STORYTELLING MEMORIES: A TANGIBLE CONNECTION TO BOMBER COMMAND VETERANS

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Abstract.

As we pass the 60th anniversary of the end of World War Two (WW2) historians are diligently collecting the memoirs of veterans to preserve for future generations. Public archives of memorabilia, letters, photos and artefacts, in the process of digitisation are complimenting the stone memorials of the past. This material culture of memory discusses human interaction. “The poor, the rich, the brave and the afraid, the hero and the deserter” (Moriarty, 1999, p 654).

In contemporary museum culture this digitised information is presented in either web-based systems, or interactive kiosks. However, this approach to packaging memories and historical data often leaves out much of the depth of the topic information, skimming the surface of the knowledge conveyed.

New solutions to memory and artefact display have been developed effectively in the Churchill room’s exhibit designed by Small Design (Kabat,2008) and Memory Miner (Memory Miner, 2008), a home-based memory archive programme by John Fox. Both convey the memories and artefacts upon a mapped interface, using our desire to discover and connect with memories to navigate the narrative in a self-guided format.

The **Storytelling Memories** project seeks to build on current research to formulate an interactive platform of memory immersion and experience within a museum environment. The project utilises a touch sensitive surface as an interface between the viewer and the memories. A physical controller, when placed near the interface surface will “unlock” contained memories, enabling an open-ended storytelling experience. The design encourages the user to interact directly with the memories to create their own dialogue, with the intention of developing a more emotive, personal connection to the Veteran.

Fig. 1: Bomber Crew Navigating the trip

Fig. 2: Veterans talking to Grandchildren during the filming of “Bomber Crew”

This thesis is dedicated to

the memory of my Grandfather, Air Gunner Fred WH Logan.
His crew, and all who flew with Bomber Command

Special thanks to my wonderful husband Garry who was able to build everything I needed, and kept my going throughout the year.
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Central Proposition.

In recent years it has become apparent that the conveyance of information is susceptible to the growing appetite of our visually hungry modern society; the influx of interactive design has now become a marketable commodity not simply for products, but for information itself. Even the past is in adaptation, for a revolution has struck museum and historical exhibition displays; upgrading the historical portrayal of information to suit modern trends and structure.

> By means of information technologies, we can empower the interaction between the physical tangibility of a museum piece, its current interpretation, and its future meaning, and we can attribute them different functions and degrees of importance according to the characteristics of what needs to be (re)presented.)Giaccardi, 2006)

This modern approach to packaging memories and historical data, however, often leaves out much of the depth of the topic information; skimming the surface of the knowledge portrayed. Is this contemporary approach giving modern society an in-depth look at our history, or is it just showing the part that our youth can interpret or finds exciting? History has in previous generations been passed down through oral and written stories, keeping the human element of emotion and exploration. Do modern forms of memory capture and portrayal still maintain this human approach? Mark O'Neill Head of Glasgow Museums has argued that 'Museums are places where people go and think about what it means to be human' and that museums are used 'to assert particular definitions of humanity' (1994) but he goes on to point out that the range of lived human experiences permitted in museums is limited."

Experiences during war are a significant facet of history within our culture, which we have an obligation to keep preserved for the education of future generations; lest we forget. With the glorification of war within games and modern media influences, is the next generation getting the correct message as to how it was?

The veterans of Bomber command in particular have been reluctant to comment on their participation during World War Two (WW2). Not associated with any regret of their roles as aerial bombers, but more as a result of society's reaction to their part in the war. The lack of a campaign medal for Bomber Command has solidified public belief that there was something unethical in the airmen's contribution. Their personal memoirs have remained private for the greater part of the past 6o years, conscious that the museum curators would adjust the display of their memories, and a fear of negative exposure.

The Canadian War museum upset Bomber Command veterans in 2006 with a controversial text panel "An Enduring Controversy" which veterans felt branded them war criminals and has sparked much public debate. Museum Director Dean. F Oliver (Oliver, 2007) describes the role of the museum:'The museum preserves, educates and remembers, interpreting the effect of military events on the country and its citizens.' But in this interpretive role, the memory story has become distorted in order to create more impact in the museum display to the detriment of the truth behind the actual memory. Judy Attfield describes the importance of accurate memory portrayal, and it's importance in the education of future generations "Within the public space of the museum, memories are triggered through people's real or assumed relationship with the objects, events and images they are witnessing (Attfield, 2000, p. 155).

It has been common in contemporary war museum displays worldwide to focus historical display on key military figures, quick facts and disowned artefacts. This display technique is provided through a transference and displacement of memories onto inanimate objects such as medals,

aircraft and weapons. This scenario of historical artefact display marginalises the natural emotive qualities associated to the memory and renders them emotive and perceptively meaningless. It caters only to a limited market of the public, other visitors seeking a human connection to the veterans and an emotive understanding of the life and death of an airman may feel their needs disregarded.

Intensive research into contemporary museum display systems, and the evolution of digital interactive technologies in the museum environment, has founded the platform of design theory within this thesis. However there are few digitized memory displays within war museums to form a precedent. S**torytelling Memories** seeks to develop an innovative prototype system for the digital presentation of memories within museum, which utilises current digital presentation techniques. It is envisioned that the prototype can provide a context for the memories which offers museum visitors an immersive understanding of the veteran through digital narrative.

In this digital age the designer is better equipped with visual tools to offer immersive experiences that literally bring old memories to life and encourage the public to connect directly with history. The designer acts as a mediator between the museum display, war memory archives and the veteran to develop a suitable solution that can present the veterans life inclusive of their experience with as little moderation as possible.

Touch and tangible interface technology describe the interactive platform for this project, combined with screen based design principles. The veterans memories are contained within a physical memory box which when brought into proximity to the table unlocks memories specific to certain times in the veterans life. The memories are presented within three-dimensional environments and maps giving the displaced memories context. The interface maps their experiences before the war, during and after with the aim of building a holistic image of the airman.

Fig. 3: Un-named crew from 463 Squadron

Introduction: Chapter One:War memory connection in contemporary culture.

1.1 The Bomber Boys

The focus of this thesis is specifically on the memories of the men of RAF Bomber Command. During World War Two over 120,000 men volunteered to join Bomber Command from the UK and allied countries as distant as Canada, Australia and New Zealand. These men underwent rigorous training for several years before forming crews of Pilots, Navigators, Wireless Operators, Bomb-aimers and Gunners. The crews were enlisted to initially complete only 30 night-time operations over Axis countries. Over 55,000 aircrew (44.4%) were killed; the largest number of casualties for any division of troops in World War Two.

Taking an example of 100 airmen:-
51 killed on operations or died as result of wounds
9 Killed in crashes in England
3 injured on operations or active service
12 taken prisoner of war (some injured)
1 shot down and evaded capture
24 survived a tour of operations. (Nanton Lancaster Society, 2008)

During the war they were regarded as heroes, yet as soon as the war ended public opinion started to question whether the aerial bombing of civilian targets was a justified act. As Martin Gilbert discusses in his request for a campaign medal for bomber command (Gilbert, 2008); the distribution of military honours after the war was assigned to Clement Attlee, the new British Prime Minister. Attlee had chaired the war cabinet committee and had sanctioned the contentious Dresden raids. He wanted to distance his government from involvement and declined to honour bomber command with a campaign medal.

Hickley (2008) commented in the Daily Mail; “Many of them still feel today that the country is ashamed of what they did and that’s terribly sad and wrong when you’re talking to 80 and 90-year-old men. More Bomber Command aircrew were lost in a single night in February 1944 than all the fighter pilots killed in the Battle of Britain.” The number of casualties the Dresden raid fire-storm caused, has just been reassessed by German historians to have been closer to 18,000 as opposed to the

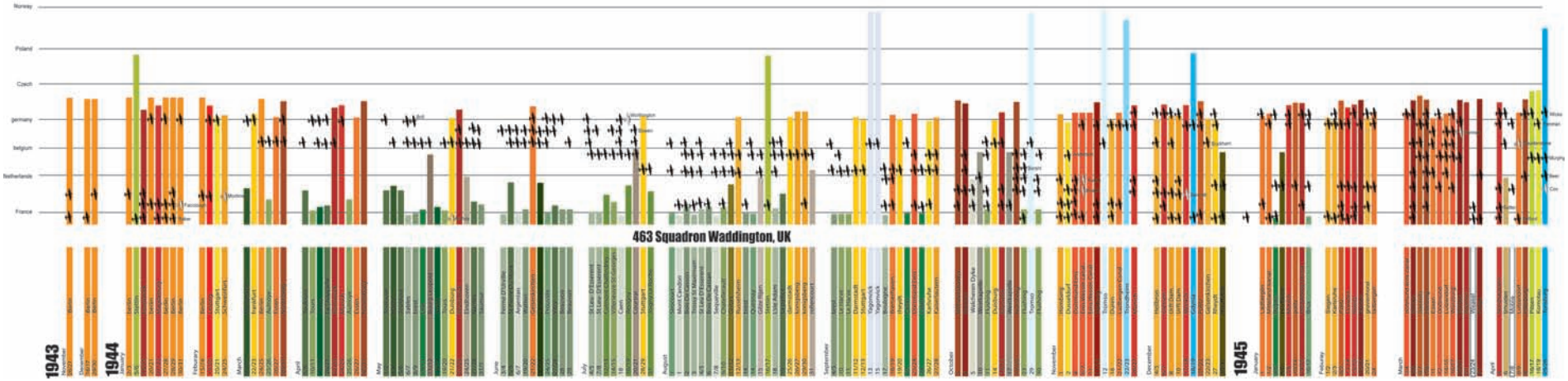

Fig. 4: 463 Crew flight distance versus fatalities

over 500,000 Bomber Command have for the past 60 years been held accountable for. W Hall (2008) reports that "the extreme number of Dresden raid fatalities was a myth invented by the Nazis, perpetuated by Communists and re-born in the past decade to serve the aims of ultra-nationalists."

Regardless of whether it was right or wrong, the social reaction of the public to the bombing raids has haunted the veterans long after the end of the war. "The sacrifice and seemingly inexhaustible bravery of the young men of Bomber Command has gone almost unrecognised for 60 years." (Hickley , 2008)
Finally decades on, there is the beginnings of acknowledgement, as the grandchild generation begins researching and discussing our war heritage. Calls have been made for a campaign medal to finally be struck for Bomber command, and a successful petition to have a permanent memorial erected in Regents Park, London. (Hickley , 2008). Though fewer than 30,000 aircrew are still alive to see this recognition, a monument and a medal will come along way towards acknowledging their sacrifice. Probably a more pressing need is to record their memories, which are the tangible connection to the past. This must be done as a matter of urgency before the veteran's pass on.

I recently visited the Bomber command association veterans at MOTAT in Auckland. For the past 20 years they have lovingly restored a Lancaster bomber to preserve a physical embodiment of their war years for future generations. It is one of only eight left in the world and is an impeccable example of an old warbird, inside and out. These Veterans are also concerned with receiving acknowledgement of their contribution, and are currently embroiled in an issue with having their memorial installed in the Auckland War museum hall of memories. (NZPA ,2008) The most earnest wish of the veterans beyond any memorial is that they can have a voice and that the public understand their perspective from a first hand experience, of what happened over Germany. It is clear upon reading articles pertaining to Bomber Command Veteran issues, that there is much public debate both for and against their history. While some comments show an educated understanding, most are based on emotive outbursts fuelled by negative propaganda, popular culture and a lack of contextual historical background. Sixty years on, public debate is still divided, and opinion misguided by being associated out of context to modern aerial bombing techniques. The comments below were posted by the public in response to an article in The Daily Mail requesting a medal for bomber command by Martin Gilbert.

> 'Why give medals to terrorists. Just because they were on our side doesn't make the carpet bombing of old women and babies acceptable. This is odious behaviour and should have been met with long prison sentences or the rope.' 2008)
>
> 'I yield to no one in my admiration of the Bomber crews and their ground staff. Their contribution to breaking the will to fight of that evil enemy was probably decisive and their courage and fortitude unimaginable.' (Gilbert 2008)
>
> 'Judging yesterday's actions by today's standards, as some have chosen to do here, is intellectually vacuous.'(Gilbert 2008)

Is it possible that in our efforts to be politically correct and distance ourselves from uncomfortable instances of our collective war history we have neglected to tell the truth? As a consequence if we do not address the need to preserve an accurate past, from the 'peoples history' perspective, and desire to honour our veteran's sacrifice, this ignorance will always create distance in our relationship with them and our understanding. **Storytelling Memories** seeks to bridge this gap by providing containment for Veteran's stories that will appeal to a modern public; where the memories are presented as they are, straight from the Veteran, as a

public legacy of their war years. My Grandfather, Sgt Fred Logan was a turret gunner in the last years of the War. He completed almost thirty operations and was flying in the last Lancaster lost on operations. His entire crew survived, and he spent his remaining life in the RAF in various service positions. I did not know him well before he died. Now his legacy remains in the form of old letters, maps, notebooks and photographs.

Storytelling Memories seeks to piece together his memoirs; and those of all airmen of Bomber Command; a rich tapestry, to reveal the men behind the artifacts. His story is not to be remembered for any particular reason, except most importantly as an account of one life in a monumental global conflict that all deserve to be heard.

Fig. 5: Sgt Fred Logan

1.2 Preserving the Past

It is an important aspect of any society to preserve our heritage and past, to help educate and inform our future generations. Accounts of history, in particular war history, have primarily been presented by historians from the Great-man viewpoint as believed by Thomas Carlye (Carlyle, 1849). Great-man theory is historical accounts recorded through the actions of influential figureheads fundamental to the shaping of history.
Contemporary museum history recording has moved from the great man viewpoint to focus on the personal testimony of the average person as recognized by Herbert Spencer (Spencer, 2000) Herbert Spencer believes this testimony of history is a more accurate representation of the cross-section of societal history, as people are a product of their environment and even great figureheads are moulded and created by the greater society's influences.

"The sovereign national state plays a key role in the politics of war memory and commemoration. " (Ashplant, Dawson, Roper 2000, p.52)

Generations detached from the war have a romantic notion of what it was like in war-time. As a result the personal testimony has become a popular form of cultural memory, as all generations can understand the desire for personal and community opinion. In an effort to humanize and relate to complex war histories on a personal level, there has been a focus created for museums, historians and archivists on collecting personal testimonies. These formulate a raw emotive connection to the past.
Some history is openly discussed; other past life memories are buried and forgotten, to be discovered by future generations after the contributor has passed on. Remnants of war history, mementos and photographs, old love letters and cigarette packets often lie for years stashed in boxes in the bottom of a wardrobe, or in the bottom drawer.

Some Veterans are comfortable to talk about their part in the war, others prefer to keep it to themselves.

There is a strong bond of comradeship during times of war and often a return to civilian life is difficult as those in the immediate generations can never fully understand the situations a veteran has witnessed. Ashplant, Dawson and Roper (2000) comment that “the efforts of the children to connect always confronting the fact of their absence from the event itself” (p. 46). Asphalt, Dawson and Roper (2000) have observed the resurgence of interest in the war and its meanings within the grandchild generation. “This process is undertaken by the descendants on behalf of survivors, as part of the translation of direct experience into cultural memory” (p. 47).The grandchildren are able to address the issue of memory perseverance and containment within a modern context, with innovative techniques of memory recording and presentation at their disposal.

Due to an advancement in methods of accessing veteran records, and data storage many organizations have been founded to collect first-hand accounts of war in the UK, Canada, USA, Australia and New Zealand. According to Ashplant, Dawson and Roper (2000) “projects involving it’s collection and preservation have become ever more ambitious and technologically complex. ” (p. 48)

The Memory Project in Canada (The Dominion Institute, Canada,2008) records veterans’ accounts and logs them into a website which contains

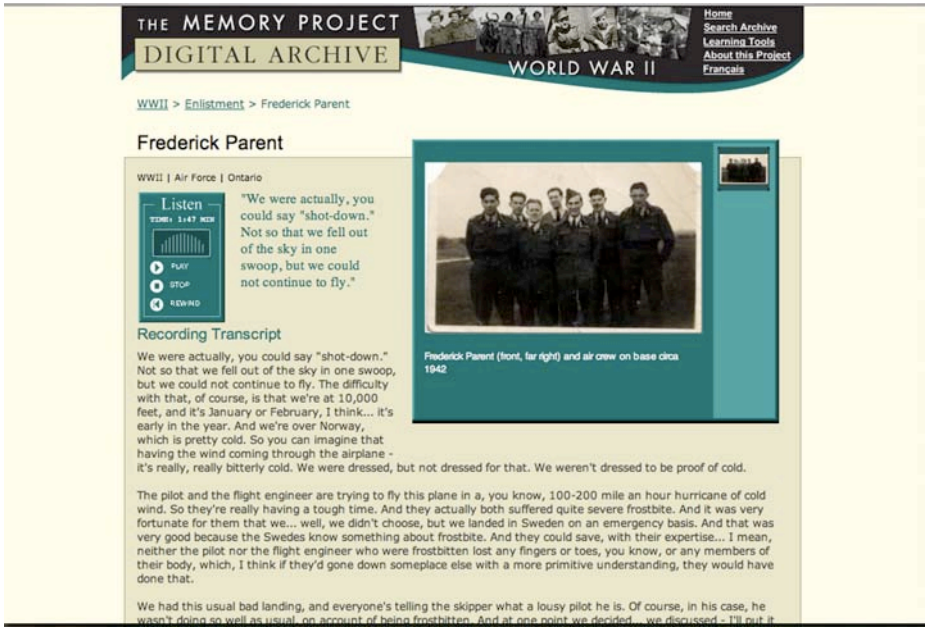

Fig. 6: The Memory Project: Canada

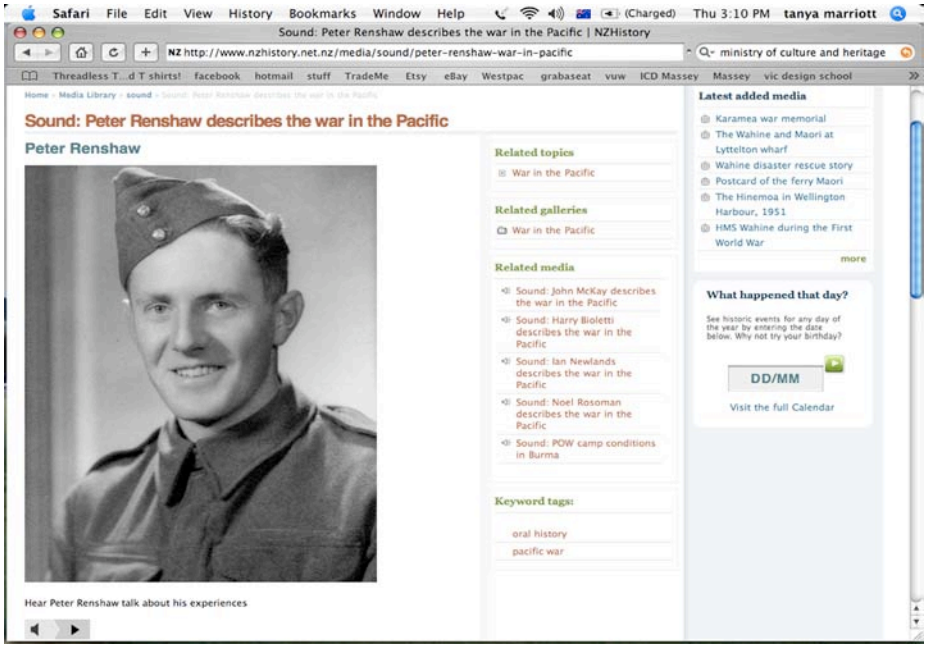

Fig. 7: From Memory: New Zealand

digitised artefacts, audio recordings and images to substantiate veteran accounts. The veterans history project initiated by the USA Library of congress (Library of Congress, 2008) is a similar system based on oral recordings with entire hour-long interviews available on their website. In New Zealand the 'From Memory' project orchestrated by Archives New Zealand (New Zealand Ministry of Culture and Heritage 2008) has been documenting through oral recordings the memoirs of New Zealand veterans.

Oral history is a popular form of testimony collection; however, one of the rules to using oral history recordings is that they must be used in their entirety. If an interview is four hours long it must remain intact. This can prove an issue as it dictates very stringent parameters to the presentation of these recordings to the public that might not be flexible enough to build a strong display. Testimony memory contains raw accounts of the experience. In order for these experiences to be viewed by the public, they need to be collated into a structured narrative. There is a potential issue that the oral history format cannot be adapted into a public presentation. Recordings would then remain unusable within archives. Asphalt, Dawson and Roper (2000) have commented "Into what kinds of commemorative service is the personal testimony elicited by the oral historian being pressed? What area's of historical understanding are privileged and marginalized in the process" (p. 49).

This thesis seeks to prescribe an alternative mode of memory recording, The containment and presentation requirements of the end product would define the parameters of memory recording. Recording memories with a direct association to physical objects, artifacts and locations give the recording a defined focal point, situated within a larger physical environment.

The recordings therefore would consist of many shorter recordings rather than long meandering dialogue. This puts the control of the recording process combined with knowledge of the use of end result back into the hands of the veterans. A predefined outcome for the recordings would foster a stronger relationship between recorder and record through a mutual understanding and trust.

The BBC has launched a website which proposes a similar mode of memory recording. The People's history (The British Broadcasting Company, 2008) is an online database dedicated to collecting and making available the personal account of anyone associated with World War Two. The archives available online include anyone from evacuated children to pilots and civilians. The BBC records all memoirs without discretion and makes the accounts freely available for the public to access and reference them.

Fig. 8: BBC Peoples War

1.3 Storytelling Navigation

"The National Storytelling Network website (The National Storytelling Network, 2008) describes storytelling as a valuable form of human expression which has it's roots back in the beginning of human civilization". History has in previous generations been passed down through oral and written storytelling, keeping memories alive through personal expression. The storyteller controls the tempo of the presentation, adapting the language to suit the listeners attention and interest. A storytelling narrative offers a non-linear approach to memory interaction, where each time you follow a thread of narrative the outcome is different. As opposed to a book which has a linear narrative where the end is always the same.

> The second generation creates where it cannot recover. In the absence of direct memory, artistic forms supply the material of imagination. The fact that the past must be reconstructed from stories rather than from direct knowledge encourages artistic creation. (Ashplant, Dawson, Roper, 2000, p.47)

Visual and oral storytelling defines an environment within which the characters and situations are played out. This can be enhanced within a digital context, as proved in modern computer game technology. The environment can be given an element of interactivity and has the ability to visually simulate the past. As the context is just as important as the memories themselves, the environment should be visually rich and informative. The environment serves to give the memory story context and placement, as it helps to create a stronger contrast and more awareness of the content (memories).

A digital storytelling interface is navigated through a pre-determined set of sequences. Giving the user the opportunity to choose where the narrative progresses by offering a series of options puts control of the system into the hands of the user. This control fosters a stronger relationship between the user and the story unfolding as the user is given a direct relationship with the environment they are investigating.

Nathan Shedroff, (Shedroff,2000) an expert in experience design theory and practice commented on the ability of new media technology to enhance a storytelling narrative. "Activities like storytelling and conversation are so powerful and necessary for creating knowledge. They allow us to interact with the information in a way that helps us build personal context and integrate the information into our previous understandings." (Shedroff,2000)

Heritage Film Maker David Grubin describes the most successful storytelling experience is one which has no end, which can be revised often always with a different outcome. This style of navigation emulates life, a series of similar paths and familiar circumstances all leading to differing outcomes. "However, the stories that appeal to generation after generation are the stories that are never resolvable - just as life is never resolvable; the complexity of life remains. Life is non-linear.. " (Grubin, 2007)

1.4 Memories in Museums

Museums have traditionally been receptacles of object preservation. When the idea of a museum as a place of historical containment was founded during the 1900's, artefacts were collected and displayed on their merit as an example of a unique object. Very little information was formally recorded pertaining to the context and emotional connection to the artifact. It was assumed that preserving the artefact alone was enough.

> The Silences in the historian's record of the nineteenth century were eerie. The absence of first person testimony left the historians devoid of individual perspectives and alternate accounts. The Histories of ordinary people had been largely unrecorded and therefore unwritten (Knell, 2004, p. 118)

Objects were displayed either grouped together with other similar objects, or in dioramas based on the objects purpose and use. With little or no appreciation or record of the objects original purpose and existence it is difficult for the public to form a relationship with the object. The Imperial War Museum in London (Imperial War Museum, 2008) first began recording testimony evidence during the Great War. They amassed an enormous archive of artefacts with related personal histories that covered every aspect of war life from medical accounts, to women's roles, to home life and the front. They were pioneers in this new form of collection.

Yet for some of their more sensitive war exhibits they still adhere to traditional object-oriented displays. The Holocaust exhibit within the Imperial War Museum London contains only artefacts sourced from the war time-period. It is believed that these objects are a physical embodiment of the past. The emphasis of the exhibition is not to give the viewer an emotional experience reflected upon as a living-breathing testament to the holocaust, but rather to present the holocaust exactly as it was as a fragment in time. The Museum of Tolerance holocaust exhibit in Los Angeles (The Museum of Tolerance,2006) has the opposite approach. Visitors are presented with a personal identity of a holocaust victim, throughout the exhibit all scenarios and displays help to build a story about the holocaust victim. At the end you find out if they survived or not. "Visitors do not respond passively to exhibits and labels. Rather, they become more actively involved in their immediate environment." (Falk, Dierking 1992, p. 67)

The Museum of the community of Lombardia Italy began a program MUVI (Giaccardi,2006), to record the personal memories of the local community in an effort of collectively conserve the past. The local accounts have brought back to life old buildings long since torn down, and allowed for differing opinions regarding historical events. This community collecting is

Fig. 9: Museum of Tolerance

designed by the community for the community. They have set in place a system for memory capture and preservation for their future.
This connection between the visitor and the past is a living breathing emotion. The visitor absorbs the display and interacts in the now, with their own personal emotional understanding and experience. Putting emphasis on the emotional personal connection to the past ensures the past is remembered, and that even the briefest of experiences are important in the rich tapestry of our collective history. In his book "Dream Spaces" Gaynor Kavanagh made this interesting comparison to the purpose of the object in a museum context. He describes the object as simply an object, and to only discuss the object is to deny us the personal experience associated with it's purpose.(Kavanagh, 2000)

Fig. 10: Imperial War Museum London, Holocaust Exhibit

> Thus when a claim is made that an object "acts" in some way, what is actually taking place is a form of transference. We can say that an RAF bomber dropped it's bombs on the target below. But the plane did not do this (because it felt like it?) - it needed a war situation, political and strategic decisions, technical preparation and a skilled bombing crew to drop the bomb - the plane was just the conveyance at the behest of the humans. We can use the object/plane as a transactional object, as a way of talking about the bombs dropping that shields us from facing up to acknowledging what it takes to drop bombs, usually on civilians. If we talk only in object terms, we lose the human actions and responsibilities vital to a whole event, and as safe as this may feel, it is however a form of avoidance." (Kavanagh, 2000, p. 101)

Kavanagh discusses transference and avoidance in museum exhibit design as a way of not encouraging interaction or dialogue with sensitive issues. We use objects as a safe non-emotively connected way of representing the past, not acknowledging that it is the human-interaction with the object and it's memories therein that is the reason why the object is retained for exhibition in the first instance. Experiences overlooked or ignored in the current systems of object display, have had a renaissance through a desire for more holistic mediums of museum experience.

