppered with questions, far more than answers, and it appears that the combined effect of these questions, hypothesis and partial answers, if nothing else, confirms that around and through the use of workPlay ideas do take on form and are encouraged to evolve. Where is the value? In his famous quote, Marshall McLuhan identified that the medium had taken precedence over the message, and suggests that there now lies the value. For workPlay, the value is pushed back another step in the direction of the user. The value workPlay provides is not in the medium or the message, but in the experience of authorship. It is what one learns about a subject through the act of expressing it’s qualities that provides insight into it’s real value. Knowledge is experience.

Aim 1

Sound historical and theoretical contexts to support the development of a unique system of visual communication have been established in the following way.

In the pictographic art of ancient Egypt and the later art of the middle ages, the study found long standing fundamental principals of information design, the qualities of which are still recognized today. The study has also established that in the ideation environment there is a need to visualize and share ideas that are specific to the user experience, and, that currently there is no tool available for effectively capturing and conveying that type of information.

Aim 2

The same research that helped to fulfill the first aim was also instrumental in establishing the qualities of design which would fulfill the second aim. Using a design approach based on the principal of being just barely-good-enough, it is considered that the means to achieve an optimum balance of simplicity of design and reader comprehension was established. The designs reflected this approach and the primary research tested them. However, whether the optimum balance has been sufficiently

defined, tested or confirmed by primary research to be able to claim that the aim has been fulfill is an open question. At this time, the question can only partially be answered, for it has only been posed to workPlay readers, not to workPlay authors.

The Program of Study anticipated the development of a working prototype for stage 3, which would have provided the means to test a user’s ability to author workPlay material and convey concepts successfully to others. The complexities of developing two parallel systems simultaneously, a graphical system and a software system, negated the possibility of developing a working prototype. To circumvent the lack of a prototype, a simulation of the process of authoring workPlay was integrated into the final scenario presented to the Technology review panel. The questionnaire asked for feedback on the usability of the system and graphical user interface, but the responses indicated that without a hands-on test, no one could reasonably comment. This aim, then, has only partially been achieved.

Aim 3

Aim3 addresses the provision, to the reader, of an environment for holistic and creative thinking. What proof can be offered that an environment such as this has been established? As is explained in detail in Appendix 3, ‘Interpreting the results’, certain quantitative and qualitative aspects of the review responses provide an indication of the ability of workPlay to communicate ideas. So, one can look in the comments made in the questionnaires for evidence of ideation around the questions being posed. This provides clues that the respondent’s imagination has been engaged by the presentation and therefore suggests that workPlay does stimulate people to ideate.

The volume of comments, particularly those from the Technology Panel who were mostly highly motivated potential users, were consistently high. Their length, on average, was surprisingly long and their quality uncharacteristically high (see ‘Primary Research, Appendix 3). With these general statistics and the following two examples which indicate the construction of novel ideas, one might conclude that workPlay provided an environment that stimulated holistic and creative thinking.

The main positive aspect for me is that workPlay would allow people with little graphic design knowledge to develop effective communications for sales, teaching/training and idea/concept sharing and development. The key learning aspect here would not be how to use the software but how to design effective workPlay scenarios. I’m sure you have thought of this, but for any marketed workPlay product, design tutorials would be very useful. As would library packages designed and directed for different user/groups or applications. Different tutorials / examples
for different potential applications /markets would help people see
how workPlay could be of use to them. With respect to the reviews,
I occasionally felt I did not have enough information to give very
accurate feedback but I guess this will come from any beta testing you
do.’ (Melanie Reddy, R&D Training Manager, Avecia Limited)

‘I think there’s a danger that the presentation may distract people from
(rather than focus them on) the requirements/proposed solution being
explored. I personally like the hieratic/hieroglyphic approach, but that
may be personal taste. (As an aside, the hieratic element is interesting
given the position that software designers/architects ‘enjoy’ in the IT
world, there are often religious overtones to methodologies and their
application, references to ‘high priests’ and so on...). However, this
may be a personal preference, so you may be in danger of ‘turning-off’
as many people as you ‘turn on’. I wonder whether there could be
alternative forms for the same story - so you could have the graphical,
strip-cartoon approach derived from a text-based version...’ (Mark
Gamble, Principal Product Development Manager, Sager(UK) Ltd.).

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Appendix 1

Star Trek Generations storyboard

The purpose of this survey was to see if the visual graphic system was capable of conveying a complex story by providing the 'reader' with just-barely-good-enough information, and no more.

The survey was conducted as part of a broader study to test the scope of workPlay system. This was the first attempt to test certain aspects of the design and to get constructive feedback on it. It was conducted before the decision to target workPlay to the technology sector, so workPlay's application to a very different purpose and its capacity to entertain do not directly relate to the focus of later studies and surveys. It was, however, a good test of workPlay's ability to convey a dynamic story, and it tested the extreme limits of length, consisting of 51 frames, which outstrips any application it may be used for in the technology sector.

The movie, Star Trek Generations, was chosen as a suitable story to illustrate because it presents some interesting challenges, including; it's length, the complexity of the plot, the depiction of time shifts and futuristic locations, and a large cast of 'actors' with a range of appearances.

The survey was conducted within the MA: DMG group. Seven members of the group completed questionnaires. The presentation and the responses suggested that the material needed some refinements before it could be used for a wider test. Although the length of the story successfully tested the ability of the system to encompass an epic story, it is perhaps too long to use as a test story.
Star Trek Generations: The storyboard

Star Trek generations
an experimental imagery system

A Champagne bottle tumbles through space, slowly drifting towards its intended target...

...the new U.S.S. Enterprise, NCC-1701-B. It is late in the 23rd century, and the inauguration of the vessel is attended by crew from the former starship of the same name; Admirals James T. Kirk, Montgomery Scott and Pavel Chekov.

Reporters and onlookers clamor to interview Kirk and the new U.S.S. Enterprise captain about commanding a starship as the crew begins to embark on its routine maiden voyage.

A short time into the flight, however, the starship receives a distress call and is diverted to aid an El-Aurian transport vessel caught in a mysterious energy ribbon.

Kirk, falling back on his old instincts, quickly finds that not only is the new captain inexperienced, but most of the ship's vital weapons and functions have not yet been installed. While Kirk, Scott and Chekov struggle to save the ship...
...the transporter room beams aboard survivors, even as their El-Aurian transport vessel is torn apart by the energy ribbon.

Kirk goes below deck to work on the deflector relays, but the ribbon suddenly strikes the starship, tearing a large gash through the hull and leaving only debris where Kirk was working.

Scotty and Chekov stare out into space, bewildered by the sudden loss of their friend.

Seventy-eight years later.... in 2371, the crew of the U.S.S. Enterprise NCC-1701-D join together on the holodeck for a ceremony to promote Lt. Worf, a Klingon officer, to the rank of Lieutenant Commander.

The ceremony is conducted using a 19th-century sailing ship and corresponding uniforms.

The merriment is suddenly interrupted, however, when Picard receives notice of an urgent personal message.

On returning to his quarters, Picard learns that his brother and nephew have died on earth, putting him in a depressed state.
Meanwhile, officers Geordi La Forge and Data successfully install an emotion chip designed by Data's creator, Dr. Noonien Soong, into the android. Although La Forge questions the wisdom of the installation as a potentially painful step in the growth of his friend, Data ignores him.

After installing the chip, Data quickly discovers the vast array of emotions now available to him and believes he has the necessary skills to integrate them into his programming.

The U.S.S. Enterprise is sent to the Amargosa Observatory to investigate a distress call.

When they arrive, the Enterprise finds two dead Romulans and five humans left alive after a mysterious and brutal attack. One of the survivors is a Dr. Tolian Soran.

The survivors are transported back to the Enterprise.

Later... working to find the cause of the attack, Data and La Forge return to the starship's laboratory and find traces of a volatile (trilithium) explosive which Soran has secretly concealed in the lab. Later... working to find the cause of the attack, Data and La Forge return to the starship's laboratory and find traces of a volatile (trilithium) explosive which Soran has secretly concealed in the lab.

While Data watches in abject terror, Soran kidnaps La Forge, taking him to a cloaked Klingon ship.

The Klingon ship, on which Soran is a passenger, is commanded by the Duras sisters. When questioning La Forge proves unsuccessful, Soran releases the starship officer after modifying his visor to transmit its signals back to the Klingon vessel.
Soran then fires a trilithium probe into the sun, which causes an incredible shock wave.

In exchange for the formula for Soran's trilithium explosive, the Duras sisters have agreed to take him to the planet Veridian III, where he wants to conduct another solar implosion.

Back on the U.S.S. Enterprise, Picard learns from Riker that Soran is 300 years old and, like Guinan, a survivor of the El-Aurian incident that killed Captain Kirk.

In an effort to understand what is happening, Picard goes to Guinan.

She tells him that the energy ribbon, called the Nexus, is a temporal anomaly moving through space. To anyone or anything inside the Nexus, linear time has no meaning and a person can experience anything that he or she desires. There is an overpowering feeling of joy so addictive, that once there, no one wants to leave.

Picard, still depressed from his recent news, informs Troi of his family lineage and that he never intended to have any children because his brother had children who would carry on the Picard name. However, now, with his brother and nephew dead, Jean-Luc will be the last Picard.

In Stellar Cartography, Picard and an emotionally troubled Data plot the course of the Nexus and the changes that have occurred since the sun was destroyed. They conclude that Soran plans to destroy another sun when the Nexus passes close to the Veridian system, killing as many as 230 million inhabitants on one of the system's planets.

Destroying the suns alters spacial forces, thereby changing the path of the Nexus. With the Veridian sun destroyed, the Nexus will pass along the surface of Veridian III, allowing Soran to re-enter it.
Picard, learning of the situation, beams down to Vendian III to try to dissuade Soren.

In the meantime, La Forge, having been returned to the U.S.S. Enterprise, moves about the ship and finally begins some work on the deflector shields.

From their cloaked ship, the Duras sisters can see everything that La Forge sees. They watch with great interest and finally see what they've been waiting for: the U.S.S. Enterprise deflector shield modulation plans.

Due to damage sustained by the K'Ranor's attack, the Enterprise suffers a warp-core breach and Riker orders the saucer section separated.

Meanwhile, however, the U.S.S. Enterprise succeeds in destroying the K'ilgorn warpbird. Unfortuantely, Soren has already beamed down to the planet, Vendian IV.
Elsewhere on the planet's surface, Kirk and Sulu fight to the death as the Nexus rapidly approaches.

After a terrifying ride, the U.S.S. Enterprise safely lands on the planet's surface. Fortunately, most of the crew are uninjured.

In their wake, the inhabitants of the Veridian system, as well as the survivors from the U.S.S. Enterprise, are engulfed in a giant cloud of fire.

For a time, Kirk is bewildered but delighted to be spending Christmas with his large, happy family - a family he never had the time to start. But then, just as the captain gazes at a reminder that this experience is not real and that he must get on with his mission.
Picard remembers that Guinan had told him he would find someone in the Nexus to help him defeat Soran. Just then, an "echo" of Guinan appears, telling Picard that he can have anything he wants in the Nexus, but that he can also leave, and he can leave prior to when he arrived - there might still be time to stop Soran's destruction. But Picard believes he needs help if he's to be successful...

..with Guinan's help, Picard finds James T. Kirk in the Nexus.

Kirk was not killed 78 years earlier on the U.S.S. Enterprise NCC-1701-B, but was drawn into the Nexus instead. Kirk is now a happy farmer in Iowa, content with his life's loves; "Antonia", and his horses.

Picard is successful in convincing Kirk of the spurious nature of the Nexus realities, and awakens Kirk's taste for adventure, duty, and the chance to "make a difference again."

The two Enterprise captains leave the Nexus and materialize on Veridian III, just as Soran is preparing to set off his solar bomb.

This time, Kirk grapples with Soran while Picard races to sabotage the probe.

Although Kirk wins the fight, knocking Soran off the edge of a bridge, the diabolical doctor manages to cloak the launch mechanism before Picard can disarm it. Soran, hanging on for dear life, loses control of the remote and it lands on the bridge.

Kirk races to recover the remote, but Soran fires on Kirk with his deadly disruptor, narrowly missing Kirk and breaking the bridge in two.
Kirk sees that the remote is lodged on the opposite portion of the bridge across a deep chasm. With the second half of the bridge about to give, Kirk jumps to the other side escaping certain death by seconds. Just as the remote is about to fall, Kirk miraculously grabs it.

Kirk looks up at the chasm, where Picard and the Romulan are standing. Suddenly the second half of the bridge collapses into the chasm, carrying Kirk with it. Picard looks on in disbelief.

With time running out and the Nexus fast approaching, Kirk deduces the launch mechanism. Kirk causes the launch mechanism to jam, preventing the launch.

Soran's smile slowly fades, however, when he realizes that Picard has second about to ignite, the rocket will not launch.

Soran, realizing the Nexus's destruction, escapes. But the evil doctor doesn't care. His moment of triumph is at hand. The launch mechanism explodes into a giant fireball, killing Soran and preventing the destruction of the entire Veridian system.
Picard runs to Kirk, where he stays until the former captain of the U.S.S. Enterprise dies. "It was fun...oh my." are Kirk's last words.

Picard buries and mourns the loss of his new friend.

Some time later...a shuttlecraft from the U.S.S. Enterprise finds Picard and takes him to the ship's crash site where survivors are being rescued by the U.S.S. Farragut.

Data's belief that he has finally mastered human emotions is put to the test when he and Counselor Troi find the android's cat amongst the Enterprise wreckage. Data, bewildered, is overcome with tears of joy.

Riker is saddened as they leave the wrecked starship, but Picard assures him that this is not likely to be the last ship named 'Enterprise.'
### WORKPLAY: ‘STAR TREK GENERATIONS’ SURVEY

The primary aim of this initial prototype is to see if this approach to a visual graphic system is capable of conveying a complex story by providing the ‘reader’ with just-barely-good-enough[BG&E] information, and no more. The text component at this stage is incomplete (it is un-edited, and has not yet been broken out into narrative and dialog text). If you could provide me with a bit of background information and some comments and observations it would help me a great deal to develop this project further.

I need honest, brutal criticism on this folks, anything that strikes you as odd, wrong, unclear, incomplete or just plain dull.

1/ Are you familiar with the Star Trek series? ____________ Yes_______ No_______ A little________
2/ Are you familiar with the characters in the Star Trek series? ____________ Yes_______ No_______ A little________
3/ Have you seen this movie? ____________ Yes_______ No_______
4/ Were you able to follow the story... ____________ Easily?—— Mostly?—— Hardly?——
5/ If you had some trouble following the story, can you identify where you had trouble and what might have caused the problem?

6/ Were you able to clearly identify the actors? ____________ Yes_______ No_______ Some________
7/ If you had some trouble identifying actors, can you tell me which ones, and why you think you might have had trouble identifying them?

8/ Were you able to follow the actions portrayed in the story? ____________ Yes_______ No_______ Some________
9/ If you had trouble following some of the actions, can you tell me which ones, and why you think you might have had trouble following them?

10/ If you had not seen the movie, would you now want to go see it? ____________ Yes_______ No_______ Maybe_______

---

## Responses

Seven questionnaires were completed. They were submitted anonymously.

- Comprehension of the story was fair to good.
- Identification of the actors appears to be poor.
- The actions in the story were clear to all but one respondent.

Some of these responses are felt to be due to the length and complexity of the story, and the incomplete nature of the text, which had not been transposed into narrative and dialog.

## Comments to question 7

'I had trouble identifying the original cast members, they were very similar. I felt Kirk should have been more vivid and Scotty older and fatter'.

'Maybe have Kirk a little bigger'.

'Probably more to do with the fact they have strange names than the actual visual'.

## General comments

'The movement visuals were very good visual cues. Also the “fading” of characters and equipment gave added and valuable meaning'.

'I think voice over would be better as the viewer tends to look at the screen rather than the images'.

'The narrative worked very well, to the point where I was caught up in the story rather than being aware of the graphic system. The only problem I had was when the captions described extreme emotion or action “abject terror” or “a fight to the death” and the images inevitably remain bland. This seems incongruous with this kind of narrative, but I don’t think it would matter in the usual function of the system’.

‘Because I am not familiar with the characters, maybe more colour differences are needed to identify the characters quickly, and the story is a bit complicated, I forgot which character is which??’
Conclusions

In response to some of these suggestions, a second version of this story was developed with a more prominently identifiable Kirk, and some adjustments to colour. Also the text was split into much more condensed narrative and dialog. Unfortunately the revisions were not completed before the decision to target technology companies, so it never got completed or tested.

The comment about showing emotion is currently being addressed. The use of colour in the skin tones of the figures might identify jealousy (yellow), anger (red), envy (green) and sadness (blue).
Two parallel series of three reviews were scheduled to be conducted over six weeks. The Design Series, addressed design and communication issues, while the Technology Series, addressed user experience (UX) issues. Two panels of academics, experts and experts in the field were sourced, the Design Panel, and the Technology Panel (see Appendix 2).

Methods
The nature of the project was considered in the decision to use mixed-method research—a combining of qualitative and quantitative research methods. Statistical data was required to support certain fundamental questions and issues, but ideas are not communicated through statistics, they are communicated through rhetoric, discourse and narrative. Since workPlay is a tool intended to communicate ideas and stimulate discourse around them provisions to show indications of this in the results of the questionnaires was needed. To achieve this, after each question of a quantitative nature, the respondent was encouraged to engage in discourse by providing comments or feedback.

A method of presentation was employed to introduce the more complex details of usability gradually and in context. The series of reviews presented to the Technology Panel were designed to address three key questions in a specific order. They are; what workPlay does, what workPlay is, and how workPlay is used. As the scenarios address each of these questions in turn, the view of workPlay progressively tightens from a broad overview, as presented in the 'Introduction to workPlay', to specific details of application, as presented in 'The Usability Architect’s story'.