1.5. Experience Design

Experience design is a new design discipline which encompasses the more traditional discipline of design such as Information design, interaction design, and sensoral design. Although experience fabrication is not new, the advance in technology- in particular digital technology- is allowing designers and innovators to create more ambitious experiences within our designs. Nathan Shedroff formally of vivid studios,CA is an experience strategist and a pioneer in the field. He describes experience design as an important skill set "for everyone to have in the next decade and beyond are those that will allow us to create valuable, compelling, and empowering information and experiences for others." (Shedroff,2000)

Nathan Shedroff (Jacobson,2000) states "Data is fairly worthless to most of us, it must be organized, transformed, and presented in a way that gives it meaning.-"(p.270) He is referring to modern media's pre-occupation with collecting and presenting factoid data, or information which serves little purpose other than to add to the viewers arsenal of knowledge. Factoids are common in informational environments where the data is simply available for the viewer to gather and feel confident in their ability to remember the information. The information serves no emotive purpose, and is oft-times not retained in our memory due to its lack of relation to who we are and what we stand for.

> To do this, we must learn existing ways of organizing and presenting data and information and develop new ones. Whether our communication tools are traditional print products, electronic products, broadcast programming, interactive experiences, or live performances makes little difference. Nor does it matter if we are employing physical or electronic devices or our own bodies and voices. The process of creating is roughly the same in any medium." [Nathan Shedroff (2000)

The first step is to convert the data into information and present it in a meaningful way, which will engage the audience and in the process forming a cognitive model. This is where aesthetic visual narrative and visual metaphors and are implemented in visually innovative ways based on our intuitive understanding. Consideration is given to the target audience, how they visualise the product, and draw understanding and reference from it's components. Nathan states it is important to note "Information Design does not replace graphic design and other visual disciplines, but is the structure through which these capabilities are expressed." (Shedroff, 2009)

> Information makes data meaningful for audiences because it requires the creation of relationships and patterns between data. Transforming data into information is accomplished by organising it into a meaningful form, presenting it in meaningful and appropriate ways, and communicating the context around it. (Shedroff,2001)

In order for the cognitive model to be successful the information needs to be represented with a sense of order and organisation. Using systems of structure which users can relate to through our intuitive understanding of patterns within information presentation. Nathan describes the seven common systems of organisation as "alphabet, location, time, continuum, number, categories and randomness." (Shedroff,2009)

Storytelling memories utilises environmental locations to form a platform for interfacing with the memories. The interface is laid out in three sections- veteran specific memories which are presented close to the viewer in a drawer. The environment those memories relate to is shown as a window back in time within the drawer. The background memories

which substantiate the veteran testimony are displayed in he surrounding screens as distant peripheral memories.

Knowledge is gained through interaction with the product and conversation and dialogue about our collective experience. The more often we are exposed to a task or scenario the easier it becomes to navigate, as we become more accustomed to the patterns of navigation and their meaning. Knowledge of the interface and our ability to navigate depends on the global, local or personal triggers which stimulate our navigation. Global navigation rely's on our collective understanding of objects and interface narrative. For example - the computer mouse is now a recognisable controller for a digital interface. As touch navigation becomes more prevalent that could supeceed the mouse as our intuitive navigation device. For users not familiar to a digital interface

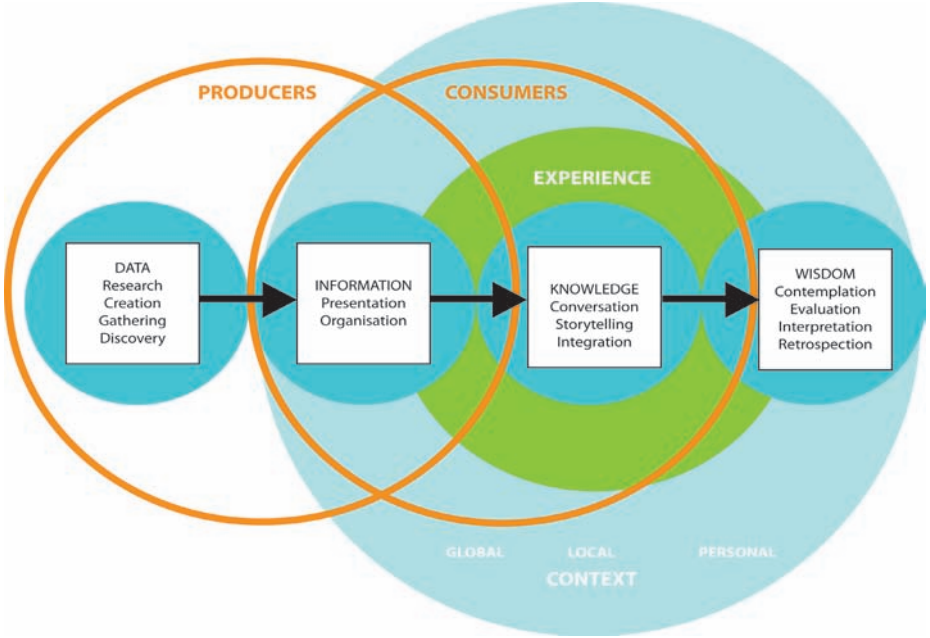

Fig. 11: Diagram of Experience design structure- Nathan Shedroff (Shedroff, 2001)

Storytelling Memories has referenced older icons of interaction such as the dice. When presented with a dice the user turns the cube and is usually presented with an icon which will represent something in relation to the game they are playing. Local knowledge is gained by an related experience and understanding of the task at hand and is specific to the genre conveyed . Personal knowledge is the users specific mode of understanding and navigation derived form the users individual point of view.

The last aspect of the system is enlightenment and understanding at the end of the experience. This is where the user can reflect upon the knowledge gained and relate it to their own life experiences. Nathan describes this aspect as being very personal and is "Ultimately, it is an understanding that must be gained by one's self." (Shedroff, 2009)

Research Methods

This thesis seeks to develop new ways to present large quantities of archived material in a formal museum environment, using contemporary touch and tangible interfaces to allow for immersive and interactive navigation of memories. Research has been conducted into current systems of veteran memory collection storage and how they are displayed in a museum environment. Research has also been conducted in the areas of experience and Interactivity design to establish strong parameters for this thesis. **Storytelling Memories** describes a platform of memory presentation which is situated within a larger system of memory processing. Conceptual solutions have been developed that draw on innovative systems of interactive interface design. They implement a visual and tactile system of story display and interaction which allows the user full immersion in the topic via an intuitive cognitive system of housing and information display.

Storytelling Memories seeks to implement experience design

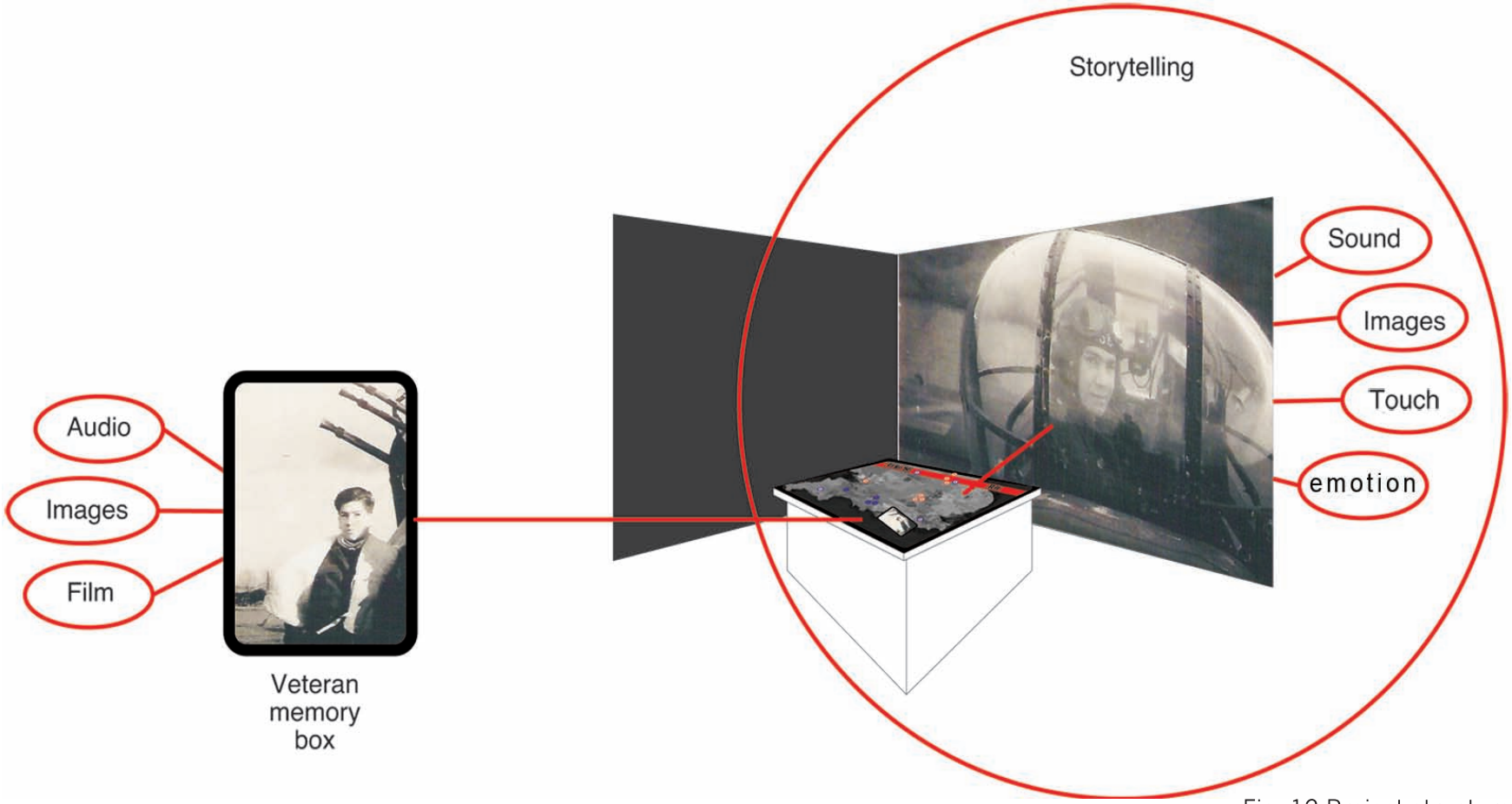

Fig. 12:Project structure

methodology, and integrate unique new practices of information, storage, retrieval and portrayal in an immersive interactive platform, that can be intuitively used by all age demographics. The design development stage is shown in the diagram below, yellow headings indicate areas of focus. Orange headings indicate areas yet to be assessed post thesis. This thesis covers the development of the concept to the functional prototype stage, ready for user testing.

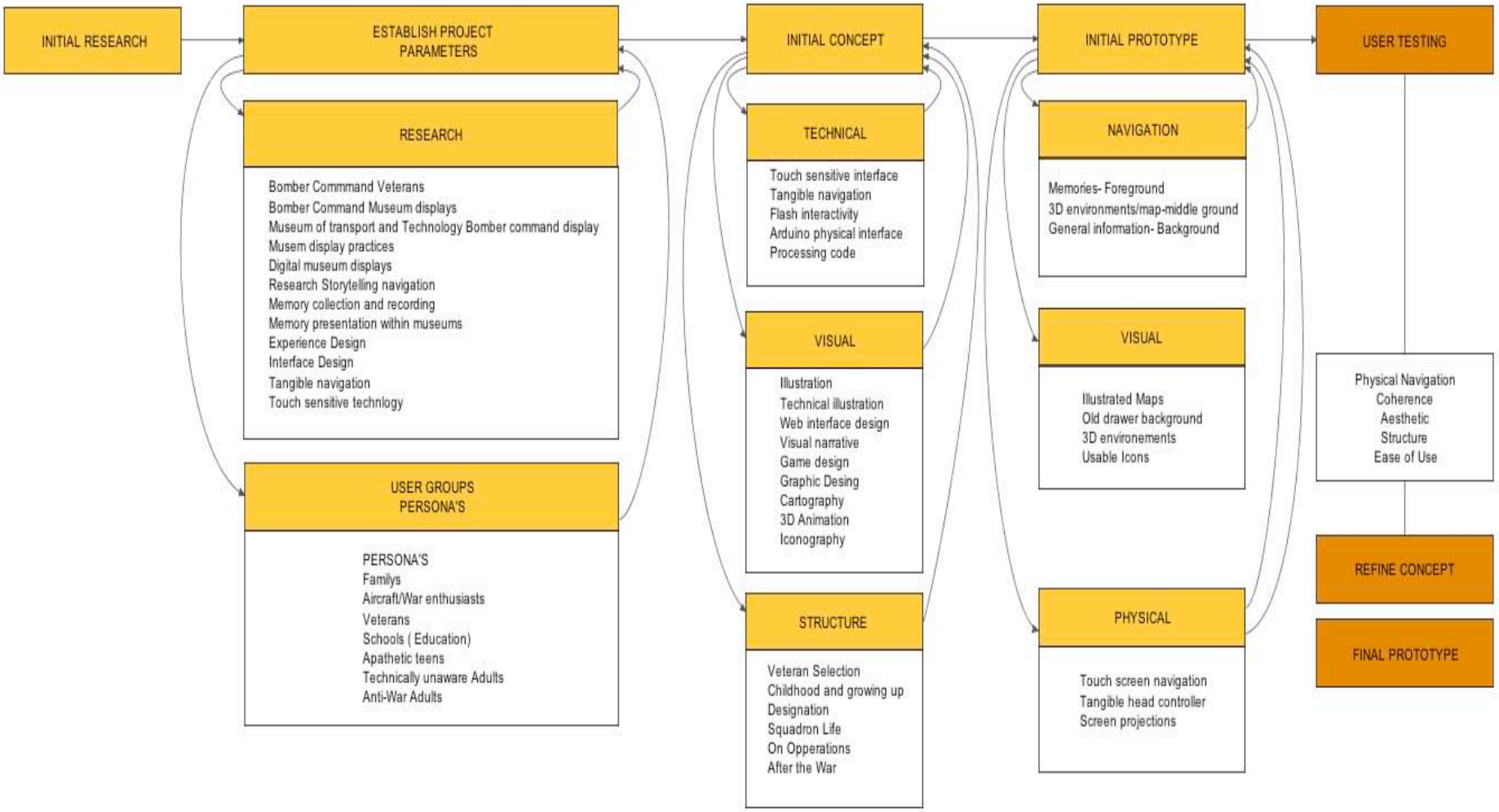

Fig. 13:Project Flow Diagram indicating thesis research

Chapter Two: Activating the Memories Methodology.

2.1 Designing collection systems

The collection and preservation of war memories is an activity once reserved only for historians and war enthusiasts. Now a genre located in the public arena, it is not enough to simply collect, society must have an active part in the preservation and presentation of these memory archives. The role of the designer has become a focal innovator in the facilitation of memory presentation. The designer is able to visualise the interaction scenario between user and the memories and offer innovative and expressive solutions that are unconstrained by current regulations and guidelines for memory presentation as established by historians and archivists.

Through an understanding of how a well-designed system can enhance and stimulate our lives, the designer can mediate between the traditional museum values of preservation and conservancy and the publics desire to access and interact with these archives.

2.2 Screen interface

The visual aesthetic will play an important role in the format of the screen. The interface aesthetic is inspired by physical memory boxes and three dimensional containment.

There has been a resurgence in recent years for retro inspired GUI aesthetics both in web and print. Textural backgrounds, with a layered up effect constructed from scanned paper textures, with shadows give the interface perspective depth and an elude to past memories or hidden meanings. Both the images used and the colour pallete maintain this treatment. Interactive flash based interfaces are moving away from a flat 2D vector Aesthetic as they embrace the Retro style. Three-dimensional photographic images layered over textures are animated to give a sense of real-life existance.

The interface will reference colours, materials and textures used in the 1940's era, such as Bakerlite switches and loupe magnifying glasses.

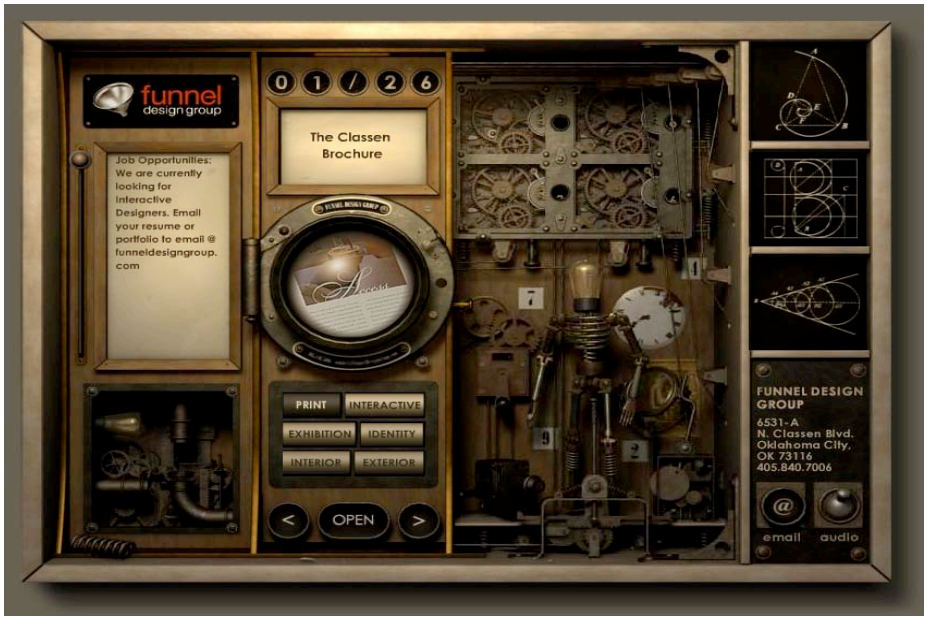

Fig. 14:Funnel Design group aesthetic precedent

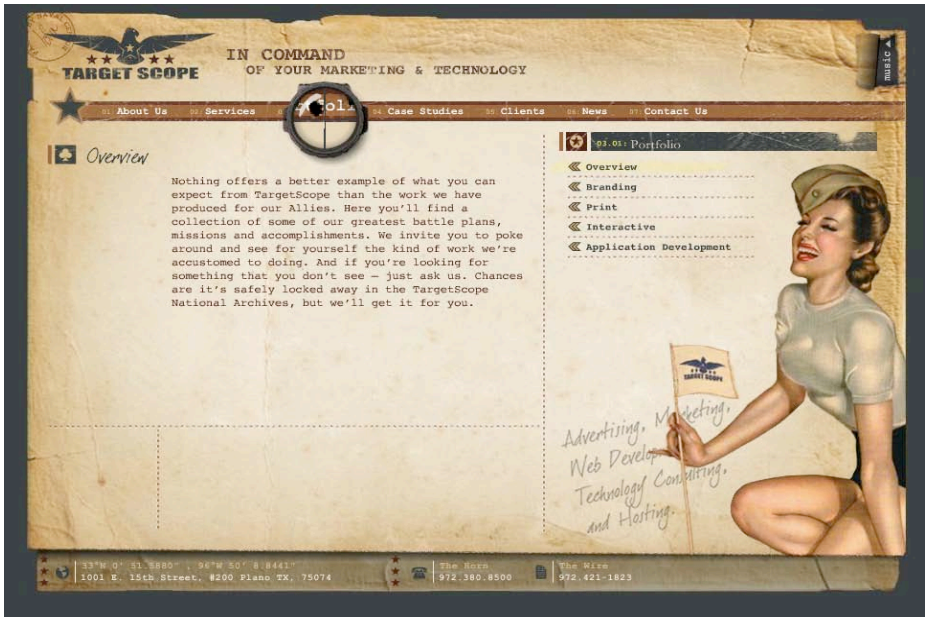

Fig. 15:Target scope webpage aesthetic precedent

2.3 Tangible navigation

Graphic user interfaces (GUI) typically rely on the ability of the user to understand and navigate a series of windows and drop menus to explore the digital environment. This system may be daunting to those not familiar with computer systems. Tangible navigation however utilizes recognisable physical objects to navigate a digital interface. The physicality of the block triggers our cognitive understanding of the object and how to interact with it. The cube controller has 6 sides each corresponding to a different section in the interface, similar to a dice. The tangible object gives the user an intuitive control over the interface navigation triggering a playful element of explorative interaction.

A journey reminiscent of exploring a new toy during childhood. The cube is the beginning of the interface menu, interacting with the device at a basic level quickly yields an interpretable response, developing a direct manipulation of the data in the interface

2.4 Touch Navigation

The Method of memory presentation used in this project utilises a touch sensitive interface system to frame a navigation structure that emphasises immersion and emotive connection. Objects and locations situated within the touch screen are activated similarly to a mouse click by touching the surface. The user is able to synthesise a physical relationship with the artefacts and memories, by associating the touch interaction with its visual response. Touch screen technology in a museum environment encourages a stronger sense of physical interaction with objects. There is an explorative element to the touch-screen navigation, where the outcome is not fully realised unless the user activates the icon, revealing hidden depths of information.

Fig. 16: National world war one museum, Kansas touch table by Second Story.

2.5 Content and context

In a museum environment there has been a long-standing debate as to the validity and importance of the artefact versus its environment. It was generally believed that an artefact was a stand-alone physical manifestation of memory and a product of its environment.
Contemporary museum display systems are moving towards an environment priority, where the artefact remains simply an object but that it is the object within its environment that embodies history purpose and meaning. It is believed that both facets have equal merit and lend solidity and purpose to each other.

An environment is empty without objects people and life to fill its spaces, and an object is meaningless without people to interact with it, to give its purpose and existence meaning. Artefacts stored in museum archives for decades are now having their status debated because of a lack of contextual history and human connection to the object. This thesis proposes that both the disinherited detached artefact and the veteran testimony memory, rich with human emotion have merit, but that they need to be placed within a context that celebrates the personal connection of the direct veteran memory in conjunction with the background contextual element of the un-named disowned war mementos.

2.6 Animated environment

A film or documentary offers the opportunity to create an environment to present characters and scenarios through visual narrative. Though a visual feast, films are viewed passively in a continuous flow that does not pause or offer alternate narrative outcomes. Equally; video game design, which more consistently uses vivid graphics and immersive environments offers interactivity and immersion, but the game play purpose does not encourage the user to loiter and absorb the environment in great depth.

A background animation within the **Storytelling Memories** interface creates a world for the memories to exist in. The environment gives the memories structure and placement within the interface. Subtle movements and panoramas are softened to represent faded memories, and reflection. The interface encourages exploration which interactively opens hidden narratives and locations.

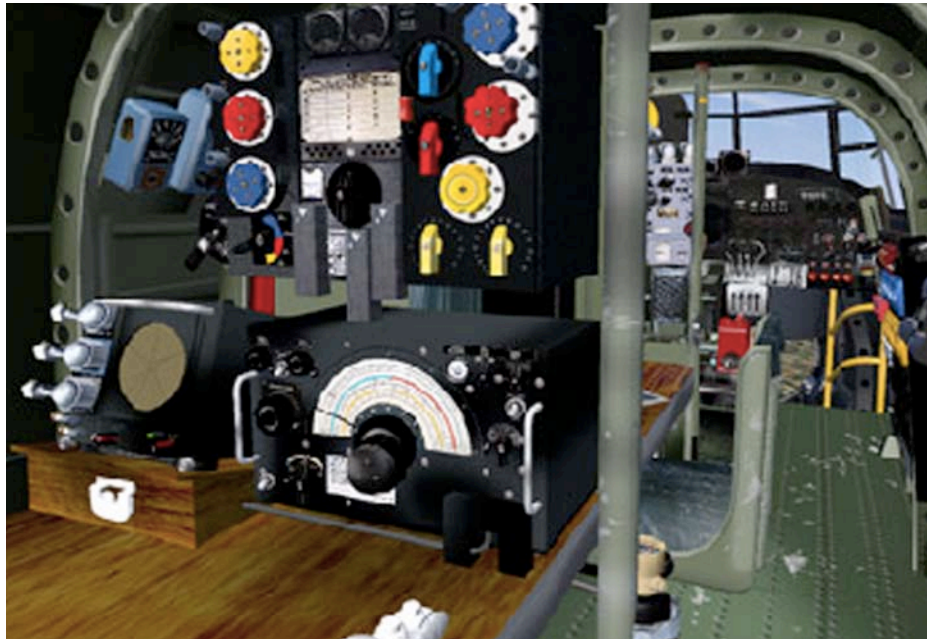

Fig. 17: Lancaster Flight Simulator

2.7 Digital memories.

Veteran memories are retained in an array of formats; from photographs to objects, audio recordings, journals and letters, and by a number of organizations globally. Images and artefacts are retained either relating to their owner or grouped in association to other similar objects. Public access to these archives is available in most circumstances, however, the memories are often in a raw format and difficult to decipher. If they are audio recordings the interview may be four hours long and not be available to be edited. To use the original artefacts is problematic as in order to preserve them they must be kept in stable conditions, with limited handling.

For a public eager to have a hands-on experience with history and who build an emotive connection through tactile and immersive actions, the display options for such memories is limited.

Fig. 18: Lancaster Flight Simulator

This thesis looks to contemporary visual interface design to provide a framework within which the memories are digitised and located. The viewer is encouraged to select artefacts and enlarge them for closer scrutiny. Static memories such as photos and diagrams are accompanied by descriptive audio and hidden narrative, that when closely inspected, enlightens the viewer. All artefacts located within the database can be accessed and explored.

The act of digitising memories and artefacts brings them out of the storeroom and into the public arena. This allows the original to be retained for prosperity, and allows a wider audience to experience the copy, either in the local museum, or duplicated from the originals to be experienced in different locations or countries simultaneously.

Chapter Three: Storytelling Memories: The Memory House.

3.1 The Memory Container

Contemporary Bomber Command displays

The Imperial War museum North in the UK (Imperial War Museum,2008) hosted "Against All Odds", one of the first Bomber command specific exhibits in 2007. Visually vibrant and packed full of factual data and tactile displays the exhibit was a great success. It offered large-scale technical diagrams, combined with stunning images and physical artefacts from the time period. When the visitor first arrived they were given a different airmen's identity papers, it is not until the end of the exhibit that the fate of the airman is revealed.

This technique of building a personal association to the airmen parallels that of the Holocaust exhibit in the museum of Tolerance Los Angeles, where visitors are given a different Holocaust victim, only to discover their fate at the end of the display (The Museum of Tolerance, 2006). The emotive element of the exhibit was complimented by a section which contains interactive touch navigated displays focusing on technical data such as aircraft bomb loads and air-speeds. Ironically, Corgi a well-known Toy Company sponsors this section.