Interpreting the results
The questionnaires addressed aspects of workPlay in two different ways. Since workPlay was used as the presentation tool to conduct the reviews certain questions addressed workPlay’s performance in that capacity: addressing issues of speed, clarity, and appearance, while others addressed a range of workPlay features as described in the presentations. This dual presence of workPlay meant that the findings could be interpreted in two ways: through the extent to which the answers and comments of the respondents are positive, the usual criteria, and through the extent to which respondents understand the message, a factor indicated by the degree to which the answers show comprehension of the questions (assuming that the question is not at fault).

Appendix 3
Primary research
Overview
Primary research was conducted between October 31, 2007 and June 21, 2008. The first two surveys are considered pilot surveys. The first was conducted October 31, a single-page questionnaire given to seven MA Design MM and Graphics students after watching a 51-frame storyboard presentation of Star Trek Generations, the movie. The second survey was prepared as a PDF e-mail. It was completed by one research fellow on December 3. The design of the survey presentation and questionnaire was later adapted for use in the series of critical reviews.

From the lessons learned by preparing and conducting the pilot surveys, a plan was formulated to conduct a series of online critical reviews by academics, experts and experts working in the field. Additional secondary research was conducted to achieve this.

The series of three Design Reviews was duplicated, and the duplicate set was used to collect additional research from students and online participants (The data from these surveys was kept separate from that of the expert surveys). To increase the number of participants in the student reviews, two survey parties were organized. The first was staged March 19 and the second on May 14.

Finally, on June 25, a meeting with Mark Gamble, Principal Product development Manager at Sage (UK) Ltd., was arranged. Mr. Gamble had participated in the workPlay technology Reviews. A short, taped interview has added depth to the comments made during the review process.

Introduction
WorkPlay evolved in the technology sector, but it was unclear whether that sector was the only potential user of workPlay, or the best one in which to test and launch it. Research was conducted to find out. Since workPlay is closely related to scenario development, indications of scenario use suggest a high probability of workPlay adoption. Based on statistics of scenario use across all sectors, those that used them the most were found to be education and technology.

A comparison study (see Appendix 4, Fig. 7), revealed that there were considerable difference between the way in which workPlay would be used in each sector. In deciding which sector to target, consideration was given to the fact that more was known about the technology sector and its culture, and therefore it was chosen as the primary market, with education as a probable secondary market.

The Expert Reviews
The expert reviews were developed to test hypothesis, to focus design directions, and to address various issues raised through secondary research and through the analysis of feedback from the pilot surveys.
Welcome.
Thank you for taking part in this review of workPlay.
In this first presentation, workPlay is both the message AND the medium. Here, workPlay shows you some key benefits of its graphical system and a small slice of its software system.
1. WorkPlay is designed to tell stories in a clear and concise way. Did you find the information in this presentation clear and easy to understand?

No .............................................................................. 0

Yes ............................................................................ 19

Other

Average 100%

1a. Please elaborate or provide comments:

1b. Do you have any suggestions for how this aspect of workPlay might be further improved?

'Would you like to highlight that this software is for non-designers? What level of competence with digital media do they need to be?'

'need to be a little careful to avoid the graphics appearing to look like clip art'

'I'm keenly interested in the use of story-telling for requirements elicitation and analysis. For software development purposes, workPlay could be improved by linking it more explicitly with recognised methods (for example, linking it to UML, visual use cases, actors, etc). For general purpose use, I wonder whether having a more structured approach to story-telling (although the structure behind workPlay isn't apparent in this presentation - it may be that the 2nd and 3rd presentations go into more detail) would be useful - this would be interesting as you could imagine a system of story templates ('Why is X difficult', 'How would Y make X easy', moral-based stories, parable-stories, etc).'

'Maybe a little more information on where this level of communications is important'

'Some simple animation - e.g. can help illustrate the flow of a process.'

'Explain why stories are a more effective method for communication compared to other methods.'

'You mention it is easy but not effective way you show it. What is the story behind the mobile?'
'A scenario is the start of a design process. How does workPlay fit with the rest of the process? How is the outcome/scenario shared with others or with other technologies?'

'The loading of the images was jerky - this could be improved perhaps.'

'Align the header on each page with the header on the previous page for continuity and visual stability.'

'more image examples could be added - but I feel this would detract from the clear almost iconic style of the piece.'

2. WorkPlay is designed to tell stories quickly. Did the presentation take more than 3 or 4 minutes to read?
   No ................................................................. 19
   Yes ................................................................. 0
   Average 100%

2a. Please elaborate.

3. workPlay enables enterprises to author visual communication materials in-house. Please check any of the following benefits you consider workPlay might provide.
   - time saving ................................................. 16
   - cost saving ................................................... 9
   - convenience ............................................... 16
   - reduced risk of disclosure/better IP security .......... 1
   - encourage creative and innovative thinking ........ 15
   - other:
     - avoid misunderstandings
     - Clarity of concepts
     - democratic
     - easy to iterate

- Fun
- helps keep the interest of client/audience
- increased productivity
- potential to link scenarios into a system

3a. Please provide any comments or suggestions that might help improve this aspect of workPlay.
' the supporting library of image is crucial to how it works - people need to feel they are creating something fresh'

'The pakage most commonly used for in-house visual communications is PowerPoint but there is little in PowerPoint to help you storyboard ideas and key concepts in a clear concise way. From the example presentation, story telling tools form a central part of workPlay and would certainly facilitate the creation of clearer, more creative and interesting presentations.'

'Effective and approriate authoring of the storyline will be a challenging for some people.'

'I think it might provide it based on the presentation, but now I would have to have a play about with it before I can comment more. So far I can do the same with powerpoint and that I know already.'

'Not sure who the target audience is for workPlay... is it technologists working with clients? Is it for business people trying to describe what they do?'

'Choice of colours for mood of presentation or image perhaps.'

'perhaps a simple set of workPlay storyboards could be added showing an actual project.eg. selling a new mobile phone'

4. Please rank the features that you saw in this prototype of workPlay.
   1 = poor, 5 = very good
   - Effectiveness of the figurative system
     1 ................................................................. 0
     2 ................................................................. 1
• Ability to use your own imagery
  1 ............................................................... 2
  2 ............................................................... 2
  3 ............................................................... 2
  4 ............................................................... 6
  5 ............................................................... 3

  Average 65%

  ‘Again - Important for flexibility’
  ‘Didn’t notice this feature’
  ‘I assume it has but no way of being certain’
  ‘I could use them’
  ‘I didn’t notice that possibility when reading the presentation.’
  ‘Insufficient examples to really make an assessment on this presentation’
  ‘more libraries available?’
  ‘not sure where my own imagery could be inserted’
  ‘Wasn’t clear that you can do this’
  wasn’t mentioned

• Seamless integration of diagrams
  1 ............................................................... 0
  2 ............................................................... 0
  3 ............................................................... 9
  4 ............................................................... 6

  Average 77%

  Comments
  • I thought this was great - I felt I instantly understood the message being conveyed
  • need to see them in a storyline
  • stylish and clear

• The provision to layer information
  1 ............................................................... 1
  2 ............................................................... 2
  3 ............................................................... 5
  4 ............................................................... 6
  5 ............................................................... 4

  Average 71%

  ‘do not understand the question’
  ‘Insufficient examples to really make an assessment on this presentation’
  ‘not sure’
  ‘Only mentioned once’
  ‘sounds good, need to see it in an example’
  ‘told the story well’
  ‘Worked well and is important for flexibility in design of visual aspect’
I’d like to be able to look at the storyboards while I do these questions’
key words should be more prominent’
’spot on’
’Wasn’t aware of this feature’

• The use of minimal scenery and props.

1 ................................................................................ 0
2 ................................................................................ 0
3 ................................................................................ 6
4 ................................................................................ 8
5 ................................................................................ 5

Average 79%

‘... presentation. Not enough ...’
‘Again - allowed instant understanding of the message without having to “figure out” how all the components fit together.’

generally helpful, depends on storyline’
’last 3 points: aren’t they part of design teachings?’
’looked very Egyptian-like’
’minimalist-always hard to do’

• The use of colour

1 ................................................................................ 1
2 ................................................................................ 4
3 ................................................................................ 8

Average 73%

Insufficient examples to really make an assessment on this presentation’
’My rankings reflect the ...’
’not sure what you mean’
’presentation looks good’
’The diagrams appear to fit together very well’
’the scenes flow but is a scene, a diagram?’
’words could be integrated more’

• The use of keywords in the layout

1 ................................................................................ 0
2 ................................................................................ 1
3 ................................................................................ 6
4 ................................................................................ 6
5 ................................................................................ 6

Average 78%

‘... information in the ...’

‘Feature?’

‘I though the combination of the figurative system and key words was used very effectively to aid understanding’
Welcome.
Thank you for taking part in this review of workPlay.
In this second presentation, workPlay shows you what it can be used for. Through the medium of storytelling and pictures, workPlay describes how the development cycle of a new drug is reduced by using a new technology. The medical scenario simulates real conditions which help convey the real benefits of the technology.

Please login using your full name, view the presentation, then answer the short questionnaire.

The Drug Carrier story

Text introducing the presentation

Welcome.
Thank you for taking part in this review of workPlay.
In this second presentation, workPlay shows you what it can be used for. Through the medium of storytelling and pictures, workPlay describes how the development cycle of a new drug is reduced by using a new technology. The medical scenario simulates real conditions which help convey the real benefits of the technology.

Please login using your full name, view the presentation, then answer the short questionnaire.
3. ViaCom technology allows Dr. Lang to work in real time with Dr. display, a biophysicist at the Gettyn lab in the Netherlands.

I agree Dr. Lang. The lab will pilot the polymer carrier and run more intensive toxicity tests.

While your team is working on the Dr. display, theordon team will be working to synthesize Ptk4. This will mean the supply of the drug for the trials, and make some spotted owls very happy.

4. Ptk4 is derived from the bark of the pacific yew tree, the habitat of the endangered spotted owl.

5. Dr. Lang. As you see here, the latest prototyped carrier and drug tests show that toxicity levels are now well within regulatory standards.

Congratulations Dr. display, this means we can move to Phase 2.

6. During a review of the Phase 2 trials, the program director announces a bold decision.

All our current rates of progress, if nothing else the ViaCom system will enable us to trim of least eight months off the standard schedule.

7. St. Vincent Medical Center, L.A., California shortly after the Food and Drug Administration approval of the new procedure.

The new drug delivery system is in place. After 16 hours and the ViaCom two-way video feed to the patient.

The Lang Procedure was approved just in time for the lady patient.
1. Please rank how well you think workPlay told this story?
   1 = not well 5 = very well

   • I understood the benefits associated with reducing the drug development schedule
     1. ................................................................. 0
     2. ................................................................. 0
     3. ................................................................. 2
     4. ................................................................. 3
     5. ................................................................. 4

   Average 78%

   Comments
   'were the owls OK?'

   1a. Do you have any suggestions for how this aspect of workPlay might be further improved?

   2.
   Please rank the following design elements for their ability to adequately convey the elements of the story.

   2a. The use of size and colour to separate elements of primary and secondary importance (see example right)
     1. ................................................................. 0
     2. ................................................................. 0
     3. ................................................................. 4
     4. ................................................................. 2
     5. ................................................................. 3

   Average 78%

   Comments
   'VizCom was clear'

   • I understood how this was achieved
     1. ................................................................. 0
     2. ................................................................. 0
     3. ................................................................. 1
     4. ................................................................. 4
     5. ................................................................. 4

   Average 86%

   Comments
   'sort of'

   • I understood the urgent need to synthesise the drug P44z
     1. ................................................................. 0
     2. ................................................................. 0
     3. ................................................................. 4

   Average 86%

   Comments
   'see previous comment'

2. Please consider how the subtle shades will look projected onto a screen rather than a monitor.

'No, but I think that placing the flat green portion of the image on a higher "platform" works well to convey the sense of distance between the foreground (grey tones) and the background (flat greens).'

   'more emphasis on the product in question rather than the people using it...e.g. The owls were memorable... but not the drug'
2b  the use of a limit range of standard poses for figures (see example right).

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Average 87%

Do you have any suggestions for how this aspect of workPlay might be further improved?

‘Only use the bit of figure you actually need, e.g. head, arms. The legs take up half of the image and are not telling us anything.’

‘Can seem a little stiff and unrelaxed’

2c  The use of colour to connect the product name with the product VizCom (see example left).

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Average 60%

Do you have any suggestions for how this aspect of workPlay might be further improved?

‘Looks like it should be a link to a website’

‘Could use strong highlights on really important features’

‘Maybe add a connector line from the text to the object’

2d  The use of photos to supplement the system of illustrated graphics (see example right).

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Average 84%

Do you have any suggestions for how this aspect of workPlay might be further improved?

‘Slight unease about the “dryness” of it all, though I know that that is inherent in any well-functioning system. How are the illustrated graphics accessed? Where are they from? Is there a possibility of being able to add humour occasionally with more “relaxed” imagery? ’

‘Clear photos can help if they clarify. The owls made sense… not sure what the bark/bush was!’

‘This shows the software versatility but what stood out for me on this was the limited text and the humourous side with the hoot hoot. Which although not in this one above, is still in my memory. Reduce wordage and bring in small elements of emotions have fun with the images’

2e  The absence of “bounding” boxes (see example right).

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Do you have any suggestions for how this aspect of workPlay might be further improved?

'The graphic cue is fine. However, it prompts the idea that may be each character should have different colour text, or fonts? It might get too messy though.'

'Use of different typeface is fine. Use alignment of type more.'

'boxes tend to box in the viewer.'

'It makes it feel less like a slide show, which is a good thing. I would strongly suggest retaining this aspect.'

Do you have any suggestions for how this aspect of workPlay might be further improved?

'Less text..and MUCH simpler names for people. e.g. Doc X. Doc Y. It felt a bit like Dr Zhivago -where I get mixed up with all the names.'

'maybe move the dialog text down a bit on the left side'

'different line lengths add small extra distractions and the speech text could be better chosen'

Do you have any suggestions for how this aspect of workPlay might be further improved?

'Use of a relatively large number of graphic cues can be somewhat confusing, especially when some (like the circles) are commonly recognized, whereas others (like the lightening bolt) is not as evident.'

'I like the straight line best'

'Use of a relatively large number of graphic cues can be somewhat confusing, especially when some (like the circles) are commonly recognized, whereas others (like the lightening bolt) is not as evident.'

Do you have any suggestions for how this aspect of workPlay might be further improved?

'I did not notice did, so obviously it is not an issue and perhaps make it looks simpler.'

'Use of different typeface is fine. Use alignment of type more.'

'boxes tend to box in the viewer.'
Jamie and the Rosetta Stone

This presentation and questionnaire was created for the Design Panel to review. The story and questions were developed towards the end of stage 2, and presented internally to one research fellow (see page 29, 'Layering and comprehension'). At that time only two levels of complexity were included in the presentation, and a sound rationale for doing that was developed. Due to time and resource constraints, this version presents three levels of complexity.

The following introduction to the presentation briefly explains how the material is arranged.

Welcome. Thank you for taking part in this final review of workPlay. This presentation explores the boundaries of workPlay's ability to communicate. It attempts to discover the minimum number of graphic elements and minimum level of detail needed to effectively convey a story. To help determine this same story is presented to you three times. In each version the amount of information and detail increases. At the end of each version there is a short questionnaire.

Do you have any suggestions for how this aspect of workPlay might be further improved?

You probably have tried different combinations of fonts, but I think it can be improved upon.

Though they are different enough from each other, the grey, condensed face feels too condensed for easy reading. It may be wrong but maybe more condensed would remedy that.

This speech font needs exploration to find a better face, this one looks like its speech but too blurry.

The text used for dialogue seems a bit blurry.

The text used for dialogue seems a bit blurry.

Text introducing the presentation

This presentation explores the boundaries of workPlay’s ability to communicate. It attempts to discover the minimum number of graphic elements and a minimum level of detail needed to effectively convey a story. To help determine this same story is presented to you three times. In each version the amount of information and detail increases. At the end of each version there is a short questionnaire.

You probably have tried different combinations of fonts, but I think it can be improved upon.

Though they are different enough from each other, the grey, condensed face feels too condensed for easy reading. It may be wrong but maybe more condensed would remedy that.

This speech font needs exploration to find a better face, this one looks like its speech but too blurry.

The text used for dialogue seems a bit blurry.

It appears that comprehension of the story on this presentation was high. When asked if it told the story well, the score was 84%. On understanding the story, 86%. There was more reservation on questions that mentioned specific facts of the story, and it’s suspected that few people read the story like a lesson where facts have to be remembered. What did the intended do this, it provides a human view that is often softened by the degree of ambiguity. However, it is said that the limited range of poses that the system can accommodate, there seems to be little concern over it.

Colour and texts need more attention. Several comments concerning the use of colour and text indicate that more can be done to make them more effective.
A teenager has been enticed into the British museum and is being taught the history of the Rosetta Stone and the qualities of learning.

Jamie is a rebel. He chooses not to go with the crowd. However his own curiosity draws him in. Through interactivity/images and sound he becomes involved and learns. Both he and his mentor are proud.

Jamie went on a school trip to the museum. One of the exhibit is the Rosetta Stone. He took interest in it and using his imagination and curiosity managed to gather the information on display.

disinterested person becoming interested in a subject not normally of any interest

The story seemed to be about a student (somewhat separated from his peers) who comes across the Rosetta stone in a museum, and makes a connection with the story behind it.

Jamie and his classmates visit the Rosetta Stone at the BM. Jamie is resistant to learning but his curiosity is roused. I'm not sure what the captain is doing there behind the cabinet. It seems as if we are being told that Bouchard is our contact at the BM! However Jamie learns through his curiosity and is proud of himself as is his teacher.

Jamie goes to the museum with his classmates. His curiosity is peak by the rosetta stone. He uses his imagination to understand the history of it.

The story is about how artefacts can be used to inspire, teach and learn. About how various information fragments can be synthesised.

2. Of the following, which lesson do you think Jamie is most likely being taught in this story?

   To try hard ......................................................... 0
   To read ............................................................... 0
   To use his imagination ......................................... 8
   To listen .................................................................. 0
   To participate in the class ..................................... 1

Please continue to the next page to read Version 2 of the story.
a) The Rosetta stone
b) Jamie's class.
c) Jamie. He has trouble reading.

a) The class leaves the exhibit.
b) Jamie is curious about the stone.

a) Jamie wants to read the words and pictures on the stone.

a) Captain Pierre-François Bouchard appears. He helps Jamie.

a) Captain Bouchard discovered the stone in Egypt in 1799.

a) Dr. Thomas Young tells Jamie how he translated some of the writing on the stone.
3. Did the extra information provided by this version of the story change your understanding of what the story is about?