The exhibition was temporary, running for a year and has now been disbanded with all artefacts and memorabilia returned to their donors. The "Against All Odd's" exhibition was an ambitious undertaking and used an expansive space within the museum. As the museum caters to all time periods and aspects of war history, and Bomber Command being only one part of the larger war machine, it was inevitable that such a display could not remain permanent. This brings to attention the issue of how to recognize and make available in a museum environment, information and memories of aspects of war history, on a continuous basis. (Imperial War Museum, 2008)

Despite the large array of immersive visuals and data displayed, Johnny Beardsall (Beardsall, 2006) comments in his report for the Daily Telegraph that the exhibition lacked a display of the actual fuselage and cockpit with the opportunity for the viewer to climb inside and experience the conditions and situation of being an airman firsthand. He states that if such an artefact had been available it surely would have been on display. With only eight Lancaster's still intact in the world and only two flying it appears unlikely that even if such a physical reminder of the war would be available for display it would be too valuable conservationally for the general public to crawl over without a hefty fee.

The Lincolnshire Aviation Heritage centre offer the opportunity to "taxi" in the Lancaster "Just Jane"; 200 pounds gives you approximately 20-30 minutes in the aircraft. They describe the experience as emotionally moving. (The Lincolnshire Aviation centre, 2008)

Fig.19: Against all odds

The public are interested in experiencing both the Lancaster (the aircraft) and veteran testimony (memories). However it is rare that both are portrayed in great depth together. Air museums such as Duxford Air museum in Cambridgeshire (Imperial War Museum, 2008) focus on the aircraft alone describing bomb loads, technical capabilities and flight statistics. Whereas displays centered around veteran testimony such as the Against All Odds exhibit lack the physical location or environment within which the memories are given context.
The artifact is an important tangible reminder of the past, without personal connection, or historical placement it cannot be presented with the full meaning and value behind its existence conveyed. “The individual lives and testimony behind an object, its provenance and association, are of little importance. The meanings an object had in use, are allowed to be forgotten. The object is the thing, the curatorial obsession, the plaything of the imagination, the handy device in whatever displays are going up.” (Knell,2004, p.120)

Fig. 20: Against All Odds

Ironically the Lancaster Bomber “Just Jane”; (Imperial War Museum, 2008) a physical relic of Bomber command memories, and the trigger of emotionally charged synthesizing of what it was like to be a Bomber Command airmen, saw no real action, and therefore has no “residual” association or provenance. While I was moved by the emotional experience of a taxi in Just Jane, it was because of my association with my grandfather and imagining I was in his shoes, sitting in the same position he had sat, imagining I was seeing what he had seen. Without the understanding of my grandfather’s memoirs and his history within the Lancaster aircraft, it would have been to me simply an object.

The Bomber Command Association of New Zealand has an exhibit at MOTAT in Auckland (Museum of transport and technology,2008) which is also centred around the artefact- an authentically restored Lancaster Bomber. The display is monitored and cared for by veterans who take the public on guided tours once a month. They are a living breathing testimony of the past. Their proximity to the aircraft enforces their remembrance. However when they pass on, only the aircraft will be left, with little reminder of their personal association with Bomber Command.

The vehicle of display for **Storytelling Memories** departs from existing Bomber Command exhibitions, in that the exhibit attempts to combine aspects of artefact and memory-centric display theories. The interface formulates an immersive display architecture consisting of background environments derived from aspects of an airman’s life. Memories pertaining to each specific veteran are placed within the environment. This thesis theorises that a large body of humanised insight into one facet of Bomber Command history will create a stronger understanding of Bomber Command history. As **Storytelling Memories** is founded upon the memory testimony pertaining to each Veteran, it is envisioned that a stronger understanding of their experience and humanity can be gained through memory immersion.

Fig. 21:MOTAT - Main Hanger

Fig. 22: Just Jane Lancaster Bomber

Packaging Memories

With the advent of the digital age Projects involving its collection and preservation have become ever more ambitious and technologically complex. The evolution of recording systems has proposed a change in the way exhibition designers and museologists desire memories to be presented. There is a need for Archivists to mediate and monitor the recording process and provide not just the raw testimony, but the background contextural information as well. One of the characteristic features of survivor testimony is that it offers itself as unmediated, "raw" experience. Indeed, this is one of the features, which gives it authority. At the same time, of course, such memories must first be composed into a narrative before they can be projected into the public arena. (Ashplant, Dawson, Roper, 2000, p.47)

Arguably if an audio interview drew focus from a location or an object and the interviewee was asked to describe their memories surrounding the location or artefact, then memories could be tied to the object, giving significance and a clear and concrete tangible existence. For example if the interviewer has been given photos of the Veteran's home-town, the Veteran could be asked about where they grew up, so the interview would focus memories around tangible objects and locations. This connection develops a structured, yet non-linear narrative with the locations and artefacts creating a focal point for the memories. This formulation of memory presentation is yet to be consistently integrated into the museum environment, as it requires access to large databases of archived memories in a digitised format in order to build a cohesive system of display.

The web offers the ability to record memory from today forwards with emphasis on social networking sites such as Facebook, (Facebook 2008) or Ancestry.com (The generations network 2008). Facebook links users through people, photos and locations, where Ancestry.com enables users to build an online family tree illustrated with artefacts, narrative and images. Each family tree can link to other family trees enabling a global networking of historical memory. Both systems however have a uniform environmental aesthetic, so again the memories are displaced from the original location and placed in a digital no-mans land.

Google earth, (Google 2008) has succeeded partly in providing a digitally hypothetical and physically accurate environment for the containment of memories based on a cartographic representation. Google begins to articulate the significance of the attached memories by giving them physicality and presence within accurate maps. It falls short however of providing a three-dimensional metaphor of locational reality as would be viewed from inside the environment.

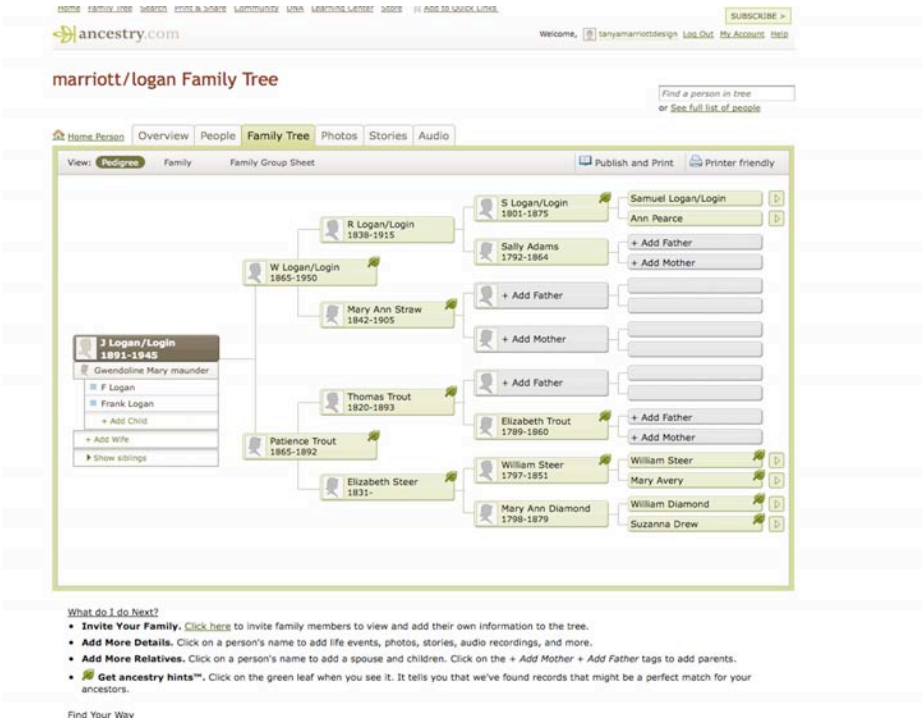

Fig. 23: Ancestry website

There has been recent development in software design for home memory collection. A successful example of this is Memory Miner (Memory Miner 2008). Designed by John Fox, Memory Miner is a home-based memory archive program that creates digital stories using your personal photo archive, linking together events to locations to people. User profiles are created using your address book, documenting the years through sequential images showing the different ages of the user. Each photo is tagged to people shown within the image. Audio and movie files can also be connected to each photo to add more depth. As memory miner works with your personal photo library it is constantly evolving. Memory Miner has recently been adapted to function in a Museum environment for the Magnus Museum in California (The Judah L.Magnus Museum 2008), which centers on the collection of collective Holocaust Memory. Memory Lab is an in-house recording system developed by Memory Miner were visitors can create a digital album based on their lives in under an hour. The albums are then uploaded to the Magnus website database for further discussion and comment.

One important aspect of Memory Miner, Facebook or Ancestry is that although the archive contains many memories, they can all be separated out and attributed to individual people. As well as exploring a narrative of many voices explaining the same subject from different vantage points, we can also listen to one voice and their many opinions and experiences. This is an important factor in the packaging of memories by **Storytelling Memories**. Each grouping of memories is told from the vantage point of one Veteran, thereby building an understanding of him as an individual, within a larger environment of Veterans. His experience is echoed in parallel memories of his crew-members, squadron mates, or unrelated bomber command personal.

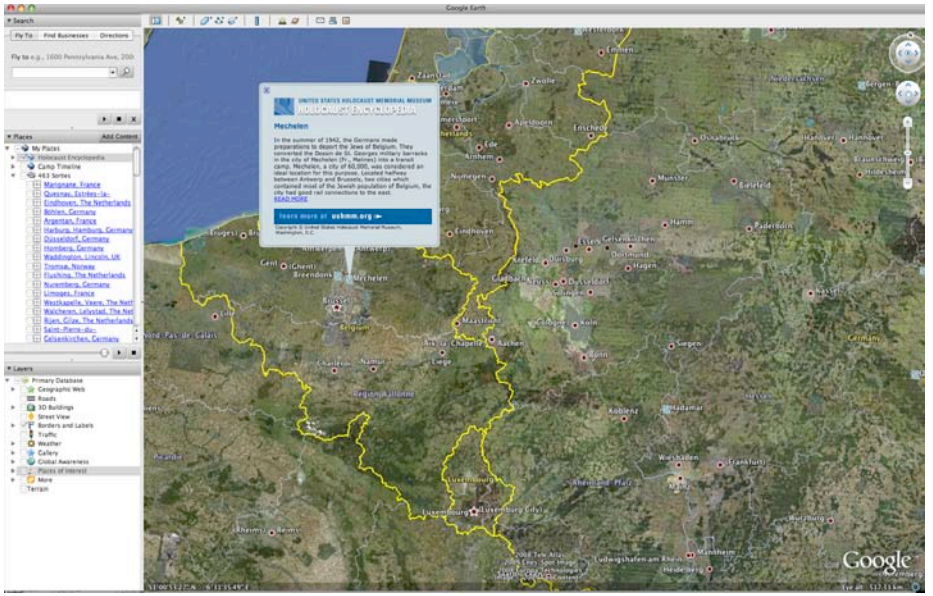

Fig. 24: Google Earth

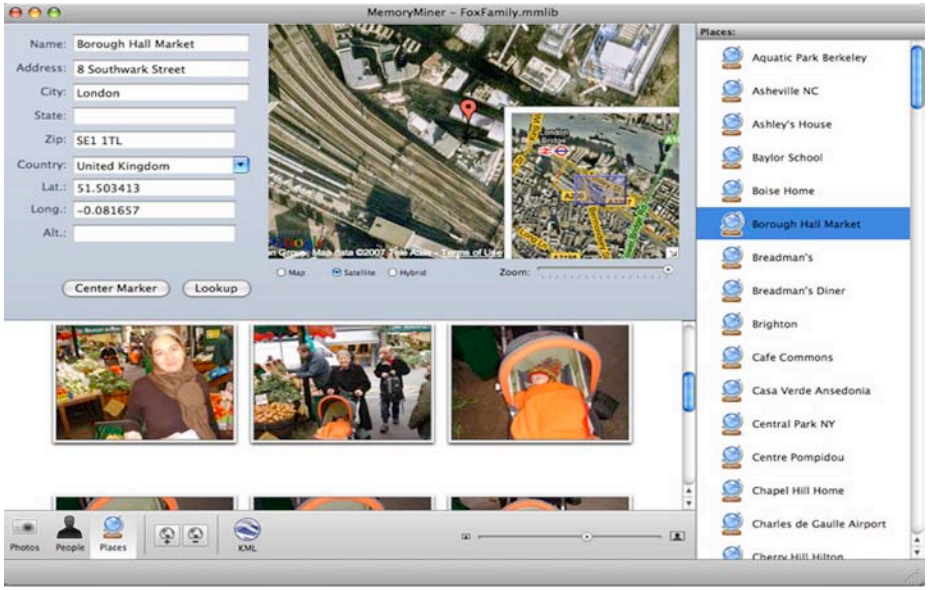

Fig. 25: Memory Miner

Memory presentation Architecture: The method of Loci

Viewing artefacts or memories within a specific space shows a context for the objects, therefore building a stronger understanding of the object, and its connection to the space. People remember "where" they were when events occur, and "who" they were with. "What" they were doing is a tertiary memory recall. The method of Loci is a technique of remembering practiced since classic antiquity. Invented by the Greeks, it was established by Simodies, who was the only person to survive a mass fatality at a banquet, where the roof fell in killing everyone in attendance. Simodies had left the room when the accident occurred. He was able to identify the victims by remembering where they had been sitting in context and associating memory with environment and location (Yates,1992).

The method of loci is a useful tool to remember speeches or data, by breaking up the information and associating each piece with a different object within a location. Seeing an object upon entering a location triggers a memory of the data attributed to it. Consciously associating information to objects in the order in which they are presented within the location ensures the information is recalled in order.

> The use of loci within a system produced a sort of memory which one can enter from an infinite number of places, and thus one can work with it-- change it about, shuffle, go backwards or forwards or jump around (Carruthers 1990; Carruthers, Ziolkowski 2002,p. 79)

Storytelling Memories advances the theory of Loci by placing the veterans memories within Three-Dimensional maps or locations. The interface architecture is broken into five segments each relating to a time within the veterans life; "childhood and growing up", "squadron life", "inside the aircraft", "on operations" and "after the war". Navigating to the childhood interface opens a map of where they grew up showing the locations of local towns and villages and areas where they had familiarity or connection. Memory archives consisting of family photos, or mementos are contained within each location, offering an insight into the life they lived before the war, and their association with the land they were trying to protect. The map is a visual metaphor for the association we attribute to home and our relationship with the memories therein. The visual space of the map is further articulated by the placement of background images and artefacts, which associate with war specific events within those locations. An example of this within the "childhood" section is the visual representation of the bombing of Plymouth in proximity contrast to the relative peace of growing up in Lannacombe, only a hundred kilometers away, for Veteran Sgt. Fred Logan.

The Inside the Aircraft section offers memories specific to the role of the veteran held. A three-dimensional environment illustrates the interior of the aircraft. Touching knobs and dials activates the wireless operators radio and sends out a morse code signal. Memories contained within the space, such as a logbook, instruments or a map are brought to life by their relationship and presence within the environment. Out of context these memories could be mis-represented or not understood for their unique importance as an aspect of war memory.

3.2 The Interactive Interface
Experience Design in the Museum environment

Museum environments contain much factoid data, quick snippets of information regarding aspects of the exhibit; they have their place in the museum as a method of educating the viewer quickly about the exhibit. However the limit of information displayed gives us little depth in understanding about the exhibit, its relationship to the viewer or significance, and does not invoke further research. Interactive technologies offer a more immersive connection to museum exhibits but also contribute to a frustration at the inadequacies in the depth of information conveyed through the design itself being limited.

Although the use of expressive media in exhibit design is not new, the evolution of interactive experience technology has yet to be applied consistently and effectively to museum exhibit design. Te Papa (Te Papa Tongarewa, the Museum of New Zealand 2008) launched their new "Our-space" zone in 2008, centred around a massive map of New Zealand. Standing on the shadow sensitive floor map activates location related films and images on the surrounding walls. The exhibit also includes a personal memories wall similar in principle to the Memory Miner software described earlier. Visitors can log onto TePapa's web-site and upload their personal photos to the digital wall in the exhibit space, where visitors can interact live with the memories.

An ambitious undertaking, the exhibit relies on a reasonable amount of patience and digital intuition to activate its systems. The digital map from observed user experience has an un-reasonable lag time between activation and execution of information, which is often missed by the viewer, and the physical distance between activation and presentation causes confusion for the viewer as to which piece of data they have activated. The digital wall relies on our understanding of a new set of icons and their meanings to record new images and manipulate the existing memories. "Ourspace" is a step in the right direction however, in including the visitor in the interaction process.

Fig. 26: "Ourspace" Te Papa Tongarewa

Fig. 27: "Ourspace" Te Papa Tongarewa

"The difference that defines interactivity can include the amount of control the audience has over the tools, pace, or content."(Shedroff) (Jacobson, 2000, pg. 283). Nathan suggests that a successful interface experience must have a purpose, or the user will have nothing to relate their experience to. It is not enough for an interface to be aesthetically pleasing, users need to be inspired, challenged and entertained. He discusses the understanding that cognitive thinking drives strong experience design exhibits. A visitor can expect to intuitively interface with a system with no instructions or prior knowledge of the display and gain an understanding of what was portrayed. In order to achieve this, the designer must understand the target audience, how they learn, what they want to learn and how to entertain them.

There are no hard and fast rules to experience design deployment, only that if the system of navigation is built on how we intuitively interact with objects outside of the exhibition system, the system needs to emulate a similar mode of interaction. If ordinarily you would walk into a room and examine its contents, it is expected that the new media system would provide a similar mode of interaction. Brett Mason of Wellington's City to Sea Museum suggested a formula to successful experience design in a museum environment when he described the formula for the museum's war in New Caledonia exhibit.

> Equal parts installation, photographic essay and collation of historical text, there is no single storyteller with this exhibition; none of the usual anonymous wall texts by museum staff that carry with them the institutional authority that leads us to swallow whatever is offered as the facts. The facts instead must be gleaned through experiencing a theatrical montage of voices; bringing together an artistic team who use sound, light, text, image and sculpture to recreate memory as an environment. Wellington Museum of City to Sea (Amery 2007)

Storytelling Memories emphasises the cognitive impulse to explore and interact with the past as a living breathing experience through an array of new media techniques. The tactile controller references traditional memory boxes, and in interacting with the cube memories are "released" into the interface much the same as opening a shoe-box full of mementos. Drawing on the rituals involved in exploring old artefacts - handling tangible connections with the past - while listening to stories, and viewing snap-shots of crew with their Lancasters within a squadron base environment. **Storytelling Memories** uses the simplistic navigation of locational exploration to derive a deeper meaning within limitless memories. It is intended that the experience be so seamlessly intuitive, that the user need never question what action to take.

Touch and Tangible Interface design

Now that computers are more accessible to all ages groups and who have a wider understanding, viewers now find intuitive tangible operating systems less intimidating. With a more mature sophisticated user group desiring access to interface systems within museums the information displayed needs to also develop beyond gimmick games and quick facts. As technology advances and users become more aware of the possibilities of interaction, their expectations of such systems also advances.

> Passive and poorly interpreted attractions will suffer at the expense of those that develop live demonstration, provide participatory and interactive displays, and give a quality of personal rather than institutional service to their visitor. Informality and friendliness will be valuable attractions.
> (Science Museum, 1986) (Mcdonald, 1997, p. 98)

The Churchill room's exhibit designed by Small Design (Kabat,2008) is a good example of this media potential. The exhibit centers on a touch table 17 metres long, which represents a timeline of the life of Winston Churchill. Specific months in each year are catalogued in digital manila folders which when touch activated open to reveal information and memories associated to the date, containing thousands or articles about his remarkable life. Small Design wanted the interface to have an analogue feeling, like rifling through someone's paperwork, which drew on the voyeuristic fascination of learning about someone's private life. Specific moments in history have an affect on the entire table when opened. For example when the atomic bomb goes up in Japan it sets off a blast and wipes the table. Or when the Titanic sinks, the whole table is flooded with water. Background simulations tie the dates together and have an affect on all of the open folders. The Churchill room's exhibit successfully utilizes touch screen technology. The development of interactive systems has moved a step further still with the introduction of tangible objects as a medium of navigation which parallels the physical world with a greater cognitive understanding.

A good example of the combination of touch and tangible design is the Reactable. (Reactable 2003-2008) Designed by the music Technology group at the Pompeu Fabra University in Barcelona, the Reactable is a music-mixing device. Music is mixed, by placing tangible objects onto the multi-touch surface. The tangible objects come in a range of shapes; the cube provides the beat, whereas the puck provides a pulse. When a tangible comes into proximity with another they stimulate and affect each other moderating the beats and sounds. Touching the table surface in the periphery of the tangibles adjusts frequency and volume. Each tangible has a unique code tag on its base surface which is read by a camera in the table surface so it can locate and plot the tangibles movements. The Reactable system is used by DJ's and musicians to mix live sound.

Although not yet available commercially the Reactable has great

Fig. 28: Churchill Museum

potential in live performance, gaming and interaction design. Touch and tangible technology has not remained solely in the entertainment industry.

A Disaster Simulation system developed as a collaborative project at NTT Comware (Kobayashi, 2006) also uses the interactive qualities of tangible objects and touch sensitivity. The interface is built on sense-table technology, a system similar to the Reactable. Maps of locations prone to flooding, project onto the touch screen display. Tangible objects represent safety measures that when placed onto the maps establish parameters. When a simulated disaster is played out across the surface, the tangibles affect the outcome and present statistical and graphical data onto the surrounding screens.

Sensorial triggers are key to a successful interactive experience. Audio and visual stimuli are common haptic triggers, and have most commonly been used in museum interface design to enhance the interaction with the exhibit. A memory is created and remembered by various emotional simulations. An old photo can be used to prompt a remembered situation. Voice recordings allow you to resonate and connect with the veteran through an imbued audio presence. Sounds such as aircraft flying overhead, or the low growl of a Lancaster Merlin engine starting up invoke feelings of anticipation, fear or excitement depending on the listeners' connection to the sound.

Touch is also a strong emotional sensation that builds an understanding of the physicality of a memory. Handling an object stimulates memory through our textural awareness of how we relate to different tactile sensations. Storytelling Memories gives the user the opportunity to handle the physical manifestation of the memory containment. The cube controller is in effect a memory box. The natural warm feel of the wood frames the ethereal presentation of the icons, that appear to glow when activated. Interacting with a related artefact while complimented by audio and visual sensations develop an instant connection.

Fig. 29: Reactable

Fig. 30: Sensetable: Disaster management system

Graphic Interface

The graphic user interface plays an important role in the presentation for memories for this thesis. Initial research into museum Kiosk design revealed little graphic ambition and cohesion, or any depth the information portrayed. Web interface design therefore became and inspiration for the layout and navigation for the project. Several companies stood out as leaders in graphic interface design in particular relating to storytelling navigation, the packaging of large archives of data and the peoples voice.

The National Archives experience (Second Story, 2008)· digital vaults website by Second Story references the substantial digital archives of the museum. The interface begins with a load sequence which initiates the user to the functions and navigation of the system. When an image is selected it moves to the centre, all other images related to it via tags, or keywords span out from the centre in a star diagram. Selecting a new image changes the configuration. The visual feast of the moving images is beautiful and quite intuitive to understand within a few attempts, the control panels to the left and the right of the interface are not so easy to understand. The icons are very specialised graphically and are not easily recognisable as being related visually to the image shuffle mechanism. The interface presents a unique method of navigation, but again the viewer is left wanting the next level of interactivity. The interface works well to present the memories, but not to offer any great depth regarding them.

The Theban Mapping project (Theban Mapping Project, 2008) is another web project by Second Story. The Valley of the Kings is documented with an initial map view. Clicking on highlighted chambers allows the user to explore them at depth through three sections· overview, description and maps/plans. The Sections are accessed by a set of tab always available on main screen toolbar. Each section of tomb is mapped the same way. The tabs offer a tier of information including detailed maps, 3D fly through views, real-life video, pictures and written accounts. The visual layout of the interface is clear and effective, the map is always to the left, information to the right.

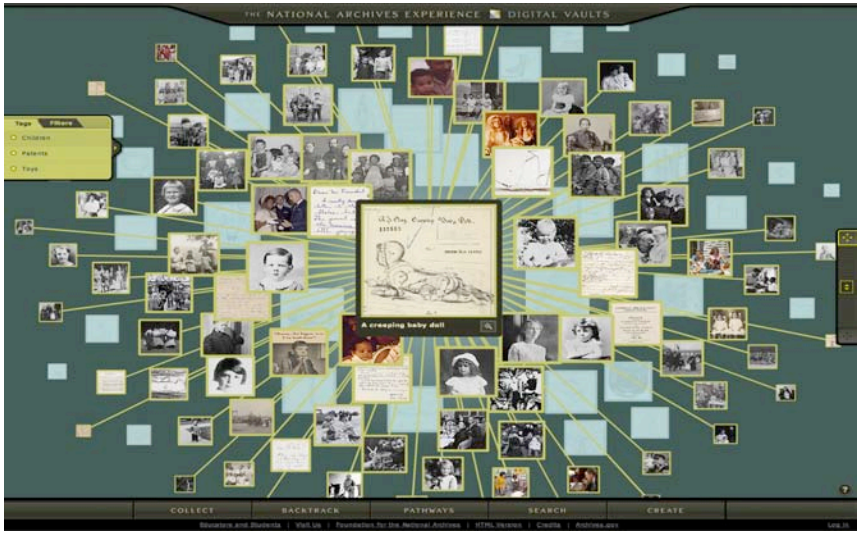

Fig. 31: The National Archives experience website by Second Story

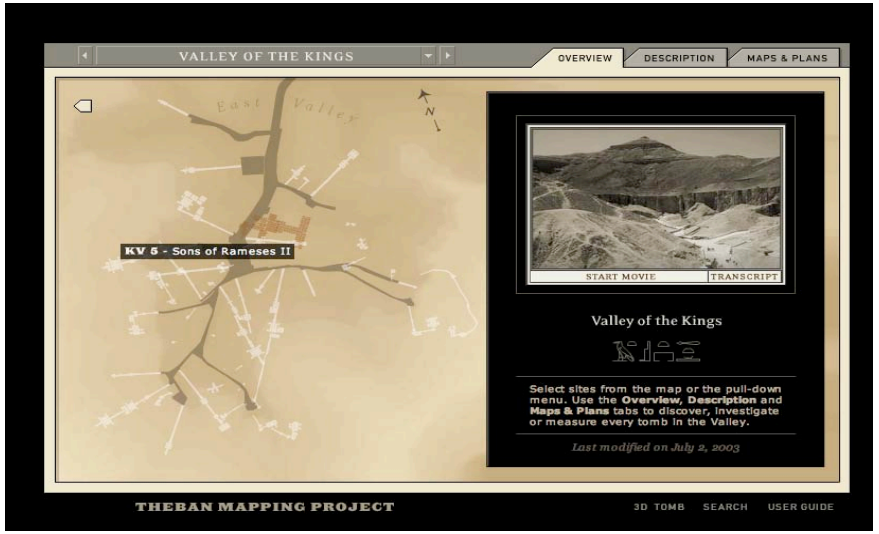

Fig. 32: The Theban project website by Second Story

However there are many layers of information and without obvious paths of navigation it is easy to forget how certain tools were originally activated. The icons used in the interface are highly include scroll-bars, zoom functions and dimensioning tools. All objects within the interface change on roll-over to indicate activity. This is a function of interactivity which works well within a web-based system, however touch screens only recognise finger proximity to the screen and roll-overs can be difficult to activate. The minimal desaturated colour palete contrasts clearly with the stark black and white information panels creating a tidy juxtaposition between the real and the documented.