No .................................................................
Yes ......................................................................

7 respondents, Average 100%

3a Can you explain in what way?

'I did not know that Jamie was a part of the class. My imagination suggested he may be off the street.'

'I did not realise he was a poor reader. I read in via the word “touch: actual interactivity/holograms etc. to stimulate interest in history”

'Clearer and more direct. The information is in the same place on every page.'

'I picked up in version 1 that Jamie was separated from his peers in some way, but I didn’t realize until version 2 that he had trouble reading.'

'I understood the use of the captain figure.'

'The text gave context to the images'

'It was far clearer what was going on and what the motivations of the characters were'

4. Please rate your level of understanding of version 2 of the story compared to that of Version 1.

<table>
<thead>
<tr>
<th>The same</th>
<th>Better</th>
<th>Much Better</th>
<th>Ave.score</th>
</tr>
</thead>
<tbody>
<tr>
<td>It engaged my imagination</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>I understand the lesson that Jamie was taught</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>It engaged my interest in the Rosetta stone</td>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>It engaged my interest in Jamie’s story</td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Average % 30.6% 33.3% 36.1%

Please continue to the next page to read Version 3 of the story.
APPENDICES

The stone was discovered at Fort Julius, near the city of Rosetta.

Dr. Thomas Young deciphered part of the stone.

James' imagination helps him understand the story.

This is the Rosetta Stone.

Here is the stone's text.

The text is in hieroglyphics, but no one understands it.

James' knowledge of ancient Egypt brings him closer to the puzzle.

The Rosetta Stone has three columns of text.

James' education and experience in ancient history allow him to read the hieroglyphics.

This is a historical event.

Conclusion: James' education and experience in ancient history allow him to read the hieroglyphics.
5. Did the addition of colour help you to understand the story better?

No ................................................................. 5

Yes ................................................................. 3

5a. Can you provide an example where colour helped you to understand something better? (If it helps, you can use the 'Back' button to see the story again).

'Allowed more focus on Jamie'
‘colour help distinguish the characters between the present and the past'
‘the sudden introduction of blue showed that something odd was happening.'

6. Was any part of the story significantly improved by the addition of narrative and dialog text?

No ................................................................. 1

Yes ................................................................. 7

Can you describe the improvements that you noticed?

'Almost everywhere.'
‘jamie’s “kidspeak” helped a lot'
‘that he was not interested at first and his reading was not good’
‘The historical detail. However was that important to the required outcome.’
‘The speech from the characters adds personality to the information’
‘The story felt more personal, warmer, it helped to make clearer Jamie’s feelings of inadequacy.’
‘the understanding of the significance of the historical characters and Jamie’s problem reading’
Technology Panel, Reviews

The three presentations to be reviewed by the Technology Panel were designed to progressively move from a broad overview of workPlay to specific details of its application, while at the same time move from a very high-level, micro view, as presented in the ‘Introduction to workPlay’, to a low-level, micro view, presented in ‘The Usability Architect’s story’. The decision to do this was partly driven by its obvious practicality. But it was also reinforced by many comments received in these first two presentations which suggested that certain questions could not reasonably be answered before knowing more about workPlay, how it works and how it conveys more specific stories.

Product Managers ranked the highest score in the user analysis tests (see ‘Primary Research’ > Technology Review Panel, page 6), and is used as a benchmark for all other user profiles. Some notes (opposite page) made while doing research provides some background on the kinds of responsibilities they have. To develop this scenario, several steps were taken: after conducting the research mentioned above, real Product Manager stories were sourced to get an idea of the kinds of real problems they face. From this several scenarios were developed, modified and finally merged into a single ‘typical’ problem scenario.

Text introducing the presentation

Welcome.

Thank you for taking part in this review of workPlay.

In this second presentation, workPlay shows you how it can be used. Through the medium of storytelling and pictures, workPlay describes an assignment given to a Product Manager. The assignment is based on a real Product Manager’s experience, but the solution is hypothetical. Posing and presenting hypothetical situations is one of the primary uses for workPlay.

Please login using your full name, view the presentation, then answer the short questionnaire.

---

### Jammie and The Rosetta Stone review: Conclusions

After the first viewing of the story understanding appears to be remarkably high. The core value of the story comes across with very little information provided. From the similarity of the brief descriptions of what people thought the story was about, it is clear that much of the story can be conveyed with very little effort. After the second viewing, respondents got some confirmation of their ideas about the story, and made some minor adjustments. The lesson that Jamie was learning was much clearer to respondents at this level. The additional information appears to have been more noticeable when it related to people than things, it did not appear to add to anyone’s interest in the Rosetta Stone. The third version provided more connection to the characters, giving them more personality and character, making them more easy to connect with. Historical facts were clearer, but, as one respondent pointed out, they are not key to the point of the story. This version appears to have proven the hypothesis, that the imagination is engaged more actively in stories with fewer cues.

<table>
<thead>
<tr>
<th>7. Please rate your level of understanding of version 3 of the story compared to that of Version 2.</th>
<th>The same</th>
<th>Better</th>
<th>Much Better</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>I understood what the story was about</td>
<td>3 6</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It engaged my imagination</td>
<td>3 3 3</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand the lesson that Jamie was taught</td>
<td>1 4 4</td>
<td>2.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It engaged my interest in the Rosetta stone</td>
<td>2 6 1</td>
<td>1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It engaged my interest in Jamie's story</td>
<td>1 3 5</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average %</td>
<td>15.6% 42.2% 42.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Finally, please rank the three versions of the story by choosing which one you think performed best in the following areas.</th>
<th>Version 1</th>
<th>Version 2</th>
<th>Version 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most interesting to read</td>
<td>3 6</td>
<td>5 6</td>
<td></td>
</tr>
<tr>
<td>Most stimulating to read</td>
<td>4 5</td>
<td>5 4</td>
<td></td>
</tr>
<tr>
<td>Most pleasing to read</td>
<td>5 4</td>
<td>5 4</td>
<td></td>
</tr>
<tr>
<td>Easiest to read</td>
<td>2 3 4</td>
<td>2 3 4</td>
<td></td>
</tr>
<tr>
<td>Average %</td>
<td>5.6% 41.7% 52.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As she leaves Brian’s office, Shirley weighs the options.

Shirley: How soon can we meet?
Brian: As soon as I can.
Shirley: In our office?
Brian: Yes.

I am assigning you to an existing project on our China Mobile account. The details are poorly documented and the deadline is going to be a challenge.

Brian: I will be in my office.
Shirley, there’s a fear of reeling out the dangers. You need to be trained and presented... in six weeks.

Diary: I need your best judgment on how to make this deadline...

I’ll review the material and map out a plan to move on it right away Brian.

As she leaves Brian’s office, Shirley weighs the options.

Shirley: Brian, how soon can we meet?
Brian: As soon as I can.
Shirley: In our office?
Brian: Yes.

I am assigning you to an existing project on our China Mobile account. The details are poorly documented and the deadline is going to be a challenge.

Brian: I’ll be in my office.
Shirley: There’s a fear of reeling out the dangers. You need to be trained and presented... in six weeks.

Diary: I need your best judgment on how to make this deadline...

I’ll review the material and map out a plan to move on it right away Brian.

3 days later Shirley briefs the team.

Despite the tight deadline, we’re going to follow standard procedures. We’ll do a project assessment, run a route map, then develop an action plan. This plan may not leave enough time to refine the dangers and present the best option.

You’re right Joe, it’s a challenge. I am relying on you all to apply some creative problem solving skills.

There are concerns about Shirley’s approach.

Options
- I can follow standard procedures and not exceed the deadline, but the procedures and risk reviews overtake the need.

Concern
- You’re right Joe, it’s a challenge. I am relying on you all to apply some creative problem solving skills.
At China Telecom Shirley meets her counterpart and the focus group that will help pre-test the designs.

When she returns to Enboro Shirley meets Brian to debrief.

After Brian's presentation, the CEO of China Mobile has good news.

Joe contacts a few colleagues and gets a lead.

Joe checks out the workPlay web site. He learns that the combination of stories, pictures and interactivity make a deep impression.

Joe prepares the focus group presentation in workPlay and asks Shirley to proof it. Shirley is in-flight to Beijing.
1. In this scenario, workPlay is shown being used both as a presentation tool and as a collaboration tool. WorkPlay has the potential to be used in various ways, each of which will influence the software design. Based on your estimation, which uses would provide the R&D technology community with the most value?

<table>
<thead>
<tr>
<th>Use Case</th>
<th>No value</th>
<th>Moderate value</th>
<th>Great value</th>
<th>Ave. score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visualization tool - use cases</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>2.7</td>
</tr>
<tr>
<td>Presentation tool - high level scenarios</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>2.6</td>
</tr>
<tr>
<td>Collaboration tool</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>Communications tool - cross discipline/cultural</td>
<td>0</td>
<td>5</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Tutorial tool</td>
<td>0</td>
<td>3</td>
<td>8</td>
<td>2.7</td>
</tr>
<tr>
<td>Personal ideation tool</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Average %: 3.0% 42.9% 53%

Can you envision any other uses for workPlay?