The City of Memory (City of Memory, 2008) is a memory mapping web-based system designed by Jake Barton of Local Projects (Local projects, 2008) . The initial concept came from a two week Smithsonian folk-life festival where participants were invited to record their recollections of past memories on pieces of note paper and pin them into proximity on a map. One of the features locations was New York city which offered a unique opportunity to document the many voices of a a culturally diverse city. The memory map was then adapted into a webpage which can be added to by the public online. The webpage interface is a sleek development of the initial concept and lacks the beauty of the visual layering of notes in memory mapping.

The user is presented with a map in the first screen with a simple instruction window, which when navigating the simple interface is probably superfluous to requirement. Memories are tagged on the map from both the general public and city lore. Colour coding differentiates the two and scrolling over opens fly windows with information regarding the stories. Related stories which narrate a journey are tied together.

The interface appears clean and clinical, almost devoid of personality and is not obviously engaging, or it's contents revealed to the user on first view. The site could benefit form a teaser of the memories contained within and further reference back to the physicality of rifling through notes as referenced in the original project.

Fig. 33: Concept ideation for the memory maps by Jake Barton

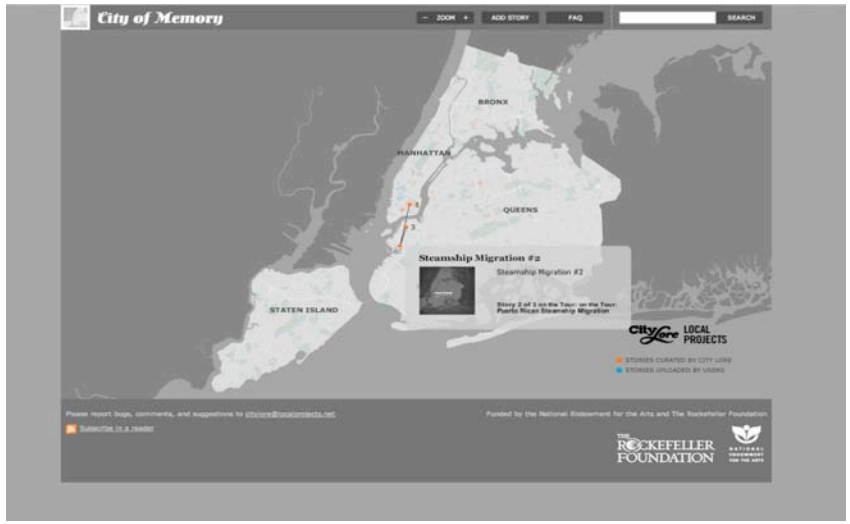

Fig. 34: City of Memory website by Jake Barton

3.3 Storytelling Memories: The Integrated Interface
The Table Interface

The table is a physical window to memory presentation. Built with touch interaction capabilities the interface content is experienced though sensorial connection. Some aspects of the interface require gentle touch manipulation such as moving the magnifying glass across an image for closer detail; in contrast to sharp reflex movements which trigger the guns to fire at enemy aircraft in the designation section. The table visual narrative is separated into six different sections, each representing a different turning point in his life. The first interface displayed is “Veteran Selection”. Here the user is presented with a scrolling panorama of faces, each one the gateway to a lifetime of memories and experiences. The user is asked to select one at random. Limited information is shown including their name and designation, encouraging the user to want to

Fig. 35: Storytelling Memories : Before the War Interface

search further to find the history behind the face. Once the Veteran is selected the cube face glows, turning the cube activates a new interface. Together the interface screens document the life of the veteran from childhood through the war to reflect on their life afterwards. The sections are Childhood and Growing up, Squadron life, Inside the Aircraft, On Operations and After the War. Each section is a visual metaphor of a fleeting memory. A digital representation of an old drawer contains images and artefacts, reminiscent of mementos packaged away in an old shoebox under the bed. Each image utilises a set of tools, a magnifying glass for closer inspection, and an old bakelite switch that controls sound. Set into the drawer is a digital window into the past; a detailed visual with subtle movements that narrates the environment

Fig. 36: Storytelling Memories : On Operations Interface

relating to the memories. The memories are to be explored at the users own pace. Moved and positioned side by side to compare and discuss, each memory is accompanied by audio testament. Touching the background animation in some interface sections causes the view to shift so the viewer can visually experience the environment physicality. Exploring left or right turns corners revealing new buildings and locations to explore. Sounds and light invite the viewer to look closer.

The interface format is always the same - the drawer containing memories- however the background narrative shifts. Eg: Childhood reveals a map providing war specific information in context to the veteran memories. The Squadron, Inside the Aircraft and On Operations sections focus on the aircraft and feature highly detailed environment and locational models, giving the viewer the opportunity to step inside the Veterans' world. The final interface After the War returns to the map, this time larger, covering more territory. This discusses the transformation personally and socially of the Veteran into civilian life, and

Fig. 37: Storytelling Memories : Designation Interface

recognises the effect the war had on global migration and social change. It is not necessary for the user to interface with the memories in order, as each and return to previous menus. The entire system is built on the collection of fleeting past memories and reflection, which encourage the user to revisit past interfaces and look for deeper meaning.

Self-navigation and exploration is key to the underlying structure of **Storytelling Memories,** the interface does not have reference icons or instructions. Navigation is understood through trial and experience. The system references an unlimited archive of background information and artefacts, which support the testimony of each veteran. As the system works around the memories of each individual veteran selecting a new veteran would yield a different set of history. This encourages the user to actively participate in the interface and allows them to build a more cohesive understanding of Bomber command through exposure to many voices.

Fig. 38: Storytelling Memories :Squadron Life Interface

Fig. 39: Storytelling Memories : The project system

The Cube Controller

The cube is the head of the navigation tree and is the tangible connection to the Veteran memoirs. Its physicality and disconnection from the table invites the visitor to handle it, like an ornament on a coffee table. Located on the table beside the interface, the cube glows with its own life beat, which reflects the glow from the table itself.

The simple act of turning the cube over offers the viewer a reaction. The icons within the cube surface are a visual reference to the interface they represent. However the cube navigation is not icon dominant, it is not necessary for the viewer to interpret the icons the first time they encounter the cube, as icons can be misinterpreted by different user groups. After turning the cube several times and observing the outcome, the icons and their meanings will become familiar, as the user is enlightened by the memories they represent; the British schoolboy represents childhood, the Lancaster silhouette the aircraft.

The cube is the physical embodiment of the memory box, made of wood, warm and inviting; it simulates the feeling of life. The wooden surface contrasts with the acrylic icons, a juxtaposition of the solidity of containment and preservation with the ethereal qualities associated with memory and remembrance.

The cube modality is continuous; reflecting the continuum of life- any ending can be rotated to present life again. If the cube brings exploration and experience, it can also invoke sadness. The viewer has no idea of the outcome of the veteran selected at random. With barely thirty out of every hundred airmen surviving the war, the viewer may turn the cube to the After the War interface, only to find the sad fate of their airmen reflected in the interface as the screen turns blank and the cube light is extinguished. Turning the cube back reveals a bread-crumb trail to their fate.

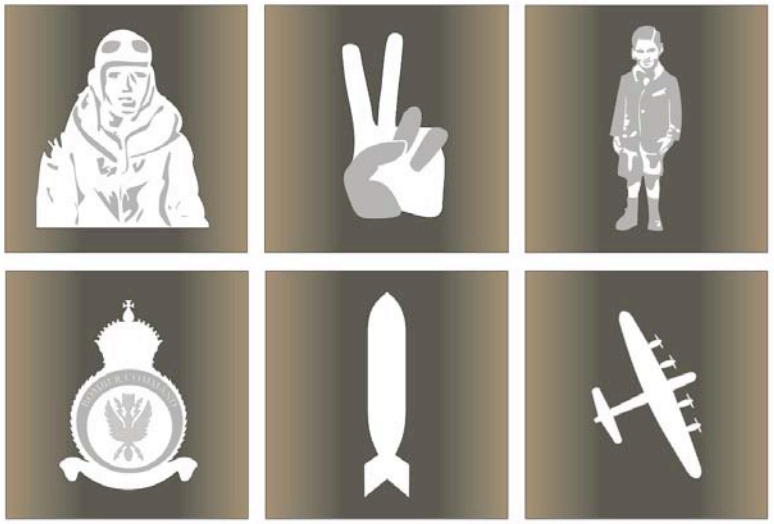

Fig. 40: The Cube Icons

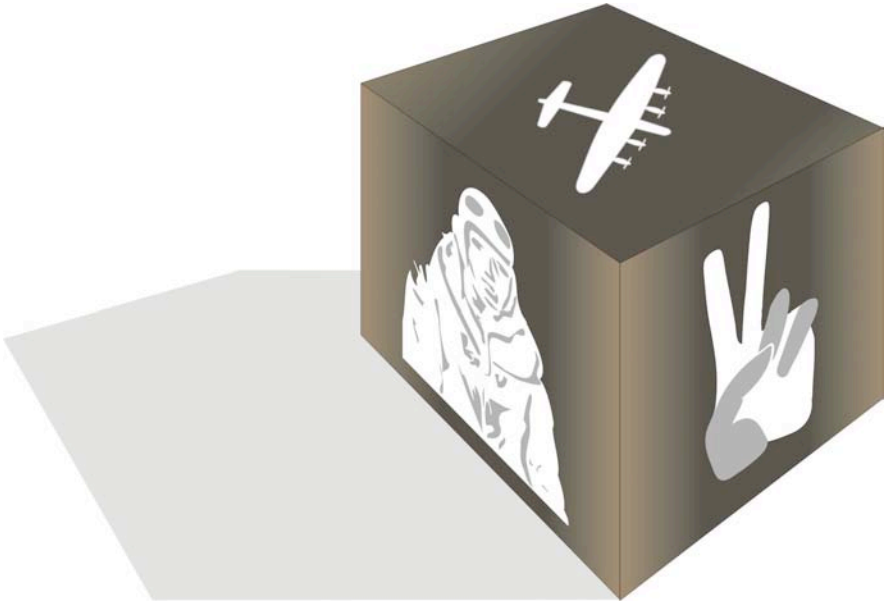

Fig. 41: The Cube

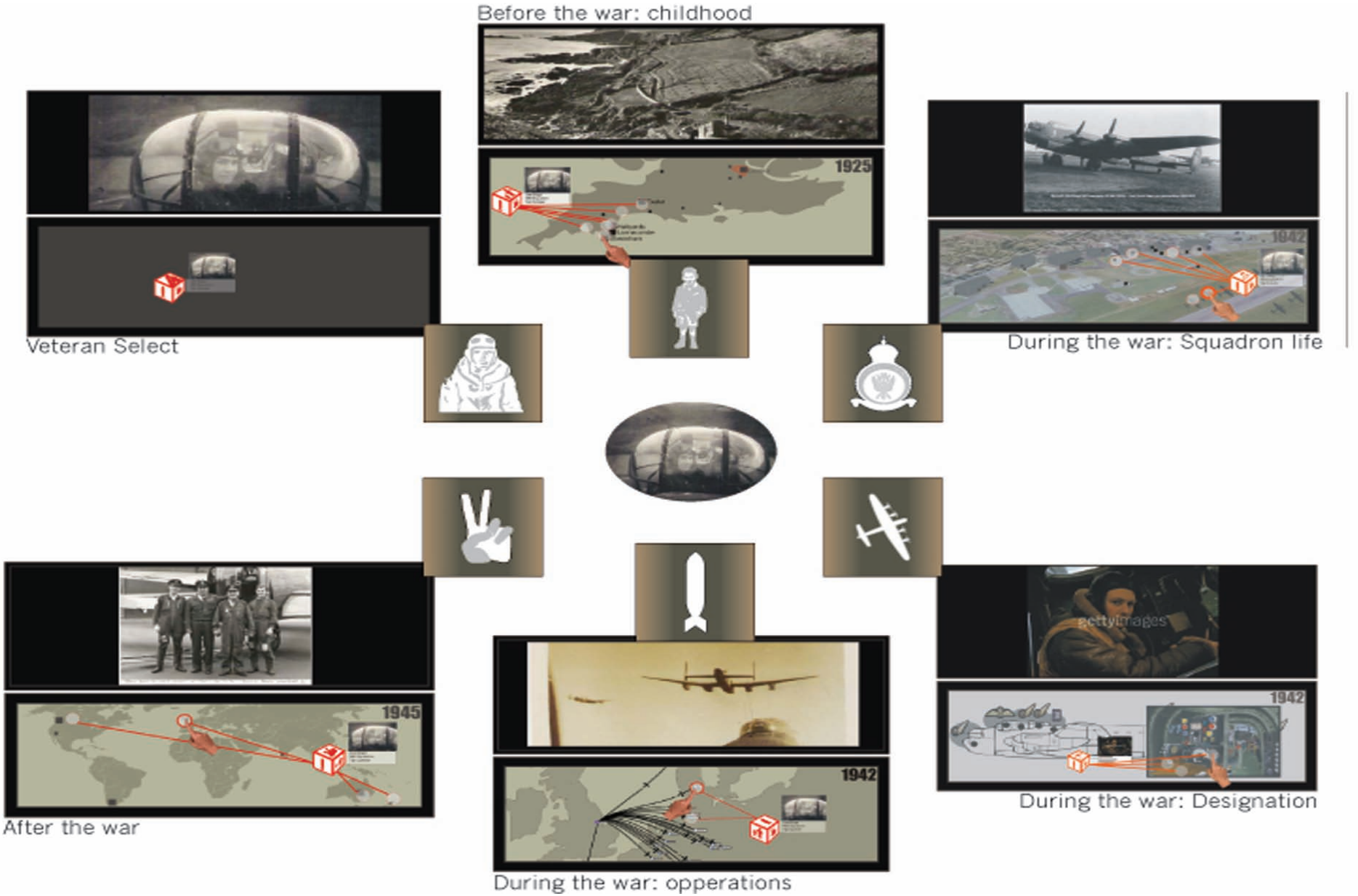

Fig. 42: The project flow chart

The Peripheral Projections

The memory narrative in the screen is substantiated by a large archive of background memories, technical information and artefacts. It is envisioned that **Storytelling Memories** can eventually contain the memoirs of all veterans within the interface. The background contribution includes technical, location and factual information, but also memoirs detached from their original contributors. The many un-named faces of airmen whose fate within the archive, remains unknown. These peripheral memoirs substantiate the Veteran testimony and fill in the gaps between memories.

This general material is common in museum archives that are full of un-named artefacts, photos and memorabilia. The extra information is accessed when navigating the background environments; icons open visuals and audio in surrounding screens surrounding the table. The peripheral information is presented in a detached format to the touch-table veteran specific memories to differentiate between personal and general testimony. The effect is similar to having a personal conversation within the wider context of an art gallery. Viewed as an extension to the table interface the peripheral projections surround the table interface, placing the user in the centre of the memory testimony.

The projections for the purpose of the prototype are situated at the front of the table, with static images visually retreating behind the viewer to simulate the atmosphere of larger projections. Ideally the projections would utilize a stereoscopic projector, where one image file can be projected onto three surfaces at different angles. This technology would also enable projections to be rendered in three-dimensions. The screens relate to the table interface as an extension of the interface environment. Aircraft pass over the table-top, exit and then pass through surrounding screens connecting the two environments together.

Fig. 43: Designation Interface

Project Technology

Storytelling Memories utilises a collection of interactive hardware and software product in an innovative new configuration. The touch table supplied by Next Window (Next Window, 2008) provides a touch sensitive membrane in the form of an infrared spectrum sandwiched between two panels of glass. The touch membrane interprets a shadow cast by the viewer's finger on the interface as a mouse click. The membrane is positioned horizontally over a large screen TV monitor. This in turn is contained seamlessly within a physical display table. The cube controller is an independent tangible object, which sits beside the table in a separate subtle docking system. The cube is manufactured in wood using digital laser-cutting techniques to create the housing for the acrylic location icons.

The icons are constructed from light illuminating acrylic plastic, which enables them to be backlit by an LED (Light Emitting Diode) located within the cube. The lights are connected to a magnetic switch, which lights the corresponding top acrylic icon when the cube is brought into proximity to a magnet located in the table dock. Each face in the cube also contains a unique RFID tag (Radio Frequency Intentification). When the cube is brought into proximity to the table, the RFID tag communicates with the RFID reader located in the table top, which tells the computer software to change the interface screen file.

When the cube is placed in the dock the top-facing icon indicates which section of the interface is opened within the table. In order for the cube to communicate with the computer operating the interface, the RFID reader and the computer are connected via an Arduino (Arduino,2008). The Arduino is a physical computing device, a simple circuit-board which provides a link between the physical and the digital environment. The Arduino receives signals from the RFID reader and interprets them as a signal to open a different Flash (Adobe,2008) file.

The interface utilises Flash (Adobe,2008) software to interface with the information and animate the environments. Three-dimensional images are constructed and rendered using Maya (Autodesk Maya, 2009) 3D software and imported as stills into Flash. Each Flash file is designed in two sections, one for the table and one for the screen. The file is split visually and projected across the touch table and the projector, so the table interface can interact with the peripheral display seamlessly.

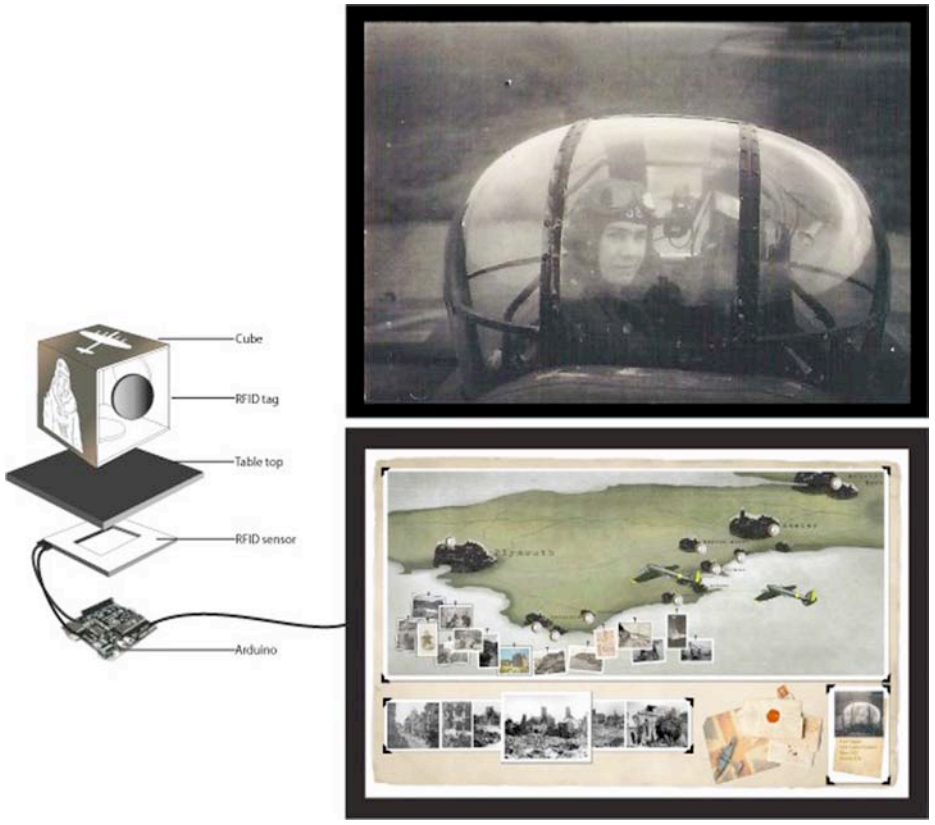

Fig. 44: The project technology

Conclusion

Every event in our life generates a memory. Some are nothing more than a fleeting experience but others stay etched on our minds for all time, to be bestowed with purpose to the next generation. With a contemporary shift of public memory interest from the great-man view-point to the people's history, museum display design has followed suit. As a result archivists are questioning the relevance of displaced artifacts that have lost their relationship to their owner's life or social context. With digital archiving now a commonplace medium of memory collection new parameters of research and documenting have been implemented.

The next step is to develop new mediums for the public to access these archives alongside traditional museological values and principals. The Internet with it's abundance of knowledge is one avenue commonly implemented to house large databases, accessed at the users leisure with the option to cross reference the topic for further depth. The Internet does not however, enable the public to interact socially, physically and spatially with the memories, and does not encourage the public to enter the museum walls.

There is also the issue with what is perceived as the correct representation of marginalized groups within society, and how best can their memories be presented, where they can invite discourse by the public without the contributors feeling exposed or judged out of context. War memory presentation in a museum environment is a sensitive issue. War history has been traditionally written from the viewpoint of the victor. However when the memories of regular servicemen surface these accounts can offer quite a different often-contentious viewpoint from the perceived truth. In a museum context the misrepresentation of veteran's accounts for the sake of alignment with traditional history has caused offence and upset. As a consequence some accounts of war history remain unavailable for public consumption.
The Second World War has shaped our society structure and makeup, creating life changing experiences and shattering dreams. We owe it to those who have passed on to remember they sacrificed their youth and for many their lives for our peace. Modern western youth lives in a world completely alienated from the implications of living in 1938-1945. Although we still live in a generation of war, it does not invade or disrupt our daily lives like it did for our grandparents. It is this personal detachment from history that has caused the third generation to seek a clearer understanding of war consciousness. We attend ANZAC (ANZAC, 2009) commemorations in greater numbers to seek a connection and watch reality shows that put us in the shoes of veterans in the hopes of understanding our collective war consciousness.

The change in Museum display techniques, and the implementation of digital opportunities provides a platform of research for this thesis. Research conducted indicates there is placement for **Storytelling Memories** as a mode of memory presentation within a museum context. It is envisioned that this prototype can provide Veteran testimony to the public area, while also staying true to Veteran sensitivities towards portraying their war memoirs in an accurate and honest context. This thesis illustrates the depth of research conducted into new methodologies of memory collection, storage and presentation within a museum environment. Study has indicated that in order to give an immersive emotive experience of any historical account, the background architecture and context is as important for the memory navigation as the memories themselves.

This architecture gives the memories placement and adds further justification and detail to back up the stories conveyed through the memories. It is important to differentiate between the personal memories and the background "facts" through separate presentation or navigation techniques. **Storytelling Memories** seeks to address these changes in musicological display techniques and implement them within a unique interactive system of display. Drawing on design development in experience and tactile design systems,

Storytelling Memories gives the Veterans' memories a physicality in the modern world which we the viewer embraces as a mode of personal experience.

The **Storytelling Memories** prototype offers a solution to memory presentation, within a larger system of memory preservation. Further research would include auditing current systems of memory recording with a view to integrate the recording and presentation process intuitively and seamlessly. This research would look at other scenarios where the public can be responsible for their own memory collection.

At the other end of the system, this thesis hints at the possibilities for viewers to edit and comment on stored memoirs, therefore opening historical collections to be contributed to and developed. As Bomber Command is often misrepresented and the veteran contribution misunderstood, it was felt that for the purpose of this project the Veteran memories should be protected from public debate. As a consequence the project needed to also shy away from also allowing the Veterans themselves the opportunity to author and manage their own memories within the museum environment.

This thesis provides a perfect departure point for further research into Veteran affairs, and the possibly for development of systems which encourage further connection between Veterans and memoirs after the recording and presentation process. Solutions could be developed where veterans can add to and manage their personal archives within the museum context. This direct connection could enable further discourse with other veterans. Through research and design process **Storytelling Memories** formulates a solution to the merging of digital and analogue collection and presentation techniques of memory preservation within a museum context. It is envisioned that the principles of the prototype scenario could be adapted to provide a solution to the memories presentation of any genre or community.

Addendum

The Storytelling Memories project has been developed into a working prototype. The concept was available for a limited public viewing at Massey University. It was received well by the public who were intrigued to sample the device by it's physical appearance, how it works or it's subject matter. The loud aircraft noises were a draw-card for many users.

The public were confident to handle the cube whether they new it's purpose as the head controller or not. The cube activation of the touch screen worked seemlessly, and has very little lag time in opening the flash files within the touch screen. The touch elements could benefit from having larger hotspots to allow for ease of activation. The touchscreen callibration needed to be more sensitive as the distance between the touch membrane over the separate monitor below created a parallax which made the mouse imprint at a distance from the users finger.

The Graphical User Interface (GUI) was easy to navigate providing the user was content to explore the interface and click on any and every component to see what the result is. Labels and notation were harder to decipher within the touch screen interface due to low monitor resolution, but could easily be remedied by using a higher resolution integrated touch screen unit.

The next step in the design development process is to conduct extensive user testing with established focus groups detailed in the apendix of this thesis. The purpose of the user testing is to assess the functionality of the tangible and touch system and how well the user responds to, understands and navigates the GUI.

The GUI visuals are closely reflective of the real-life scenario of looking at and discussing artifacts laid out on a table top or found in a drawer. Therefore the interface was designed with no recognizable icons or graphical reference to assist navigation. This is an aspect of graphical interface design this thesis would like to test further, to assess the functionality of a GUI when the user is presented with visual

replications of physical objects within an contextual environment as opposed to designed graphic icons. This is to establish whether graphic icons and instructions are required within an experience design interface, or whether the experience itself is enough to give the user cognitive and intuitive understandings of the system navigation. User testing would establish a design parameters which need addressing and how they can be improved.

Fig. 45: The final prototype

Fig. 46: The final prototype

Appendix

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Figure 32. The Theban Project by Second Story, Retrieved from www.thebanmappingproject.com and www.secondstory.com
Figure 33. Memory Mapping by Local projects, Retrieved form www.localprojects.net
Figure 34. City of memory by Local projects, Retrieved from www.cityofmemory.org and www.localprojects.net
Figure 35 Tanya Marriott, Storytelling Memories: Before the War Interface
Figure 36. Tanya Marriott, Storytelling Memories: On operations Interface
Figure 37. Tanya Marriott, Storytelling Memories: Designation Interface
Figure 38. Tanya Marriott, Storytelling Memories: Squadron Interface
Figure 39. Storytelling Memories : The project system
Figure 40. The cube Icons
Figure 41. The cube
Figure 42. Tanya Marriott, The project flow chart
Figure 43. Tanya Marriott, Designation Interface
Figure 44. Tanya Marriott, The Project technology
Figure 45. Tanya Marriott. The final prototype
Figure 46. Tanya Marriott. The final prototype

Appendix

4.3 Workbook Development

This appendices presents a selection of design development images from the workbook of **Storytelling Memories**, Including notes regarding the makeup of user groups and personas.

User Groups

Grandchildren/Family (all ages)

- Curious about their family history
- Want to know about particular family members and related crew
- May know existing information and will want to add to interface
- Want a more personal interface, more memories, stories, and personal artifacts.
- More immersive emotive interface.
- Will have varied computer skills, but will be actively interested in the interface, and will try to work it out, and have patience.
- Interested in war locations so they have a tangible location to tie memories too

Aircraft/War enthusiasts (teenage boys + men over 40)

- Interested in technical specs of aircraft and feats of heroism.
- Want technical data
- Not interested in emotional stuff unrelated to aircraft
- Would probably like to add comments if they feel information in inaccurate

Veterans

- Want their memories recorded before it is too late.
- Want a dignified description of their ordeal
- Want an accurate description of the events and want to have their say.
- Some may be computer savvy but most are not.
- Want the opportunity to add more information personally
- Want to connect with mates
- Has lots of stories to tell, both technical an emotional

Schools (primary and secondary school children)

- Factual education
- Heroic memorable events
- Stories
- Wants a game to play
- Technical information
- Will have the most experience with computers

Apathetic game playing teens

- Interested in what game engine is used
- Wants to see cool graphics
- Not interested in emotion or stories
- Wants a game to play

Tech Phobic adults

- Wants to know bout the exhibit but are threatened by technology
- Interested in stories and memories
- Wants a simple interface they can understand
- Not experience at all with computers
- Doesn't want technology to overpower concept

Anti-war

- Interested in stories, but will be strongly biased against stories
- Needs to be convinced of the veteran's predicament
- Very tech savvy

Personas

Jamie + his mum Sarah: Grandchildren/Family (all ages)

Jamie is 9 years old, His great-grandfather was in bomber command. His great-granddad died a few years ago so Jamie doesn't know him very well but he wears his great granddad's medals with pride on ANZAC day. His mum Sarah said her granddad did some pretty cool things during the war and had a lot of strong memories about living in Coventy, England. Granddad's family got bombed several times and their house destroyed, but they all survived. Sarah used to know all the stories but she never wrote them down, so a lot of her family history is lost.

She is hoping the exhibit will give her an insight into her Grandad's life and about her family back in England. Jamie just wants to know what it was like to fly in a Lancaster bomber and if his great granddad ever fired his gun... and if he was scared of the dark.

Bruce: Aircraft/War enthusiast

Bruce is really interested in the war, It all started when he was a teenager and used to make model airplanes. He is really interested in the technical aspects of the aircraft and keeps huge scrapbooks of newspaper clippings about all the Lancaster's in the world. He could tell you where each squadron was based and on what dates they flew their missions. The emotional stuff isn't really all that interesting to Bruce, as he is not sure how to process it, but he does love listening to the old boys tell a yarn about the war days.

Fred: Veterans

Fred is a veteran of world war two bomber command, he signed up when he was about 19 as he wanted to do his bit for the war and it was better to sign up than be drafted. His family lived in London, and was heavily bombed. He flew 35 missions at the end of the war being shot down in the last mission. He has taken up journalism in later life and now as a retiree is in the process of recording his memoirs. He has written most of the them down and has recorded some stories as well. He is happy to talk about the war, but has more interest in events surrounding his part in the war than his actual role. He has tried to get in touch with some of his crew, but found them difficult to find. He has however found a lot of information online and is quite Internet savvy. He is keen for people to know the reality of war, that they had no choice and exactly what the experience was without all the glorification.

Miss Black: Schools (education)

Miss black is a secondary school teacher. She has brought her class to see the exhibition during their History class. The students have had a few discussions about the war and have learnt many facts about those involved. Miss Black brought the students along in the hopes she could give them a more immersive experience. She wants her pupils to relate to the stories told and for the experience to imprint on them somehow. She is not so concerned about fact, there is plenty of that in her textbooks, she is more interested in the real-life accounts. The students themselves are a bit bored, they are tech savvy and unless the display is visually and technically stimulating they will get bored. The are hoping there will be a game involved, so they can compete with each other and fired some guns. They vaguely remember fondly their grandparents telling them all about the war and how fascinating that was but they don't want to let their classmates know they are enjoying this school trip.

Michael: Apathetic game playing teens

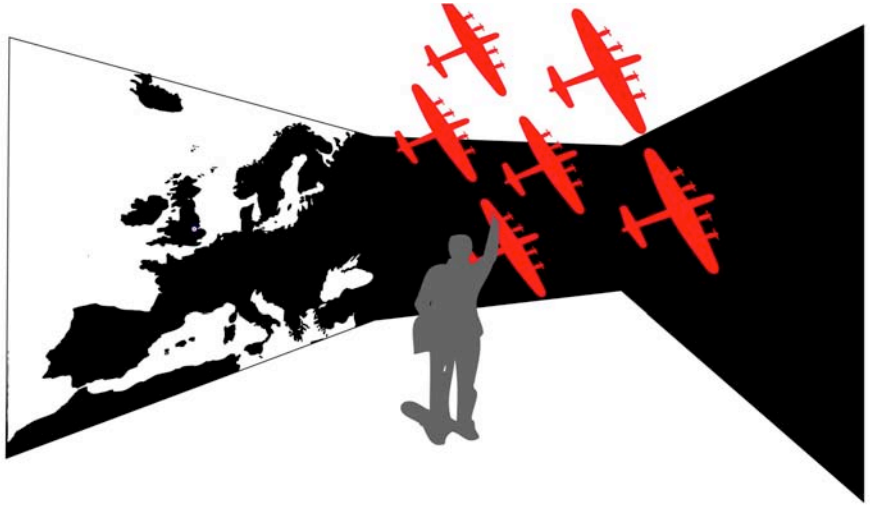
Michael is one of Miss Black's students. He's really into computer games and "emo" music. He has a really high rating in World of Warcraft and plays it all night with his mates online in the USA. He isn't really into WW2 war is boring and for stuffy old people, but the guns and planes are pretty cool. He would probably be interested in the exhibition if it had cool game technology and graphics. And if he gets to fire a gun.

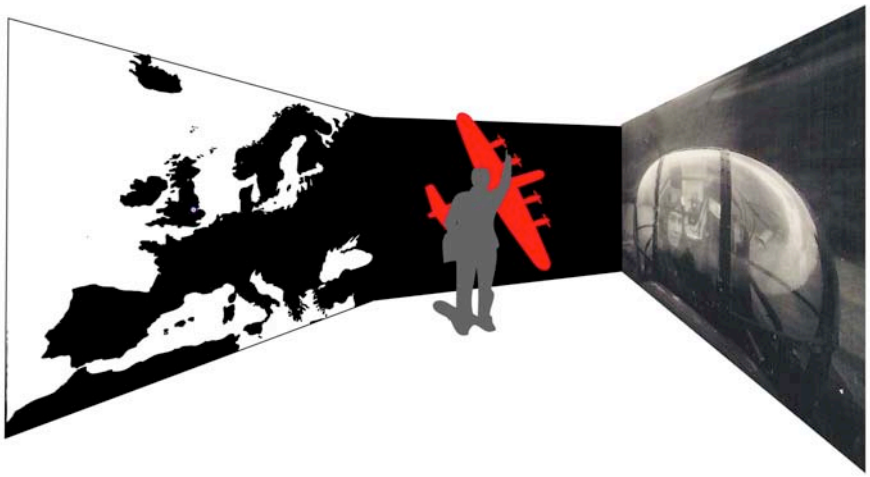
John: Tech Phobic Adults

John is rally interested in war history, and has read a lot of books. He doesn't own a computer, and is a bit afraid of them. He always avoids museum interfaces that use computers as he gets confused and feels awkward due to his lack of skill. He is really interested in a good old yarn, and loves to listen to the old boys talk about their war days. He loves to look at pictures and old stories and imagine what the person was like behind the image.

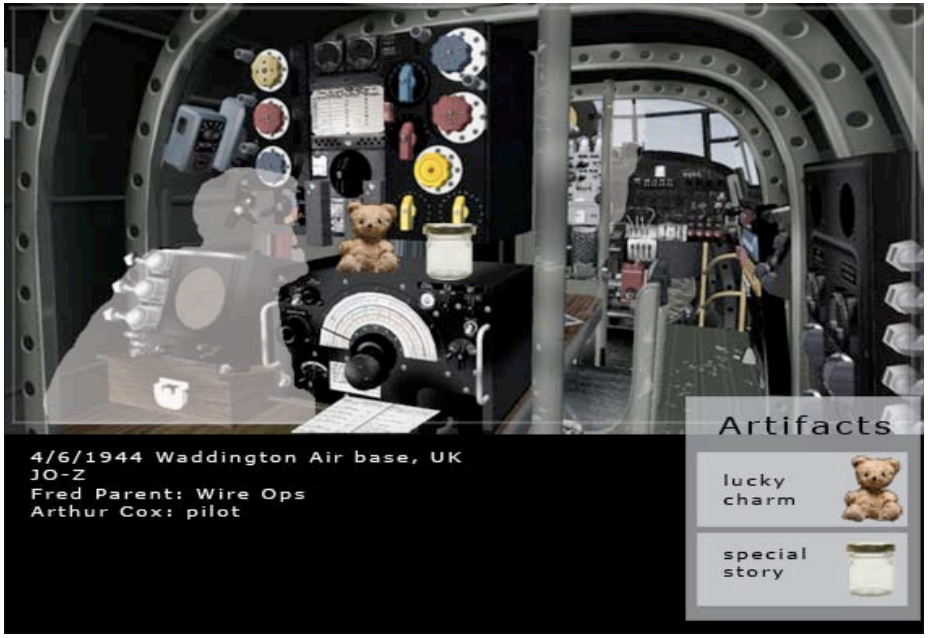
Astrid: Anti-war

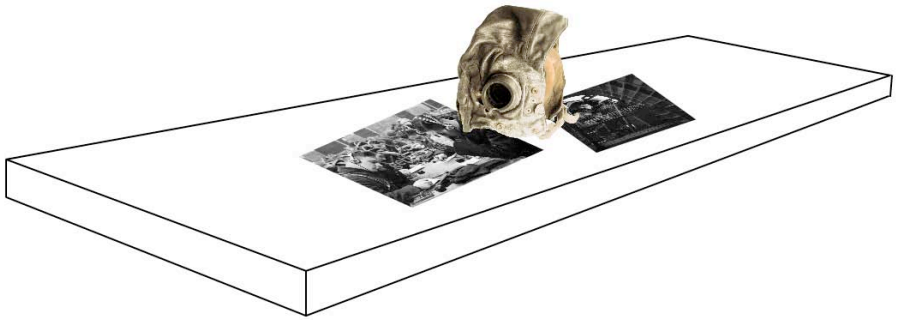
Astrid has an anti-war stance. She is mainly anti the Iraq and Afghanistan wars, but this has filtered into a hatred of all wars. She doesn't understand the old boys and their stories and feels that they should have been stronger and avoided the conflict. She has a tendency to be vocal about her opinions, not considering other people when she vents her frustration. She is interested to see this exhibition as it offers her a chance to have her say, but she is a little concerned that her beliefs might be swayed when she starts to relate to the veterans thorough their stories.





Initial concept development looking at interactive exhibition space with touch sensitive walls.





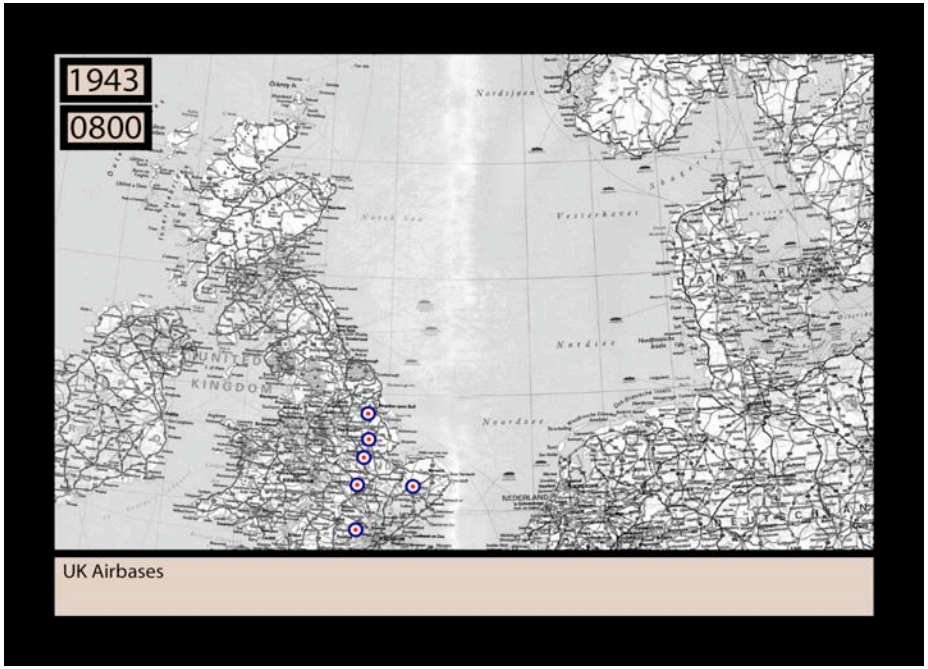
Initial concept development of interior showing memories as physical objects, or using physical objects to activate digital spaces.