"Concept elicitation"

'I am sure there are some'

'Marketing tool - to express new ideas to a broad audience'

'None'

Do you have any suggestions for how workPlay might be designed to serve any of these roles better?

'I wasn't sure how workPlay would support collaboration. The script suggests that additional technology was required. Also, images may or may not be culturally appropriate. Chinese/Japanese graphics design appears quite different to me, at least. Before using in presentations, I would want to validate the imagery. Also to note, when I used this technique with the Europeans, the feedback I received was that the cartoons trivialized the problem and the proposed solution. The same images were well received in US/Canada.'

'Would definitely need to be able to embed text, equations and pseudo-code'

'I think the scenario portrayed is clear and easy to understand.'

'The real question is can people easily use workPlay create there own scenarios in the various roles. It could be a good vehicle for the above roles - if you have a good driver. Thus a test of th driveability is needed. Ideally, against traditional methods.'

'In fact, I do not really understand what personal ideation tool means, sincerely sorry...'"

'Because you are depicting scenarios you could have branching / choices in the story line that depict different outcomes from different decisions. This would be a great Tutorial tool, especially for “behaviour” based training.'

'For collaboration, you could use with existing tools such as Skype, but you'd need one team member controlling the animation. And/or you could add annotation features.'

'no, probably real live use would generate some useful pointers'

'I think there's a danger that the presentation may distract people from (rather than focus them on) the requirements/proposed solution being explored. I personally like the hieratic/hieroglyphic approach, but that may be personal taste. (As an aside, the hieratic element is interesting given the position that software designers/architects 'enjoy' in the IT world, there are often religious overtones to methodologies and their application, references to 'high priests' and so on...). However, this may be a personal preference, so you may be in danger of 'turning off' as many people as you 'turn on'. I wonder whether there could be alternative forms for the same story - so you could have the graphical, strip-cartoon approach derived from a text-based version...'

2. The scenario that you just read describes a real problem and a hypothetical solution. Please rank how well you think the scenario conveyed the problems and solutions?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Very well</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Moderately well</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>Poorly</td>
<td>1</td>
</tr>
</tbody>
</table>

Average 81.7%
3. WorkPlay is designed to help people make choices or decisions about events that are influenced by human interactions. Does workPlay convey human qualities and events sufficiently well for someone like yourself to base important decisions on?

No ............................................................................. 5

Yes ............................................................................. 6

Please elaborate.

‘Although I get it personally... would want to see how WorkPlay “plugged” into a requirements system like Rationale Pro to use as a cross-reference or how it could output JPG images to then be incorporated in word docs... or perhaps be used to generate forms in a PDF that could be used as a reference. Need to understand how it connects with the other products I use in my job.’

‘For me the storyline or script needs to be compelling in such a way it illustrates a core issue. The storyline didn’t tell me the story of how or what exactly they did with workPlay to meet the deadline.’

‘It’s an ideation and sketching tool more than one that provides evaluation support. Good decision making requires more than simple experience prototyping. WorkPlay for me is a tool for the fuzzy front end of design, but one that provides a basis for continued shared understandings and design refinements as a project progresses’

‘It take you much of the way - other interactions are bound to be involved in a real life situation so don’t expect it to do the full monty’

‘As above, the scenario was focused on very high-level issues, so I could have answered ‘yes’ to this, but I’d like to see a scenario with more detail.’

Do you have any suggestions for how this aspect of workPlay might be further improved?

‘Maybe by exposing more solutions, instead of focusing on only one.’

‘The second scene focusses on the UI designs perhaps too much... what seems to be missed is how important are the UI designs (e.g., Key requirement for market adoption appears to be the interaction design). For me, when I read “mobile O/S” that meant speed and reliability as key requirements, not UI design. Also, how WorkPlay shortened the design cycle was somewhat glossed over... perhaps have one scene where a target consumer provided live feedback, as a nifty-pick, Sally can’t really pick up changes on her laptop... communication devices are supposed to be turned off. She could talk on the phone while enroute but it would be the phone attached to the chair in front of her. Suggest indicating that she reviewed the proposed layouts in WorkPlay while enroute and prepared an email which was sent when she landed.’

‘None, it was very clear’

‘Its very high level and does not illustrate exactly how the problem was solved. The scenario just claimed it was solved by workPlay. As I think I mentioned before, workPlay illustrates a storyline why does a story based approach work better than other methods. One reason is it can illustrate a value proposition better than just a dry objective description because people can relate and identify with it experientially.’

‘I think the scenario is not really credible/convincing, it seems too optimistic, as if all kinds of problem are solved in a magic way... there is no unexpected incidents, whereas in real world this always happens...’

‘None’

‘I don’t think you can do better at this level of detail, so any fixes may have to add details, perhaps as secondary animations and/or notes/comments’

‘again more and more real life testing’

‘This is a difficult one to answer - I’ve chosen ‘poorly’ because the scenario didn’t really go into the detail I would expect - I didn’t get any information about the project itself. Having said that, I got a good picture of the difficulties faced at the project management level.’
4. Please rate how well you think the features in this prototype work.

Refer to the examples provided below.

1 = very poorly, 5 = very well

No 'bounding' boxes in layout

1. .......................................................... 0
2. .......................................................... 0
3. .......................................................... 2
4. .......................................................... 4
5. .......................................................... 5

Average 85%

Comments:

'Agree the text should not be boxed, otherwise it will look too much like a comic.'

'It never came across that you need a box'

'not a big issue for me'

'Tufte: Reduce Ink'

2. Narrative text positioned above image

1. .......................................................... 0
2. .......................................................... 0
3. .......................................................... 1
4. .......................................................... 5
5. .......................................................... 5

Average 87%

Comments:

'bottom or top fine with me'

'Clearly readable, perfect'

'Comic strip metaphor'

'I thought it was too close to the Narrative text on a couple of pages'

'Very good and clear with good contrast of typography'

3. The depiction of the aircraft

1. .......................................................... 0
2. .......................................................... 2
3. .......................................................... 1
4. .......................................................... 6
5. .......................................................... 2

Average 75%

Comments:

'but not a big deal'

'Good enough'

'I like it but I spend a lot of time on planes.'
'Instantly recognisable'

'noticing that she is in an aircraft, is it really important? Why?'

'ok, but not critical to storyline'

4. The depiction of ethnic groups
   1. ................................................................................. 0
   2. ................................................................................. 2
   3. ................................................................................. 5
   4. ................................................................................. 1
   5. ................................................................................. 3

   Average 69%

Comments:
   'Both the male and female do not look that much different, but then this might be not necessary.'
   'Didn't really notice, not important to me per se.'
   'Not really visible at first, needs a second view to see it'
   'Of course, this needs to be handled very sensitively.'
   'This is actually important'
   'Varies, some ok, some not'

Do you have any suggestions for how any of these features of workPlay might be improved?

   'If it's important to convey ethnicity, then I suggest trying blonde hair or perhaps a longer skirt length for the women. See the regionally specific versions of Vogue or Elle online to see what I mean.'
   'Hard to say without trying to use it. I am conscious of the Egyptian style. I wonder if this might distract people or somehow make the story less compelling.'
   'I do not really understand why it is so important to describe where is each people each time he receives

some informations (in the restaurant for lunch break, in the airplane...) I think managers who have to take decisions would not worry about this... they like when only the useful information is presented, don't they? Will they have to read such a scenario when they want to take a decision or the tool will be used for teaching students how to manage a project?'

'no, the images are crucial though together with clever text editing - the user can do this well or not so well and simplicity is the key'

'Not a suggestion, more of a question. Setting technical difficulties aside, do you think workPlay would be improved by having very high-fidelity CGI-type models or even human actors? Would people respond more readily to real actors, or does the line-drawing approach situate the content more effectively? Is there a 'sweet-spot' between primitive representation (e.g. stick men) and highly-relatistic representation (CGI/human actors) that provides people with enough fellow-feeling to connect with the scenario, but a sufficiently strong indication that this is a representation, rather than 'real-life'?'

5. Did Shirley make the right decision, following standard procedures in such a situation?
   Yes ................................................................................. 4
   No ................................................................................. 0

Comments:
   'good on you, Shirl'
   'I don't think there was enough detail to make a valid judgment on this.'
   'It's better to know what problems might lie ahead, then not knowing.'
   'Not enough information to say yes or no'
   'Procedure should not dictate the tools that are used'
   'She downloaded the problem to her staff by saying creative problem solving was required. Perhaps indicating that using different tools or stating that following the general procedure didn't imply that all steps had to remain the same. Shows a more leadership orientation.'
   'Yes: Better to cut corners than to hack out a new route completely'
The Product Manager's Story review: Conclusions

In general, I have to conclude that if this survey is any indication of the effectiveness of workPlay’s ability to get people engaged with a subject, thinking about it, ideating, and participating in responding to it, it is working very well. Both the quality and quantity are very good.