Initial concept development showing interior projection concept

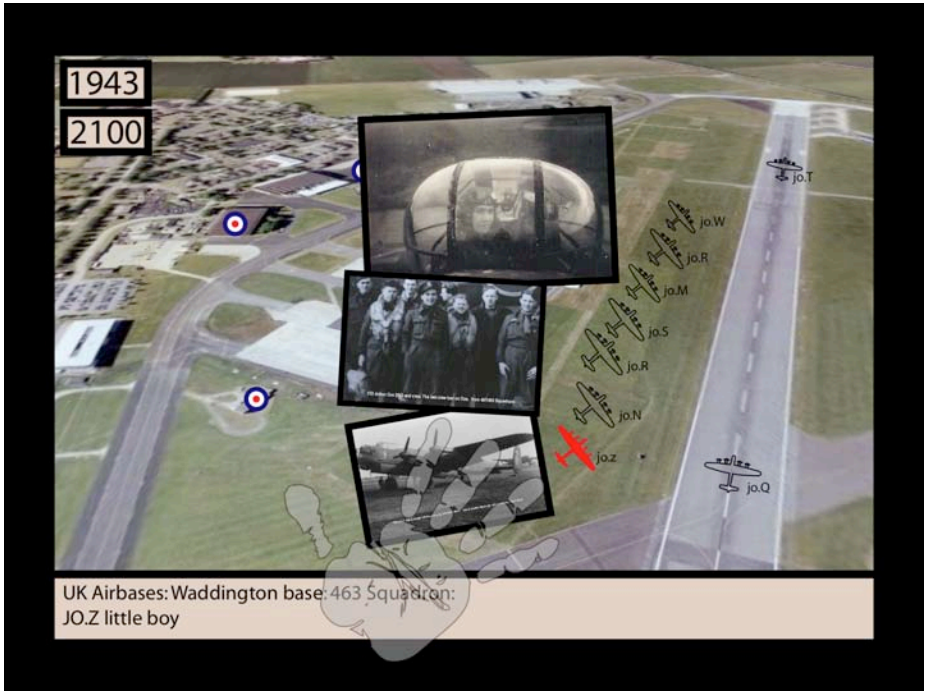
Initial visual aesthetic development

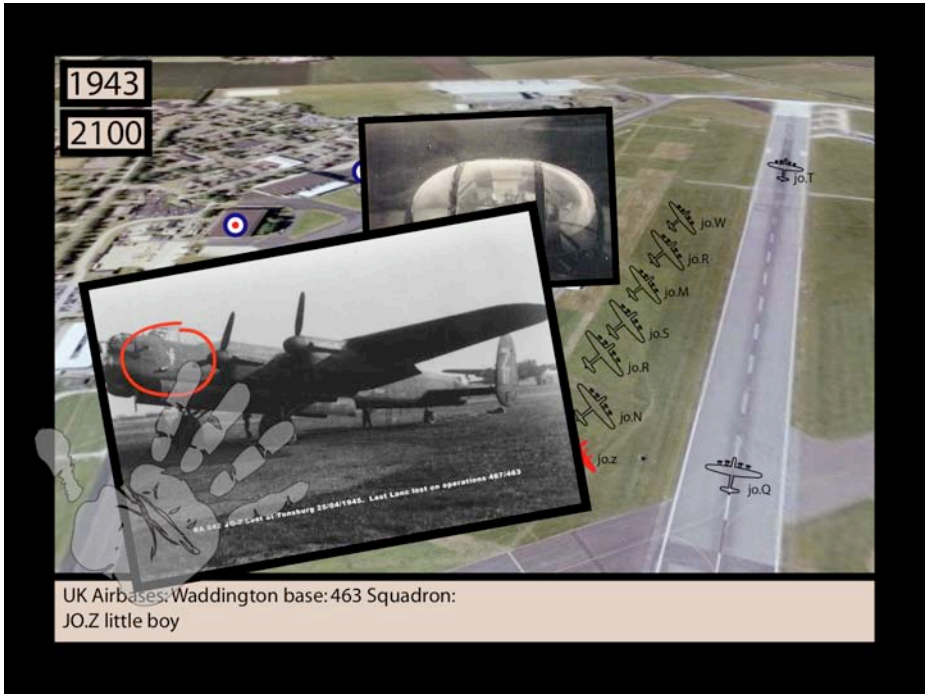
Initial visual aesthetic development

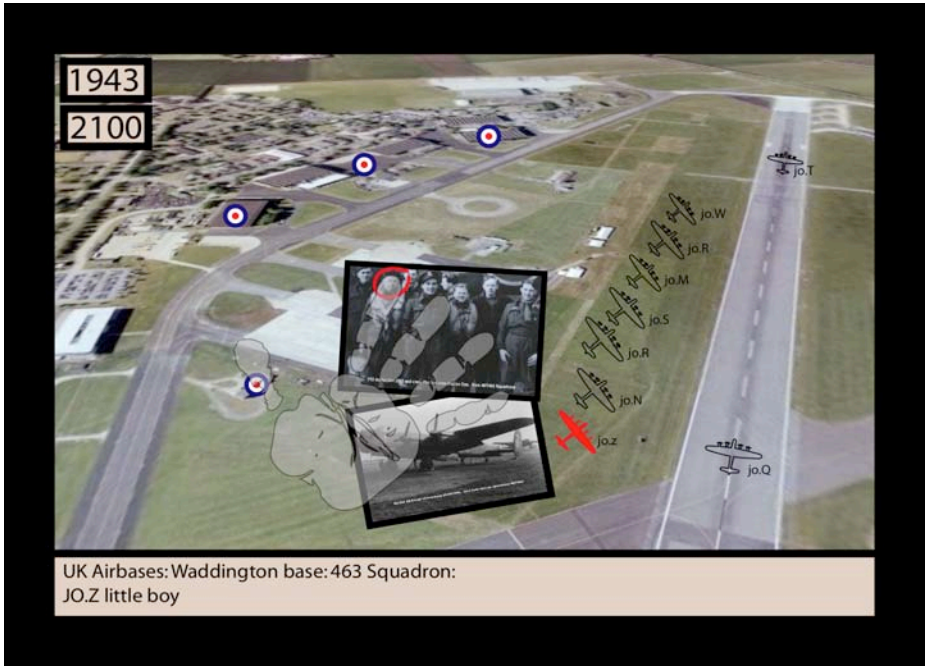
Initial visual aesthetic development

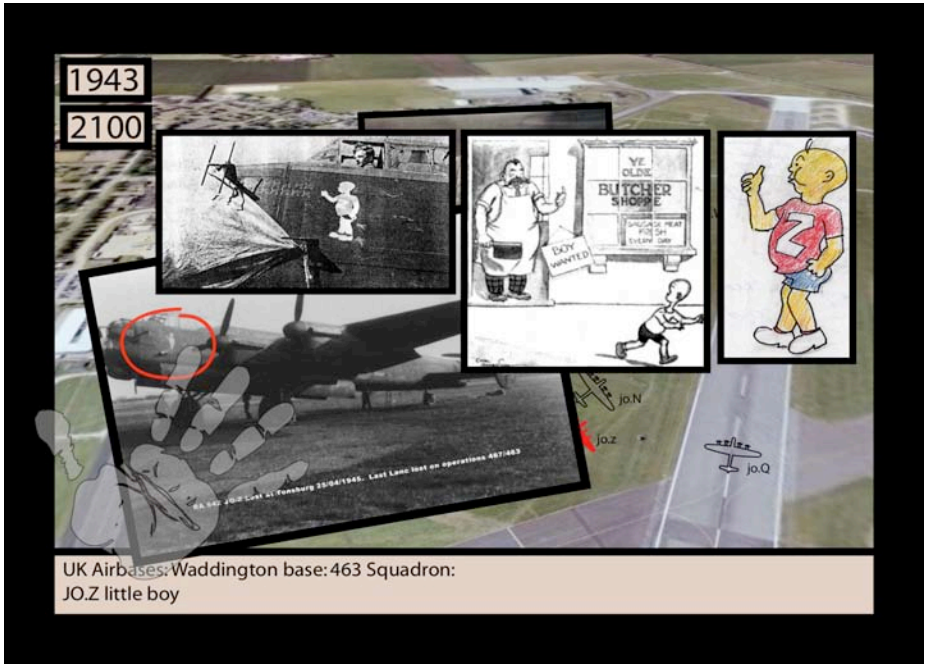


Initial project structure development

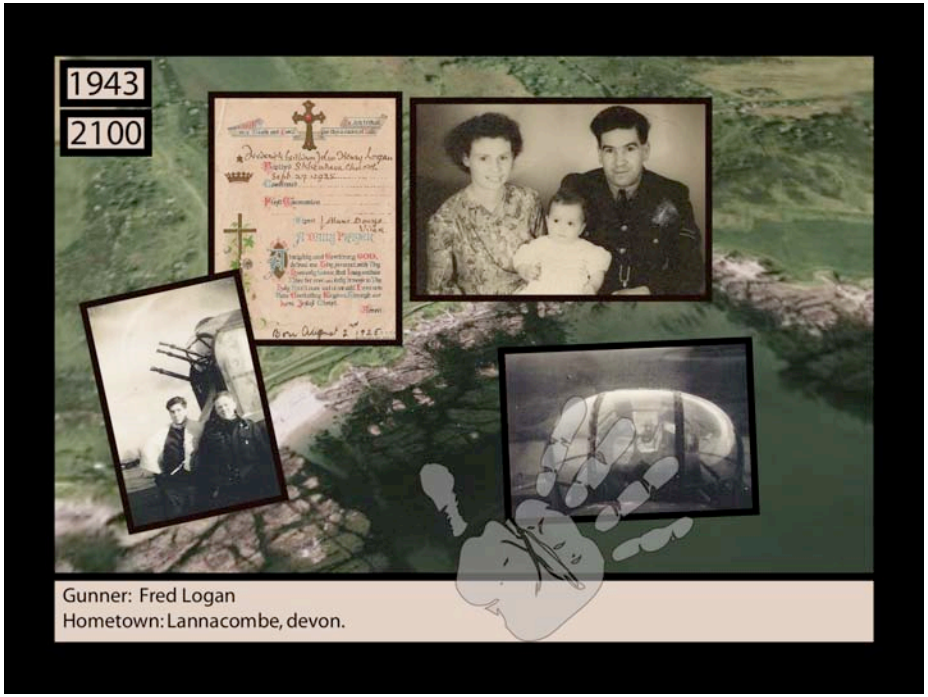


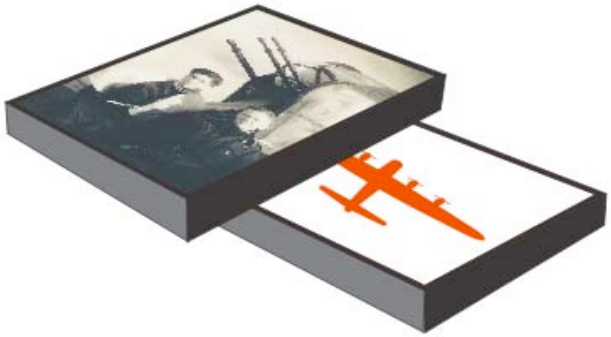


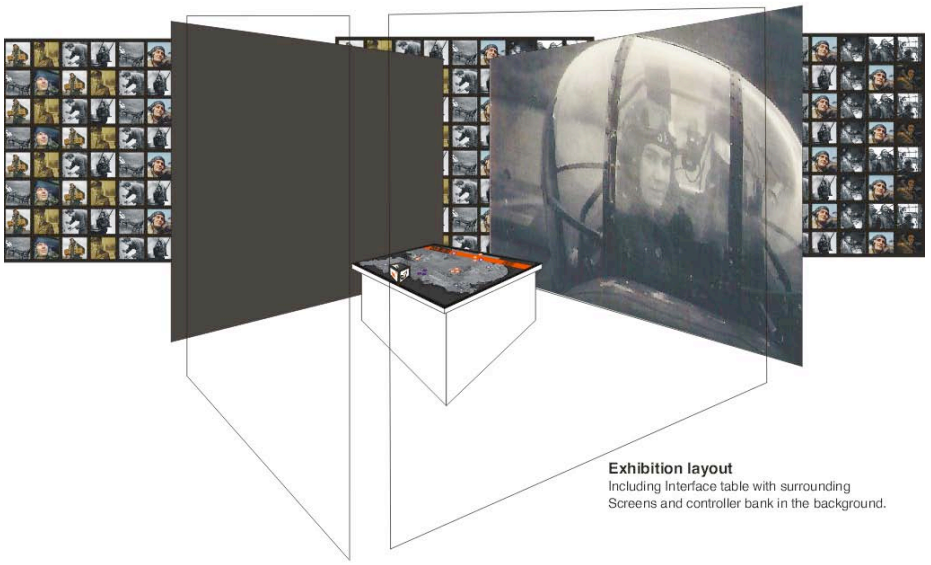




Initial project structure development

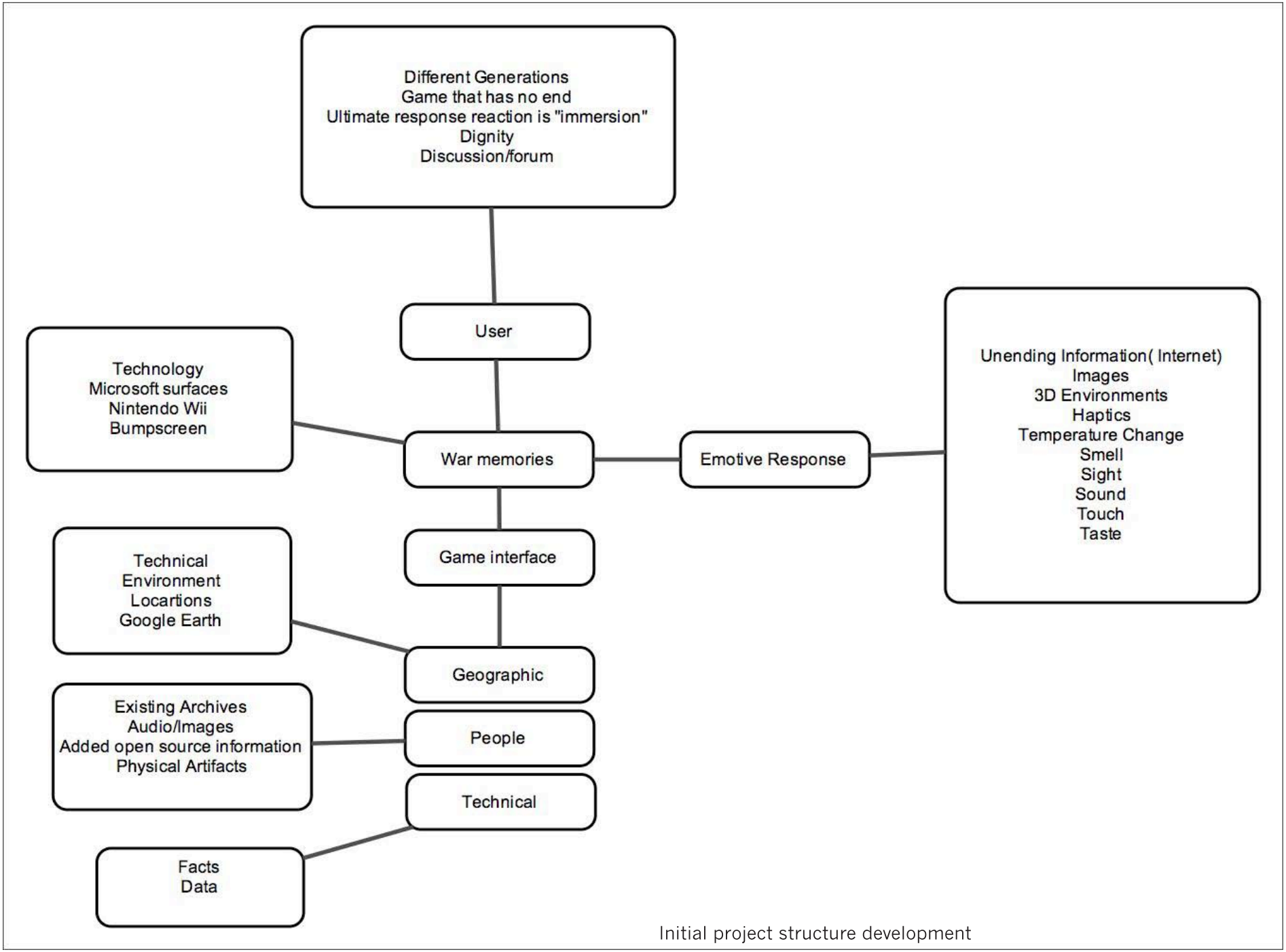




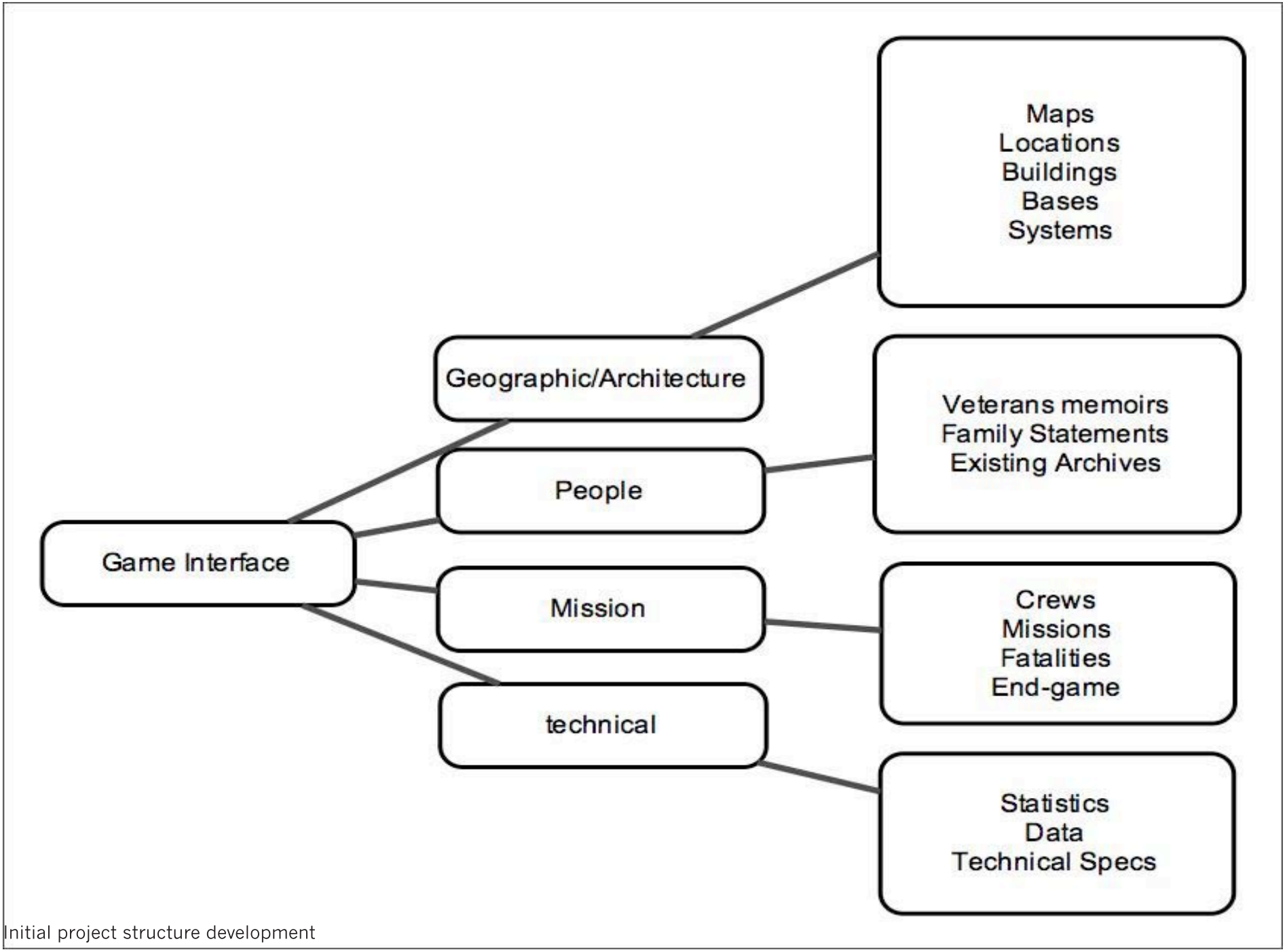


Exhibition layout
Including Interface table with surrounding
Screens and controller bank in the background.

Initial project development describing the physical interface configuration and tangible controllers



Initial project structure development



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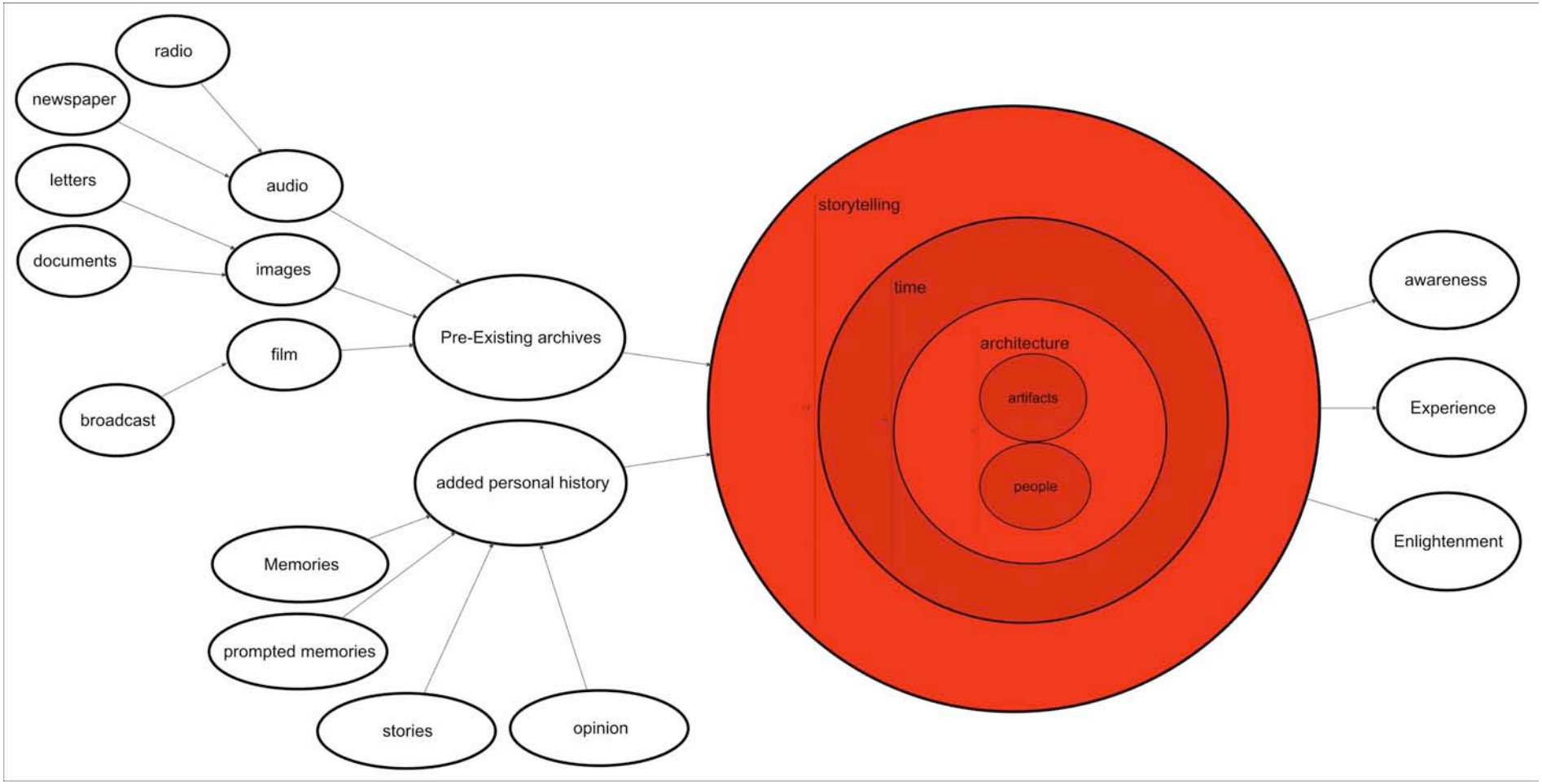
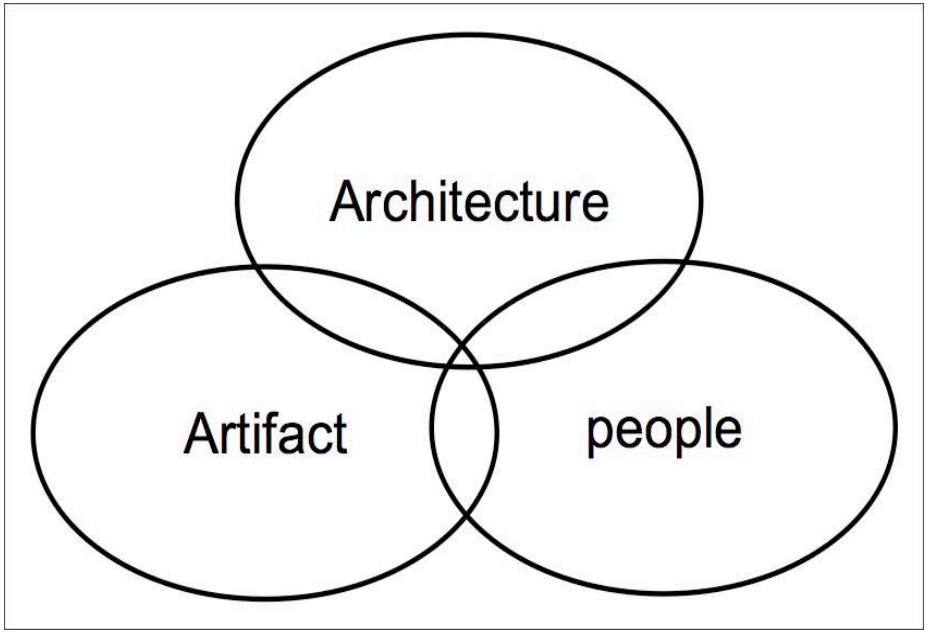
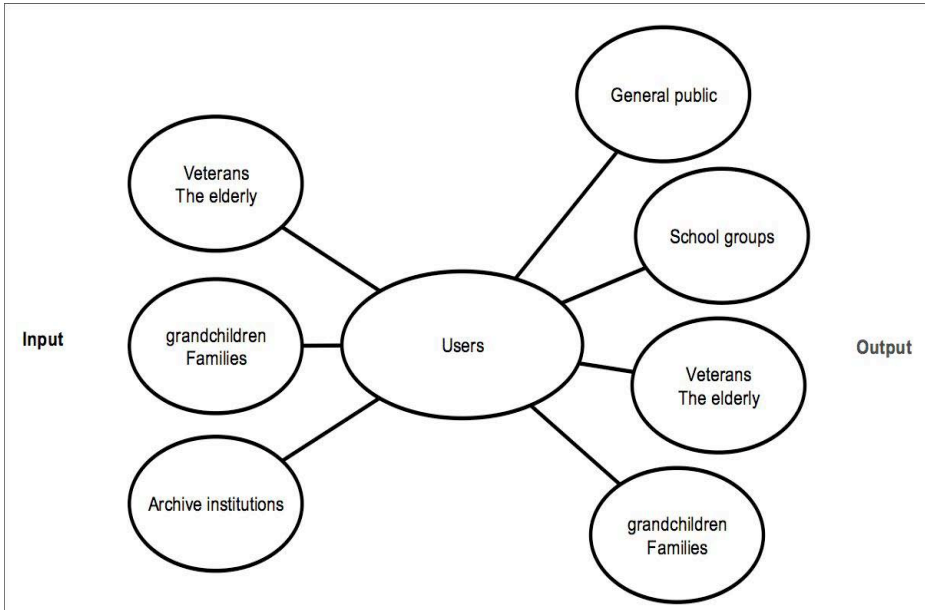
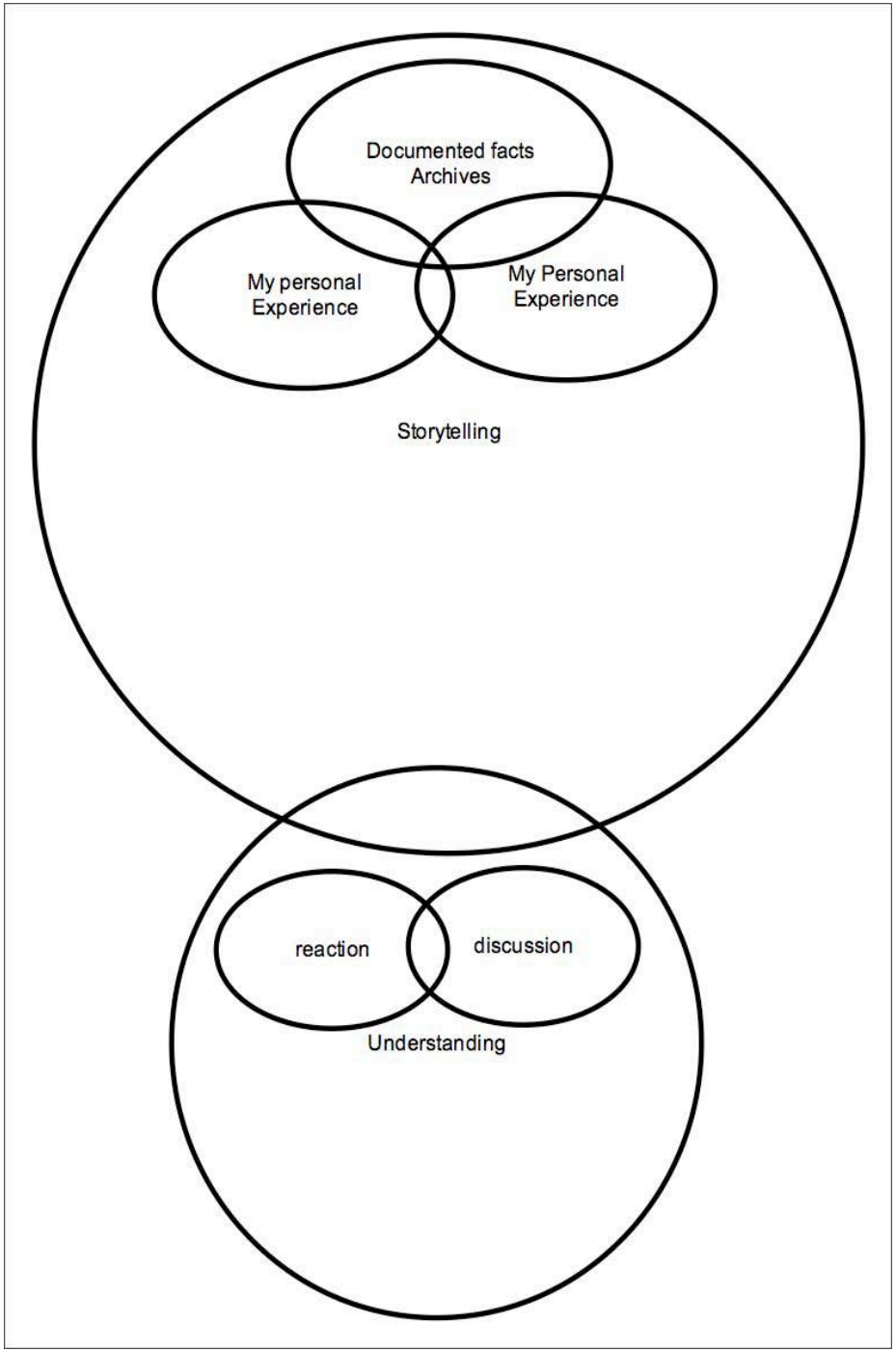


Initial project structure development



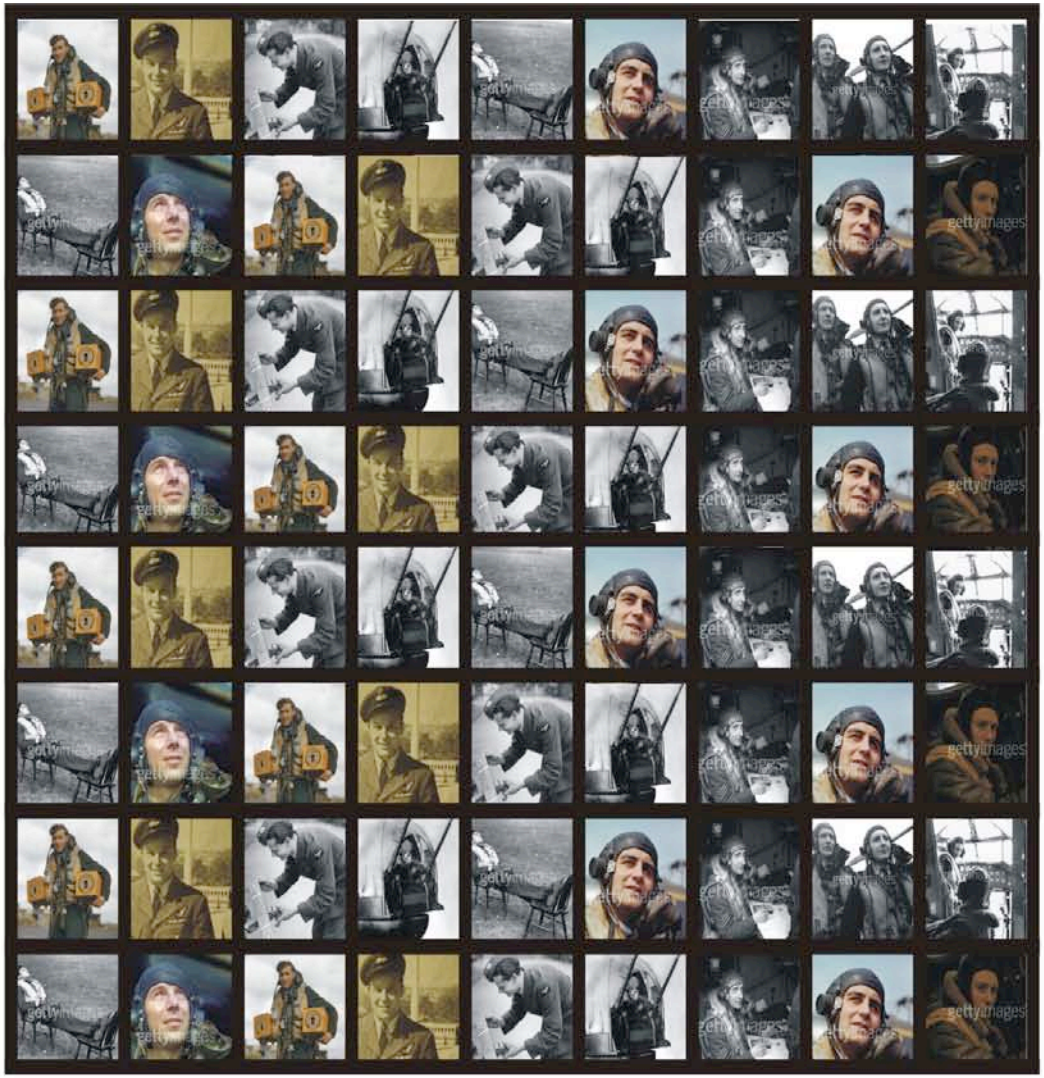




Initial project structure development

6 Sided Controller

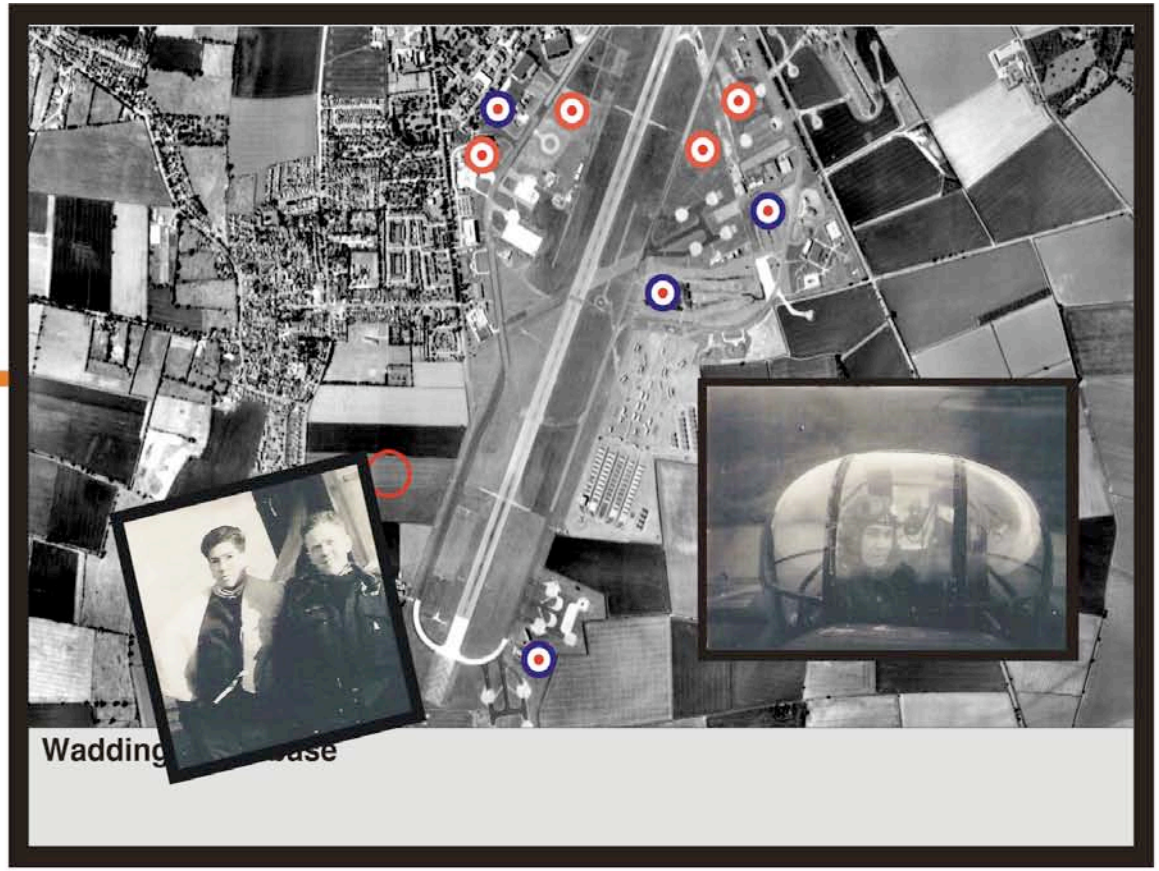
1. Veteran profile: Memories during the war
2. Sortie: the missions and training
3. Designation: their position within the aircraft
4. Honours: any battle honours, medals comendations
5. Peacetime: memories before and afer the war
6: Comments: moderated comments made by the general public



Controller Wall

The Controllers are memory cubes or boxes. They sit in a wall unit surrounding the interface, The museum user selects a random “memory Box” and unlocks the memories by placing it on the interface.

The first Concept - Using the cube as an interface controller



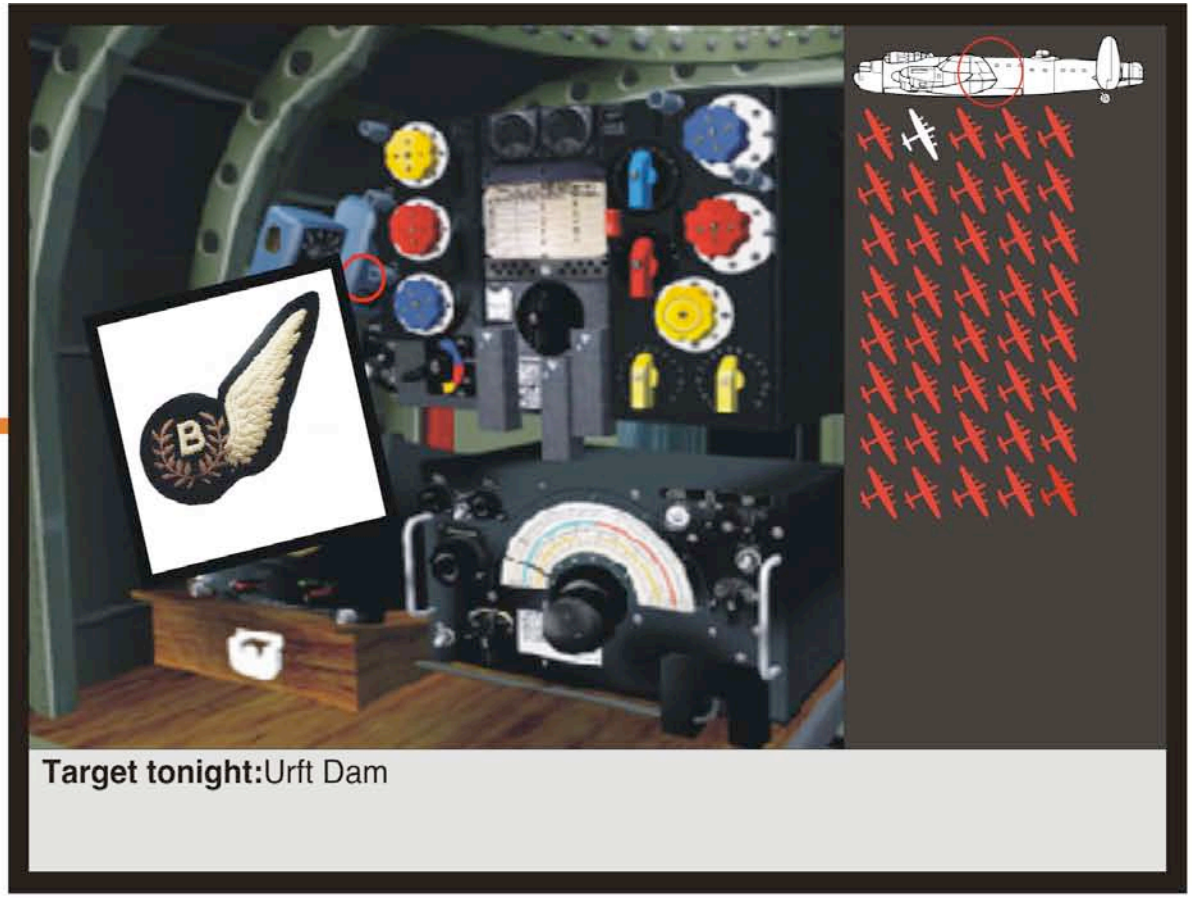
Veteran controller

Placing the veteran image up on the interface opens the veteran memoirs.

They open within a map environment, zooming in on the roundels and touching them opens the memories assigned to the locations.

Images and video when opened are projected on the screens surrounding the interface.

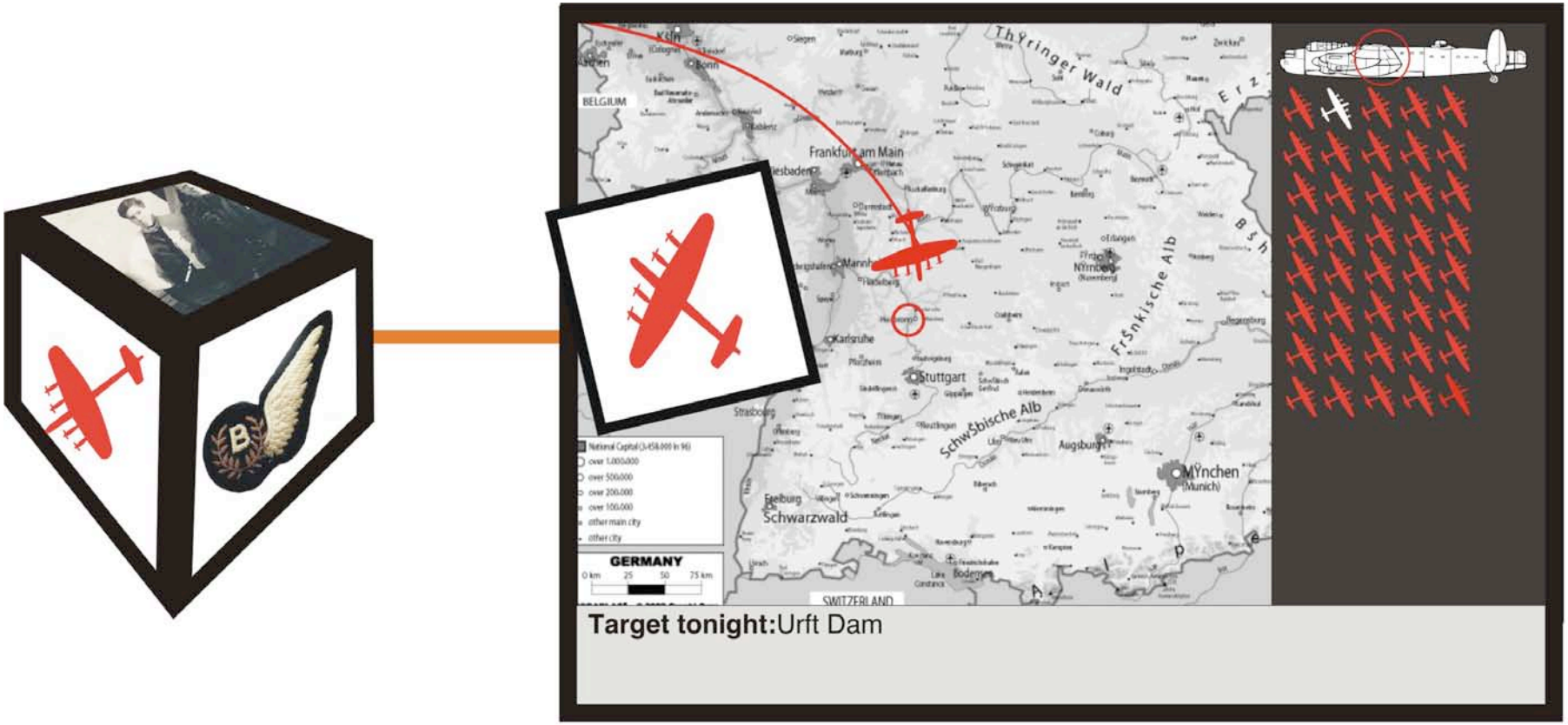
Smell and temperature sensations are released from the interface attributed to the memories.



Veteran controller
When the 'sortie" disk is placed on the interface it take the viewer straight to the work-station of that particular veteran. Eg: Nav, Pilot.
The workstation will be fully animated so the user can experience the position of the wire/ops

In dependant memories are tagged to
the workstation relating to the sortie being looked at
.
Memories are opened up on larger screens surrounding the interface table

The menu to the right explains what sortie you are on,
backed up by a mission manifest listed below.



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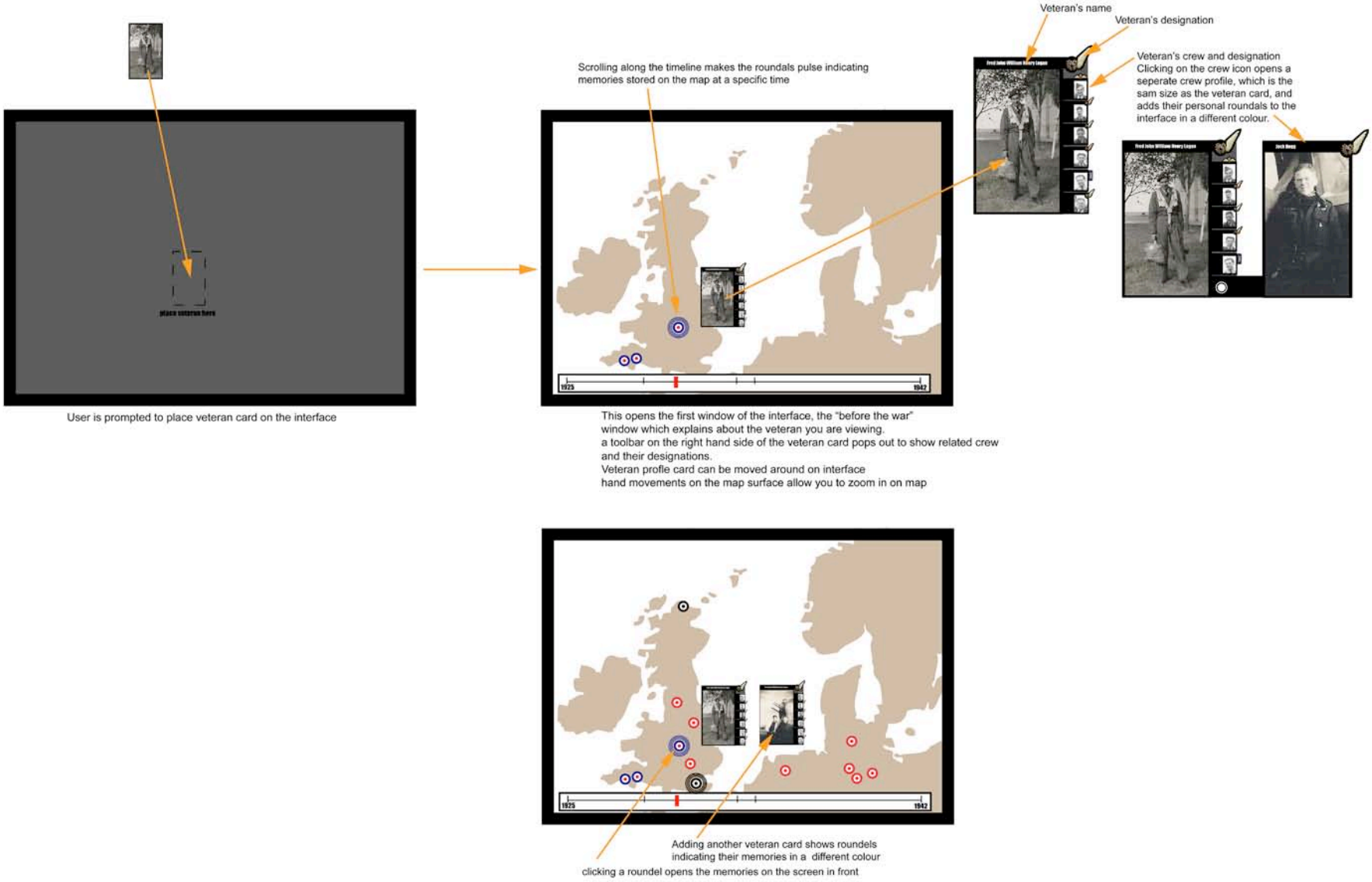
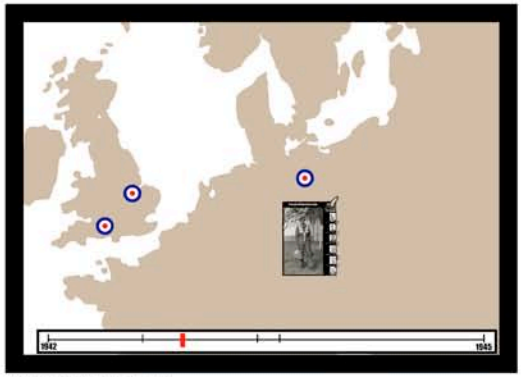


The Second Concept - showing navigation development



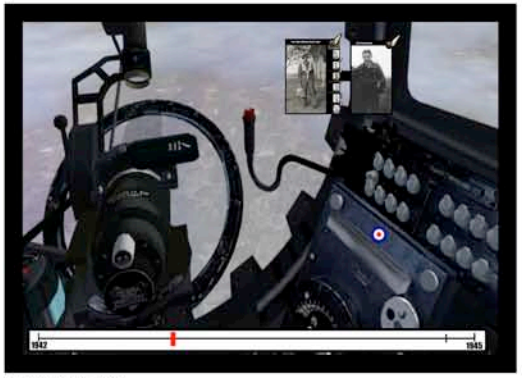
During the war Interface:
The roundels indicate memories associated to the veterans war memories.
Clicking on the memories open them in the surrounding screens.
Scrolling the timeline reveals more memories attributed to different times. zooming in on locations reveals more information. Some memories are specific tot he veteran, or have been recorded by the veteran, others are linked to the veteran by association eg: information about squadrons, bases. locations.

clicking on the veteran's crew opens side windows with roundels keyed to them.
The roundels show up on the map, clicking on them reveal more information about the veteran.

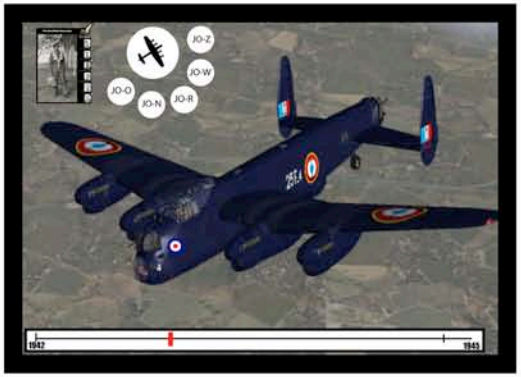
Primary information
Veteran memories

Secondary Information
Crew memories
Veteran association memories *eg: squadrons, locations, targets, adding context to memories*

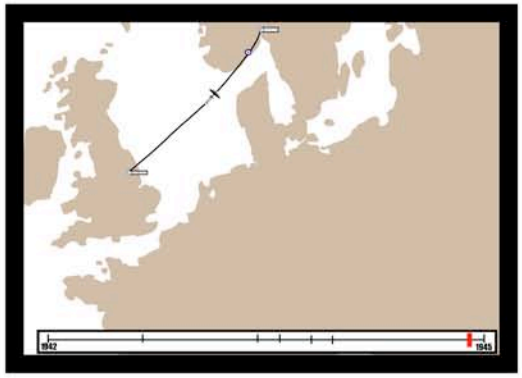
Tertiary Information
Other crew memories *eg: memories tagged by other crew to locations, designations, posible option to scroll throught to other veterans.*

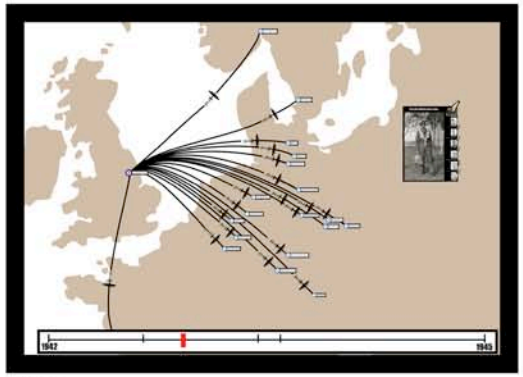


Inside the Aircraft:
Clicking on the veterans crew opens an interface window showing the inside of the aircraft.
This interface is fully-interactive, touching the buttons and dials opens windows explaining how they work, you can zoom in and out on particular aspects of this interface.
Memories are also locked into this interface at certain time perods.
Scrolling the timeline unlocks the memories.
There may be other veterans memories locked to this designation.



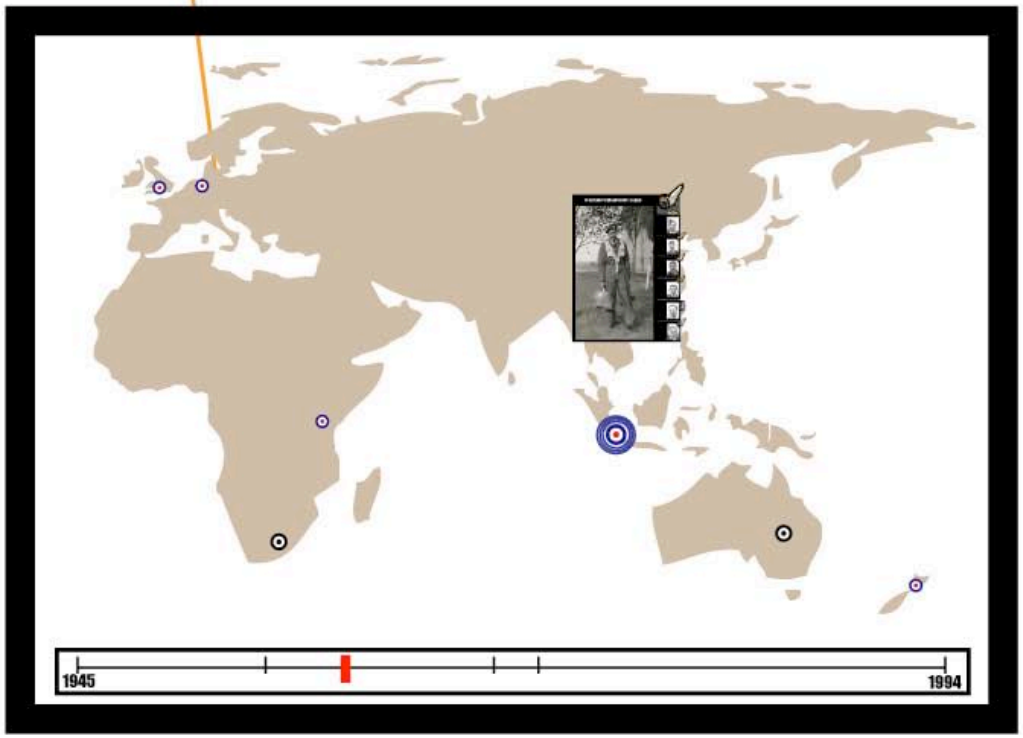
Outside the Aircraft:
This interface shows the aircraft specifically related to the veteran.
Clicking on the specific aircraft opens a visual related to the aircraft, any memories attributed to the aircraft will be represented as roundels.
This interface will also be fully interactive to allow the user to explore technical aspects of the aircraft.
There may be other crew's memories locked to this aricraft.

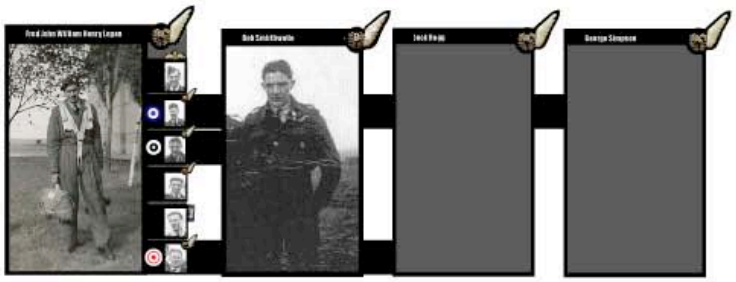




Sorties:
This window talks about the sorties or trips taken by the veteran.
They are shown as locations the map. clicking on the target reveals more inofrmation about the purpose of the target and sortie. Any memories attributed to the sortie will be tagged on the journey line.
The interface itself will project emotive material onto the surrounding screens relating to the sortie.
There may be other veteran memories tagged to these locations.

Scrolling along the timeline makes the roundals pulse indicating memories stored on the map at a specific time





clicking on the veteran's crew opens side windows with roundels keyed to them. The roundels show up on the map, clicking on them reveal more information about the veteran.

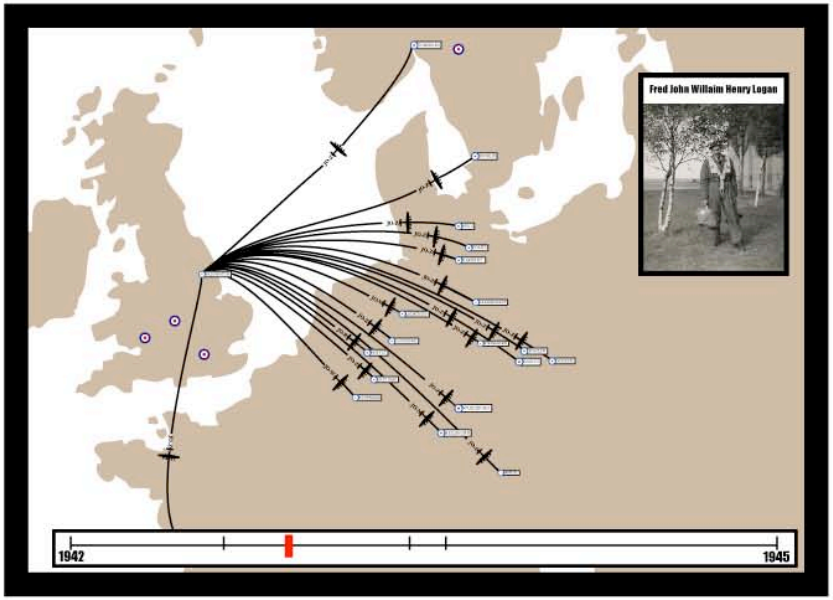
After the war Interface:
Is very similar to the before the war interface. This interface describes the veterans life after the war. The interface still works on a map with roundels showing the keying of memories. Scrolling the timeline makes the roundels pulse. Clicking on the roundels opens the contained memories in the surrounding screens.
Roundels in a different colour show the memoris of realted crew members.

Primary information
Veteran memories

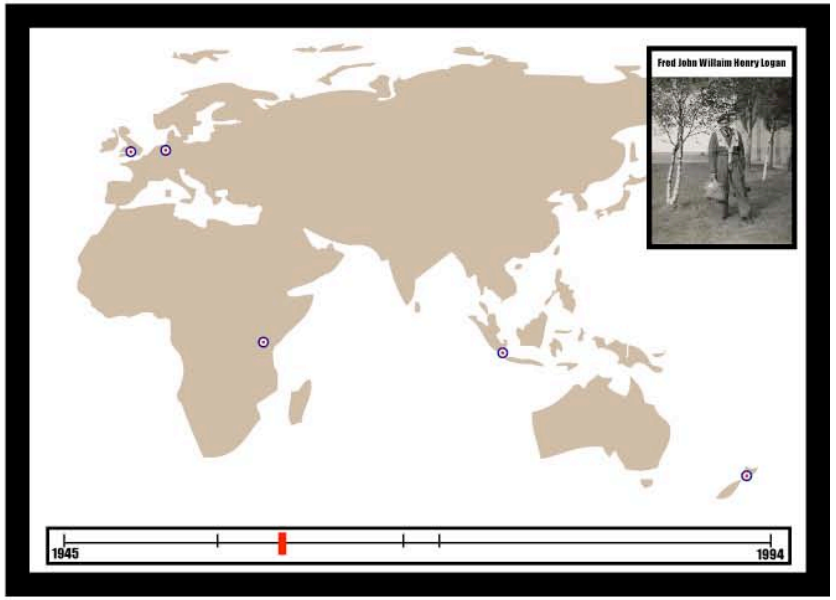
Secondary Information
Crew memories
Veteran association memories *eg: squadrons, locations, targets, adding context to memories*

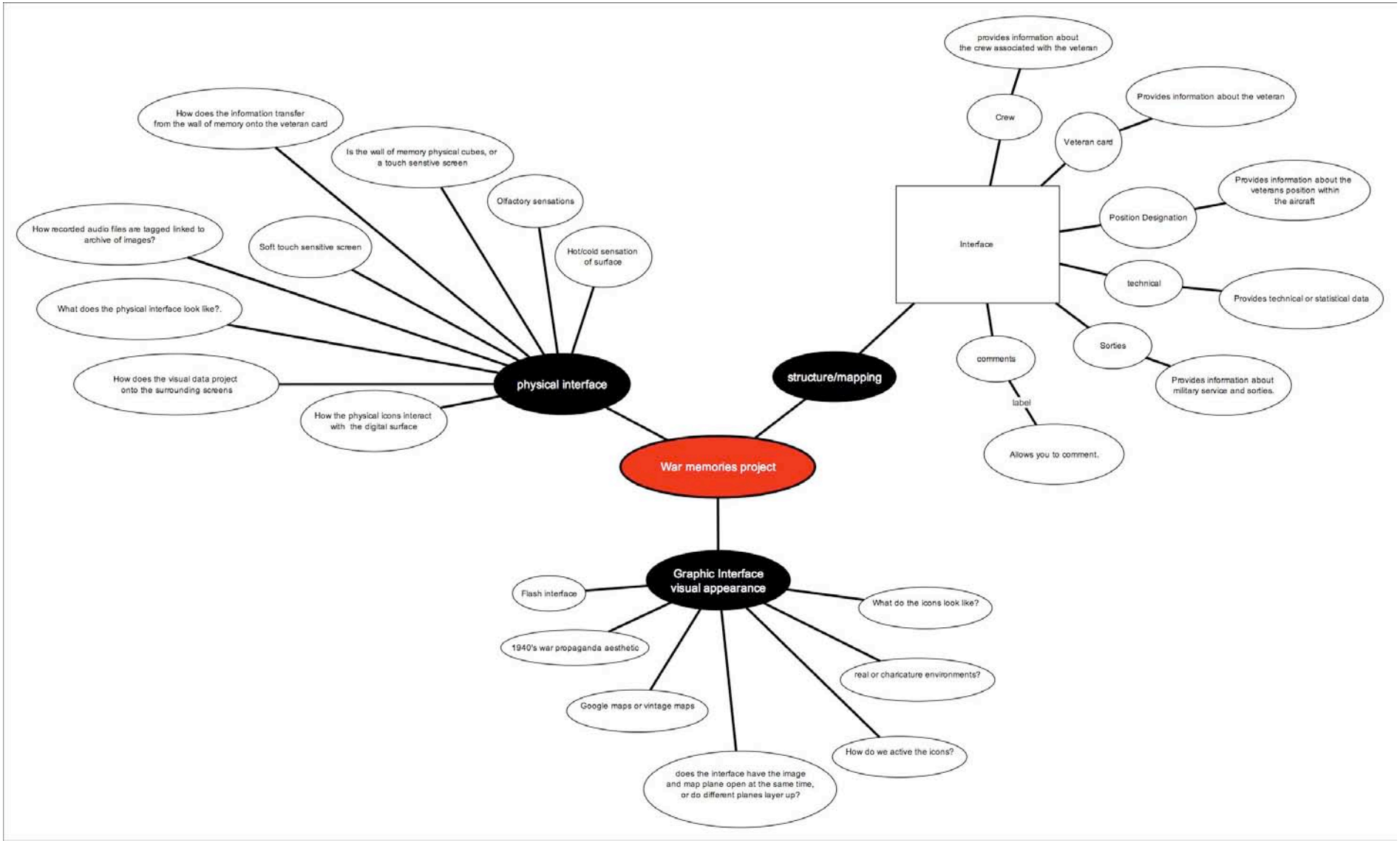
Tertiary Information
Other crew memories *eg: memories tagged by other crew to locations, designations, posible option to scroll throught to other veterans.*


Fred John Willaim Henry Logan
1925
1942


Fred John Willaim Henry Logan
1942
1945


Fred John Willaim Henry Logan
1942
1945

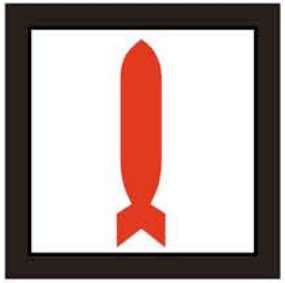

Fred John Willaim Henry Logan
1945
1994



Project influences and factors.