There appears to be some agreement that workPlay is valuable as a visualization tool, a tutorial tool, or a high-end presentation tool, but less enthusiasm for it filling the role of a collaboration tool. This ‘feature’ will be downplayed in future.

There is a very astute comment concerning ethnicity, and the need to fully validate that there are no negative responses to their depiction in workPlay and provide that validation before expecting anyone to simply believe that they are OK to use. This concern is also reflected in the ratings later, at 69% there is some hesitation to fully commit.

Technical issues, like embedding text, equations (hadn’t thought about that, but obviously would be very handy and extend the application further into the sciences), and pseudo-code need to be looked at. As do suggestions made later about how workPlay will connect with existing tools, and how it will export what has been created in it.

The idea of providing story templates is extremely intriguing, and one that will be studied further. The system appears to present problems and solution very well. It scored 82%, and was supported by several comments. It did not score so well on facilitating decision making. It is suspected that the reason may be that the question contained two elements: one about workPlay’s ability to convey human qualities, and one that probed it’s ability to act as a tool for making important decisions. The comments on this question, and those made on others, suggest that the mechanisms that organizations have in place for making decisions would not cross over into the territory that workPlay occupies. Concerns over this may have influenced the responses to this question, which is too bad, because the opportunity to get response on the other issue, the human qualities, was lost.

Perhaps the most valuable comment is this one, it captures what workPlay is all about in eight words:

‘workPlay for me is an ideation sketching tool’

The Usability Architect’s story

The last presentation to the Technology Panel, a sixteen-frame scenario, once more addressed issues of clarity, collaboration, problem solving, the ability of workPlay to adequately reflect human behavior, and certain design features, this time in the context of very specific circumstances. It also addressed some, as yet unaddressed, issues: that of its design being dedicated to the R+D sector, and some of its communication and presentation capabilities.

Usability architects scored very high (89%) in the user analysis tests that were conducted. An excerpt from a job description (left) provides some indication of what a usability architect’s responsibilities are. Since they do a lot of research, it is expected that they would be interested in tools that help them do it better, as this story suggests.

One of the main issues addressed in this Review is the issue of repetition. Many early storyboards created for usability testing had to deal with this issue. People who are using software do not move a lot. There are no opportunities for visual dynamics that might add interest to a presentation. The question arises, Is it necessary to have visual dynamics when one is simply trying to convey some factual information? In a hand-drawn storyboard one can employ animation techniques, such as panning around the subject, viewing from different angles and at different distances. workPlay does provide that capability, so finding out if it might be an issue for people who might use the tool was important.

Text introducing the presentation

Welcome.

Thank you for taking part in this final review of workPlay.

This presentation follows the story of Joe, the usability architect who appeared briefly in the last presentation. His story is presented in the form of a use case. It also provides a rough sketch of workPlay’s components.
The usability architect's story
1. The process of creating a scenario in the workPlay software system follows that of a proven manual or ‘paper’ method. From this presentation of how workPlay’s software system is planned can you grade and comment on the following:
   1 = poor, 5 = very good

   **workPlay’s software components**
   1. ............................................................................... 1
   2. ............................................................................... 0
   3. ............................................................................... 2
   4. ............................................................................... 8
   5. ............................................................................... 0
   
   **Average 71%**

   Comments:
   ‘I would have to have used Workplay to be sure, but the linkTool, graphic importing, web sharing and libraries make it pretty complete’
   ‘It tells you workPlay can be distributed on a network, but not a lot else.’
   ‘There wasn’t an architecture presented. Architecture would present a schematic on how the components work, groupware, email, etc. work together.’

   **The usability of the system and GUI**
   1. ............................................................................... 0
   2. ............................................................................... 1
   3. ............................................................................... 2
   4. ............................................................................... 5
   5. ............................................................................... 3
   
   **Average 78%**

   Comments:
   ‘Cannot assess with using it’

   ‘Difficult to tell without actually using it.’
   ‘Looks simple and intuitive’
   ‘Seems very usable.’
   ‘The scenario makes it look pretty easy, even for someone not used design, but again, without “having a play” I cannot give full confirmation’

   **workPlay’s integration with existing, client systems**
   1. ............................................................................... 0
   2. ............................................................................... 2
   3. ............................................................................... 2
   4. ............................................................................... 4
   5. ............................................................................... 2
   
   **Average 72%**

   Comments:
   ‘Appears OK but again, I’d have to try it.’
   ‘Cannot assess with using it’
   ‘don’t know’
   ‘Seems plausible but without specific references, not sure if it’s more than email integration.’

   Do you have any other comments related to workPlay’s planned software design or its usability?
   ‘I always find a help button that assists with items related to the page currently on display to be helpful.’
   ‘The scenario is clear and the information is easy to understand’
‘I just hope that it’s as complete and easy to use as it seems in the reviews.’

‘To introduce the first scene, I suggest stating the task more clearly... such as “designing a mobile version of our flagship product” or “delivering timely information to our mobile subscribers”. Need to relate the task to the telephone picture near the end.’

‘It looks pretty handy’

‘workPlay seems very good at creating scenarios. For use cases we tend to require work flows as well.’

‘I understand how its going to work as if I was reading the documentation, but it is difficult to make any useful usability assessments without actually using workplay’

‘I could have given 5s all the way, but I don’t think that the presentation allows this. I would like to go back and review the presentation while answering some of the questions. This requires me to rely too much on memory and doesn’t make it easy for me to have a second look. So it all looks great, but I’d like a second look to be more confident now I know what I’m being asked about it.’

‘As per a previous comment, there’s a risk that some people will react negatively to even an expertly-produce workPlay scenario. They may feel that the presentation trivialises the content.’

2. WorkPlay’s software system enables the author to sketch scenes using articulated manikins and some basic drawing tools, then, if necessary, apply a higher level of graphics. In terms of supporting workPlay as an ‘ideation sketching’ tool, does this quick sketching capability provide added value?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td></td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

Please elaborate or provide comments:

‘It gives an extra dimension to presentation, more visual.’

‘It allows the user to quickly try out ideas’

‘The graphics convey the potential... but the language speaks of a graphics design and drama background, not of a usability practitioner or technologist. It’s an interesting dilemma... trying to find the right language that will appeal to the target audience (software engineers). Check out descriptions of use cases or scenarios on the Pragmatic Marketing web site to see what I mean.’

‘individuals using Wordplay will want to feel creative and not using clip art’

‘Potentially, again need to try and solve one of my problems before I can make a good assessment.’

‘To be able to sketch different scenarios quickly, to try out different ideas and send for review electronically, is a real strength - decreasing development time and reworking. You can get the essence of the message before adding the higher level of graphics. I think it makes a great storyboarding tool.’

3. Describing computer/human interaction at the level of a use case is not visually dynamic. In this presentation Joe is seen in the same pose for 13 of 16 frames. Do you think that the repeated image of Joe provides visual continuity and a necessary human perspective?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

Please elaborate or provide comments

‘You could have a textbox describing what Joe does without the need for him in the picture (text - over, like voice over)? With him constantly in the picture I got the feeling of a very elaborate process which is not what you want to promote’

‘To be honest, it does not seem repetitive’

‘Joe stay in the same unnatural pose during all the review, but strangely this is not weird at all. He just looks like a man working on a computer.’

‘Suggest changing the phrasing in the last frame to suggest a dynamic environment. For example: “Sally - I like your suggestion for the last step. What do you think about...”’

‘yes but not hugely. Users will want to be fairly quick in assembling the presentation.’

‘It is redundant, Joe adds no new information. The frames could just zoom into the screen shots ’til Joe
needs to illustrate something else.’

‘In trying to get a better feel for what workPlay can do, I felt that Joe featured too large on the “screen shot” pages relative to the screenshots, which could have conveyed a little more detail about the workPlay interface.’

‘It’s interesting that the lack of visual dynamism didn’t really occur to me, but on reflection I think this is because sitting in front of a software application isn’t a dynamic activity, so the representation was a good fit to reality.’

4. Do you have any final comments, insights or suggestions about workPlay or this series of reviews?

‘Generally, it flows well, the information is clear. My only question is whether an untrained person can still create visuals as elegant as yours?’

‘I suggest having his thoughts relate more to the task... such as “Could we suggest areas of relevant news to our mobile customer?” or “How can we suggest our service to mobile users?”... the tool is to support the scenario development. Also, in the last frame, suggest using this phrase: “This is great. He’ll see my comments on the scenarios when I land.”’

‘I think the secret for success lies in achieving a balance between the user feeling they have created something unique (over and above getting their message across) and being able to do this easily.’

‘Sometimes I get a bit disoriented that the subject the tool is describing is the same tool. Some of the text tends to promote workPlay. This could be seen as biasing your results.’

‘I am afraid that I have not been a very useful reviewer, sorry. Perhaps my English was too poor to sufficiently understand. I still wonder if the commercial release of the software will be used to help managers to take decisions, and what kind of work they will be able to do in a collaborative way... will they just share such scenarios or also other working documents as plannings, description of a product design, etc...?’

‘The main positive aspect for me is that workPlay would allow people with little graphic design knowledge to develop effective communications for sales, teaching/training and idea/concept sharing and development. The key learning aspect here would not be how to use the software but how to design effective workPlay scenarios. I’m sure you have thought of this, but for any marketed workPlay product, design tutorials would be very useful. As would library packages designed and directed for different user/groups or applications. Different tutorials/examples for different potential applications/markets would help people see how workPlay could be of use to them. With respect to the reviews, I occasionally felt I did not have enough information to give very accurate feedback but I guess this will come from any beta testing you do.’

‘See above, generally very impressive, well done’

‘There are some interesting ideas here, and I think that any tool or technology that helps people connect with the ‘problem’ and ‘solution’ space has got to be useful. The real difficulties that I think you face are: 1. Deciding how “realistic” and animated the presentation should be. As per an earlier question, would CGI-level representation “grab” more people, and as a new question, would animation help? 2. The real danger of turning a substantial portion of the audience off. Maybe some further research on learning styles would help you to decide whether alternative representations (e.g. the ability to publish text-only versions of the scenarios) would be useful. 3. The balancing act between keeping the system sufficiently simple so that users can quickly put together quite primitive stories, versus the need for any presentations to be professional in appearance.’

The Usability Architect’s Story review: Conclusions

Posing questions about workplay’s software system, GUI and functionality was premature. It was hoped that the scenarios had explained enough about how workPlay works for the panel to pass judgement on these issues. However, they are a seasoned professional bunch, that know better than to commit without being certain of what they are committing to. I don’t blame them for reserving judgement. The next step in development must be to create some prototype software that people can play with.

The idea to provide a sketching ability in the core software using manikin personas was well received. It was felt by one respondent to be a real strength: “decreasing development time and reworking. You can get the essence of the message before adding the higher level of graphics. I think it makes a great storyboarding tool.”

Despite the repetition of Joe in 13 of the 16 frames, few respondents thought him redundant information. The concern that he might appear to be an elaborate luxury is very real, especially troubling for a system that claims to honour the JBGE code. One suggestion that he might be too large, leads to the concept that he might be tested as an icon, quite a bit smaller and simpler.
In conclusion there are re-iterations of concerns about whether people with little graphical training will be able to create effective stories using this system. There is some slight confusion over workPlay being both the medium and the message, an issue that was considered before the presentations were designed. A resolution for which has still not surfaced. Templating character styles and stories seems like a valuable suggestion.

Post-Review Interview

A meeting was arranged with Mark Gamble, Principal Product Development Manager - Small Business Division Platform, Sage (UK) Ltd., to conduct a post-review interview. It was considered that this would add a level depth to the knowledge already shared by Mr. Gamble in his capacity as a reviewer on the workPlay Technology Panel. The interview was recorded and it has been transcribed.

Mr. Gamble has a keen personal interest in the use of storytelling in requirements elicitation and analysis. We talked at length about the mechanisms that Sage currently uses to achieve the things that workPlay is designed to achieve. There appear to be many different means, most of which are ‘very structured’, ‘mechanical’ and document based, rather than tools that enable ideation and creative thinking. From Mr. Gamble’s description of the processes that they go through at the front end of product development, it has been possible to get a better picture of how workPlay might fit into that environment, the kinds of people that would use it, their mind-set, and their needs.

Mr. Gamble suggested that the role of storytelling is very important to the process. It ‘cuts right across, whether it’s a formal document, whether it’s a formal process, whether it’s anything else, the biggest value is in the storytelling.’ He also pointed out that because of the medium, the way you interact with a piece of software like workPlay, it puts the thinking outside the realm of most of the other tools in use where ‘you can think about it in a different way’. This idea of a kind of space where ideas are allowed to float and form is mirrored by several comments in ‘Sketching user experiences’ (Buxton, 2007)…the space is storyspace!
The Research Methodology encompasses:

- the identification of the main fields of study and the areas within them that are relevant to the development of workPlay,
- the qualification of the importance of each area of study to determine the level of effort to expend on research in that area,
- an appreciation of the relationships between areas of study to better understand the influences that each has on the other, and
- analysis to determine important findings, and to determine areas of study that present new research opportunities.

The map (above) provides visual reference of the methodology’s architecture with indications of research activity and outcomes. It shows the two fields of study considered to be most relevant to the development of workPlay: the upper register, the field of design, shows the sequence of steps involved in the communication of an idea; the lower register, the field of technology, shows activities in that sector that influence the design.
Figure 4

A comparative study of Storyboard Quick and workPlay.

Comparison Study - Storyboard Quick and workPlay

<table>
<thead>
<tr>
<th>Name</th>
<th>Primary focus</th>
<th>The graphic system</th>
<th>Visuals &amp; Communication</th>
<th>Audio &amp; Communication</th>
<th>What the reader experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storyboard Quick</td>
<td>Presentation-based</td>
<td>Drawn, animated, graphic presentation</td>
<td>Visuals only, no audio feedback</td>
<td>No audio feedback, no visual animation feedback</td>
<td>Provides a linear sequential narrative with visual and textual elements, enhancing understanding.</td>
</tr>
<tr>
<td>workPlay</td>
<td>High technology, multimedia</td>
<td>3D environment, web-based, interactive, or interactive</td>
<td>Visuals &amp; Communication</td>
<td>Audio &amp; Communication</td>
<td>Provides an immersive, engaging experience with multimedia elements, enhancing engagement.</td>
</tr>
</tbody>
</table>

Figure 5

A comparison analysis of styles used in pictorial and textual narrative formats.

<table>
<thead>
<tr>
<th>element</th>
<th>Traditional comics</th>
<th>workPlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>mood</td>
<td>humorous</td>
<td>serious</td>
</tr>
<tr>
<td>colour</td>
<td>juvenile</td>
<td>mature</td>
</tr>
<tr>
<td>characterization</td>
<td>caricature</td>
<td>idealized</td>
</tr>
<tr>
<td>framing</td>
<td>informal (cropped)</td>
<td>formal (uncropped)</td>
</tr>
<tr>
<td>figure proportions</td>
<td>exaggerated</td>
<td>realistic</td>
</tr>
<tr>
<td>poses</td>
<td>dynamic</td>
<td>restricted</td>
</tr>
<tr>
<td>perspective</td>
<td>linear perspective</td>
<td>None</td>
</tr>
</tbody>
</table>

Figure 6

A chart created to determine the ‘tipping point’ where information is just barely good enough.

Figure 7

A comparative analysis of potential workPlay user groups.
The system has many visual inconsistencies. Figures are posed either formally using a face-on or profile view (soldiers, Egyptian, Chinese, table with 2 figures), or informally using various views (European, business meeting). The informal poses require additional visual devices to convey their message, such as white contour lines. The stylization of the ‘European’ (attitude on chair, disproportionately small feet), although evocative, appears unnecessary in order to convey the meaning – a stylistic affectation.

This system of imagery shares many inconsistencies of style with Isotype (Fig. 10) the system on which the research was based. The deck chair appears to have been styled from a photograph. It uses linear perspective and shows material ‘colour’ (in the stripes), so it is not a silhouette. Other images use a profile or face-on view that range from realistic silhouette to simplified icon. The plate of fish and chips is interesting, as is the umbrella. The former because it departs from the convention of showing a single item to show an arrangement of three, and by doing so enters the realm of design. The latter because it too has more than one element, one of which is a natural element, rain. Does an umbrella not suggest rain, just as a deck chair suggests sun? It is not clear why the motorbike helmet or the fast-food softdrink cup needs to be a three-quarter view.
Figure 12

The font, Apocalypso, designed by Jonathan Bambrook.

Figure 13

The Battle of Kadesh (1274 B.C.). An example of the formal depiction of figurative elements and composition in Egyptian art. Also believed to be the culmination of narrative Egyptian art (Bochi).

Figure 14

The Bayeux Tapestry (1070's A.D.) showing the integration of keywords and different types of pictorial information, including: narrative through the central register, and symbolic in the margins 'sometimes ornamental; sometimes they represent fables; sometimes they are used to portray a sub-plot and even possibly to foreshadow future events.' (Wilson 1986, p.11).

Figure 15

St. Georgi before Diocletian (14th C.), by Damiane. An example of inverted perspective. Note how the sightlines of the parallel edges of the stool converge towards the foreground rather than the distant background. The viewer of the art becomes the point of origin of the sightlines.
Figure 16
Graphic scenarios. A form of storyboard used in the technology sector to convey the user experience.

Figure 17
Comics storyboard. An example of Kevin Cheng's work.

Figure 18
A sample strip from <http://stripgenerator.com/>

Figure 19
A workPlay scenario scene showing how the positioning of narrative text above and the ground line below the picture space helps to define it without the need for a formal rendered frame.

Figure 20
The design specifications for the workPlay stage, showing the nineteen-square grid on which the figures are based, the position of texts, register and ground line.
Figure 21
A workPlay scene showing the use of three levels of figurative scale.

Figure 22
A chart showing the standard sizes for male, female, and three ages of youths.

Figure 23
A colour chart developed for the first pilot survey. After testing several options, a scheme that uses two tiers of tints provided the level of detail and flexibility to meet the requirements of the Design Methodology.

Figure 24
A test of the use of colour to depict emotion.
It was like trying to sculpt
Michaelangelo's 'David' from a giant bean bag.