Growing up
before the war

During the war
squadron and
life on base

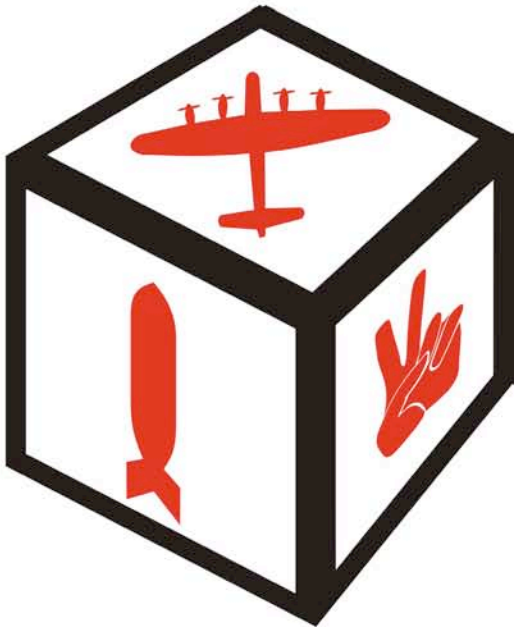


During the war
Sorties

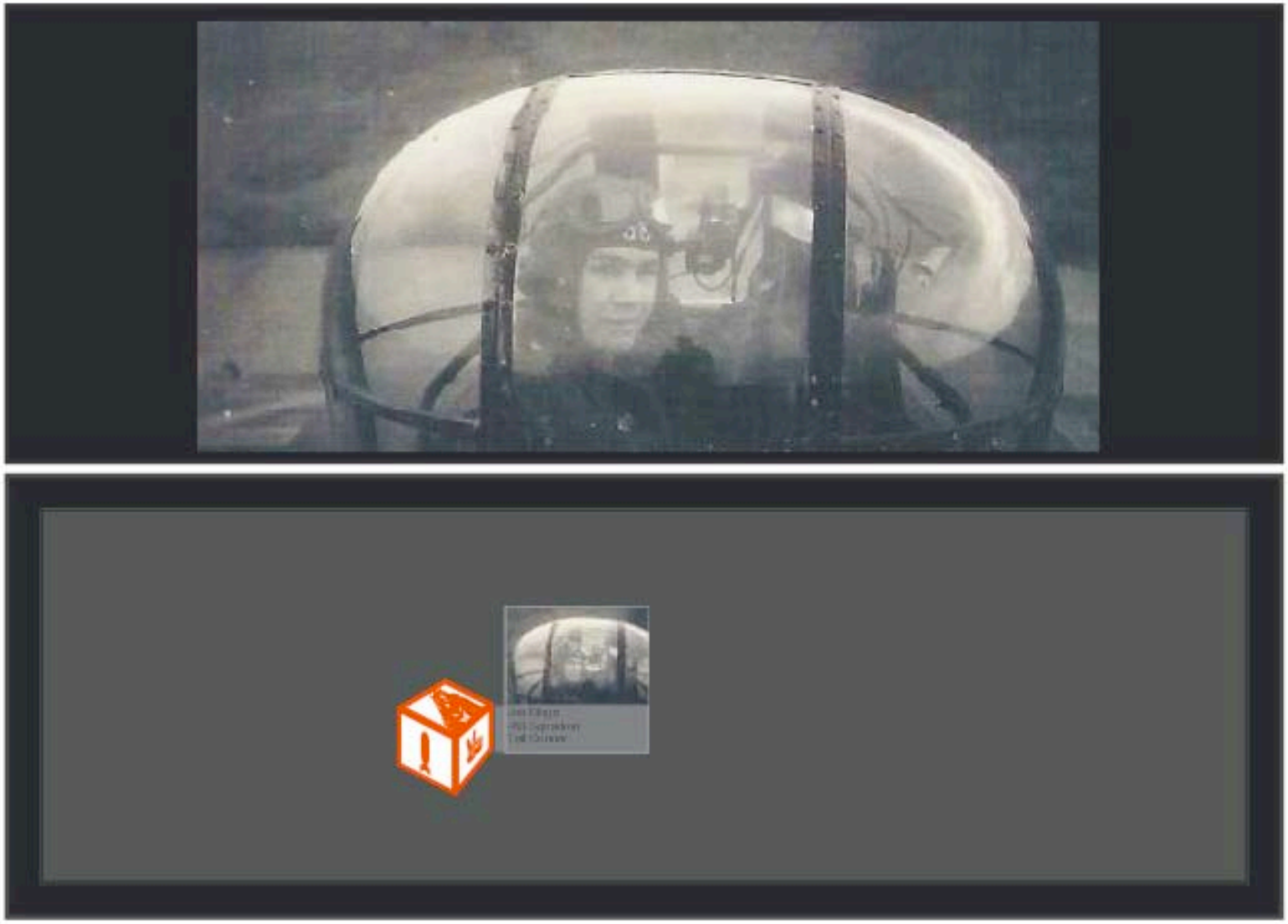
Victory and life
after war

During the war
designation and
the aircraft

Technical
information



Cube Controller · Initial sections within the interface.

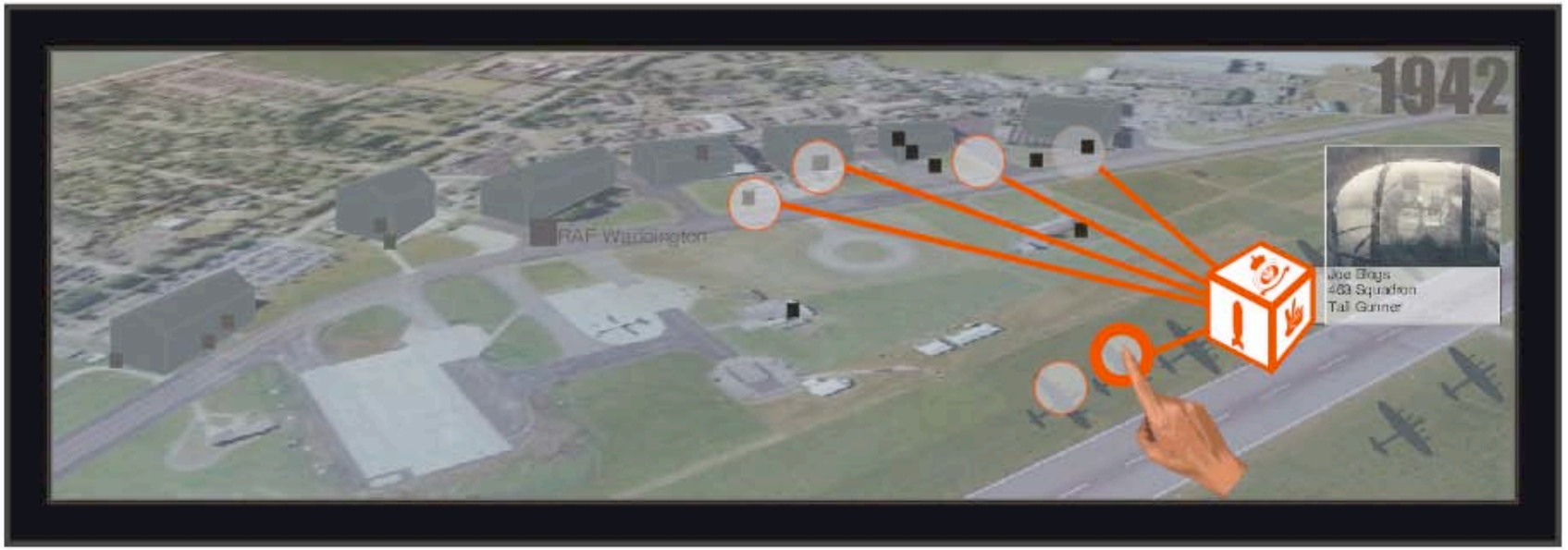


The Third Concept - showing navigation development


1925
London
Exeter
Hallsands
Lannacombe
Stokenham
Joe Blogs
463 Squadron
Tail Gunner

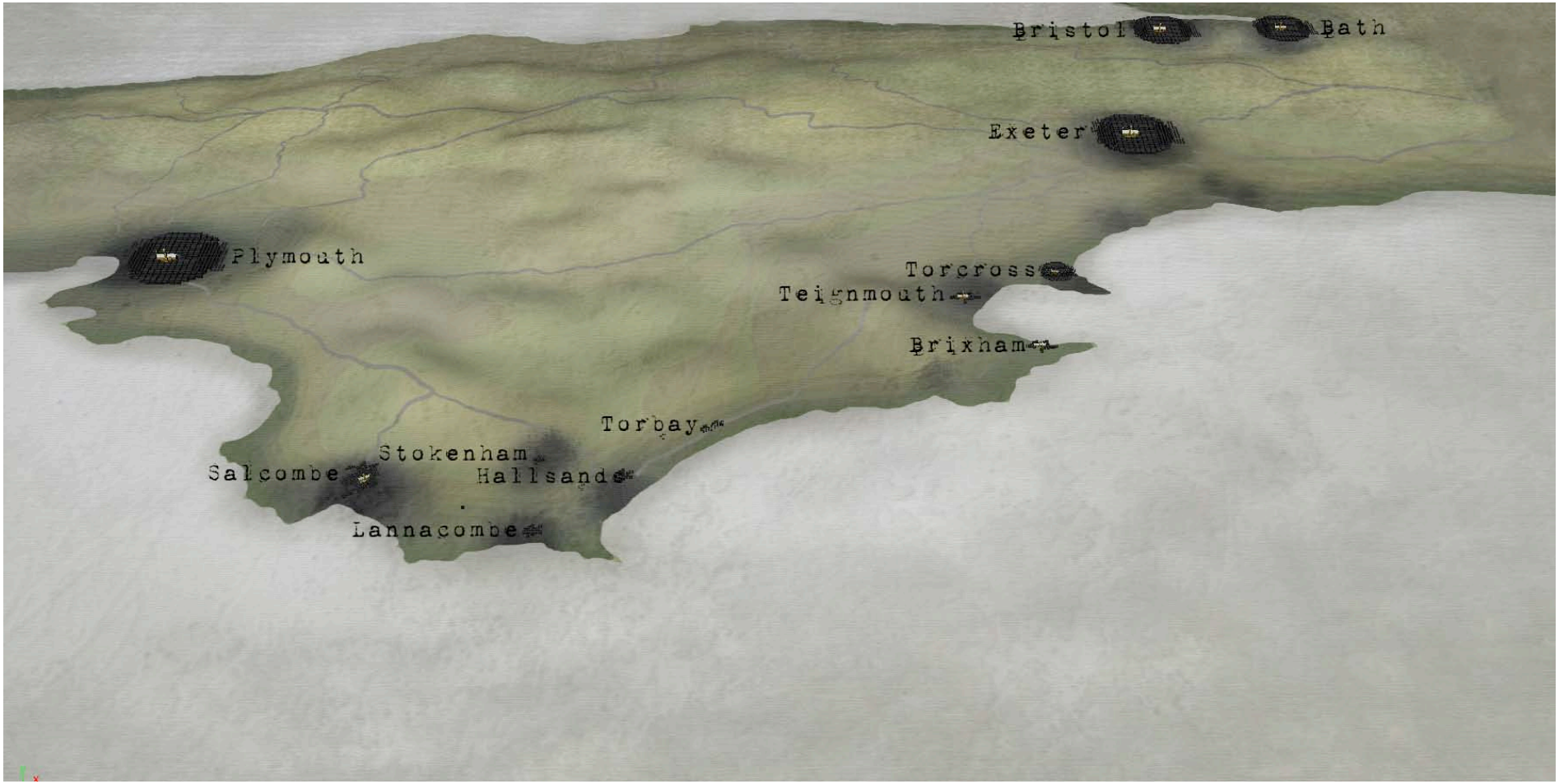

gettyimages
1942


RA 542 J0-Z Lost at Tonsburg 25/04/1945. Lost Lanc lost on operations 467/463


1942
RAF Waddington
Joe Blogs
463 Squadron
Tail Gunner

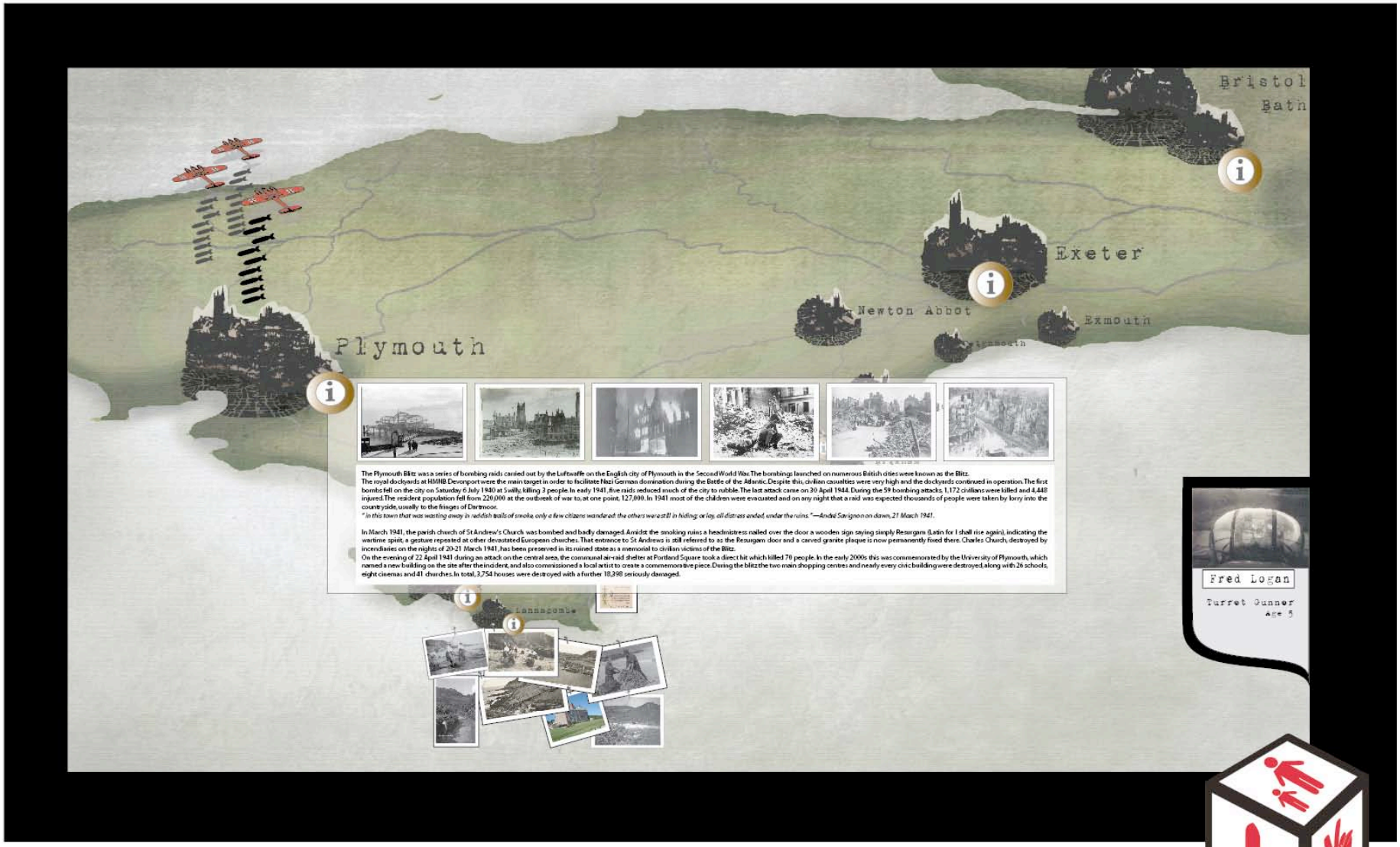

1945
Joe Blogs
463 Squadron
Tail Gunner

The Fourth Concept · Looking at aesthetic development, minimizing and refining the interface to make it more visual

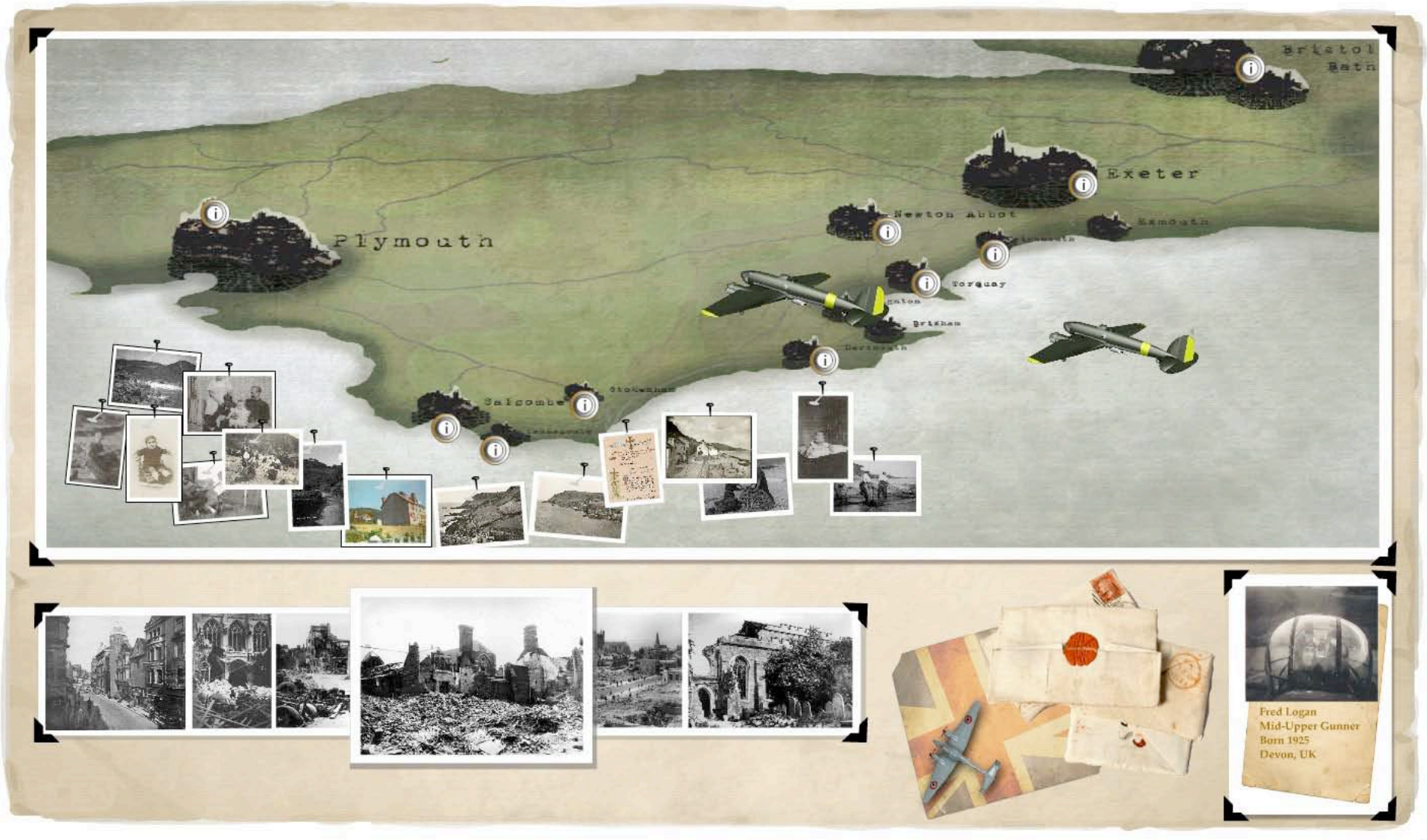


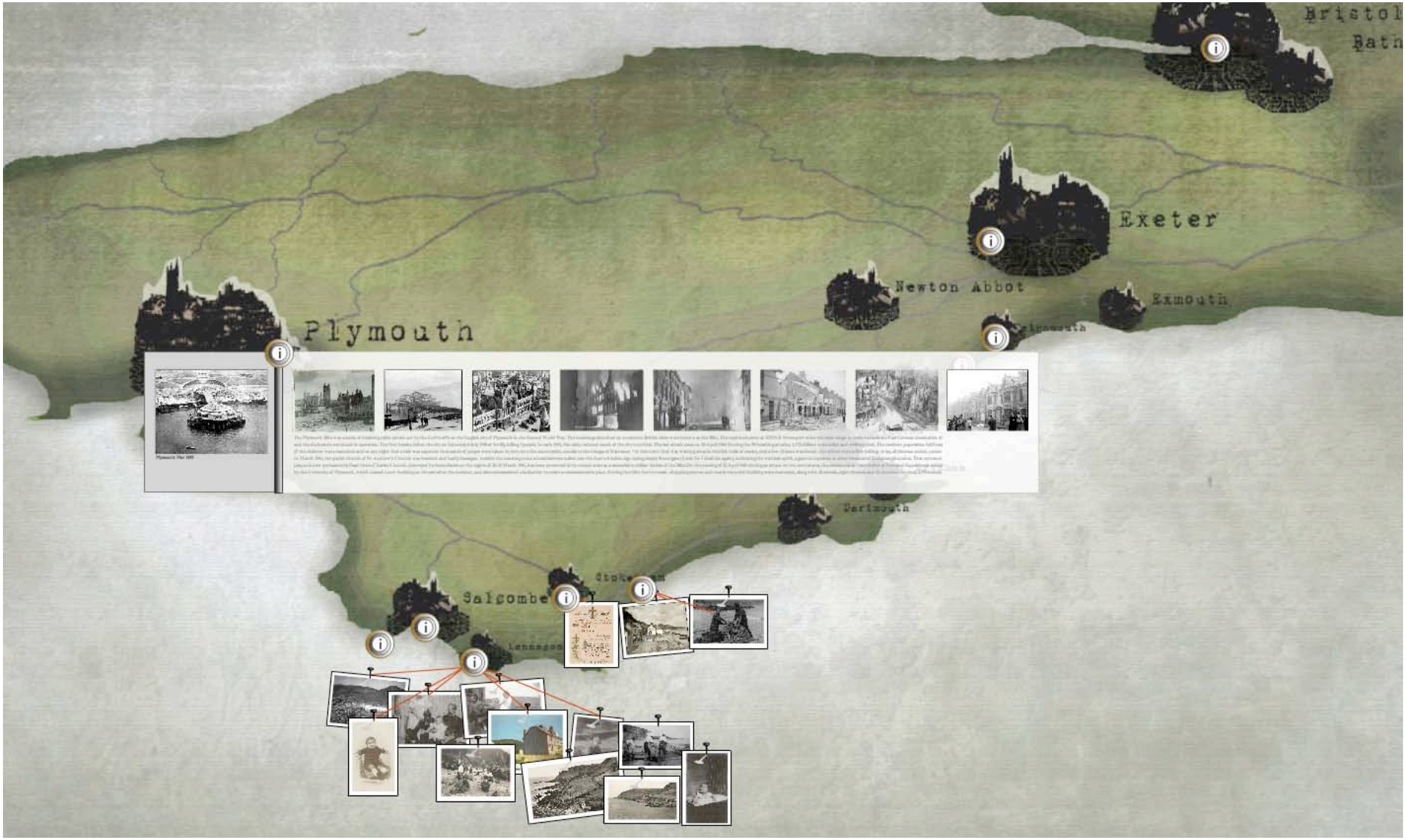
Initial Aesthetic development

The Fourth Concept - with the new aesthetic, looking at navigation between hierarchy of information

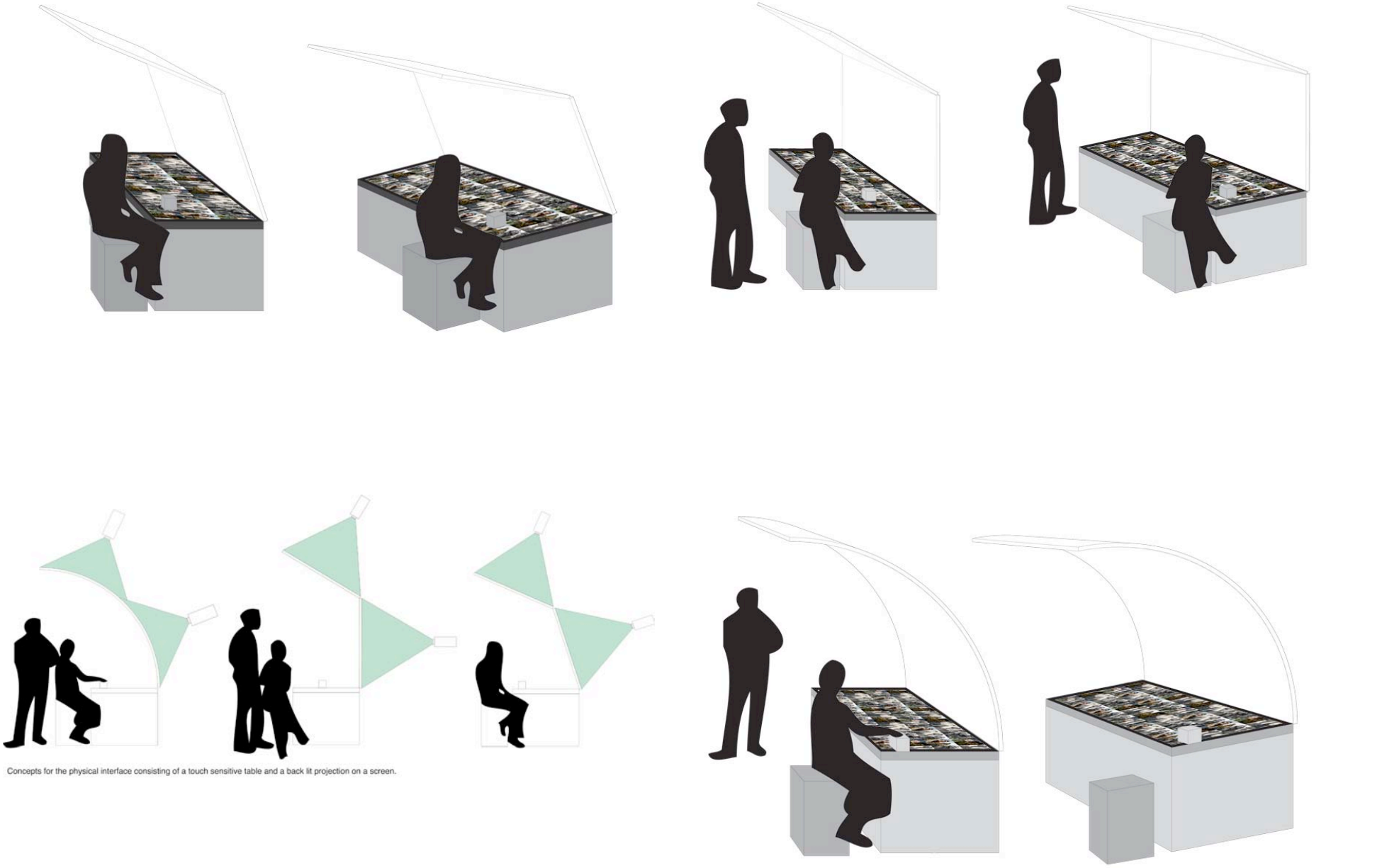

Bristol
Bath
Exeter
Newton Abbot
Exmouth
Plymouth
The Plymouth Blitz was a series of bombing raids carried out by the Luftwaffe on the English city of Plymouth in the Second World War. The bombings launched on numerous British cities were known as the Blitz.
The royal dockyards at HMNB Devonport were the main target in order to facilitate Nazi German domination during the Battle of the Atlantic. Despite this, civilian casualties were very high and the dockyards continued in operation. The first bombs fell on the city on Saturday 6 July 1940 at 5 wilfy, killing 3 people. In early 1941, five raids reduced much of the city to rubble. The last attack came on 30 April 1944. During the 59 bombing attacks, 1,172 civilians were killed and 4,448 injured. The resident population fell from 220,000 at the outbreak of war to, at one point, 127,000. In 1941 most of the children were evacuated and on any night that a raid was expected thousands of people were taken by lorry into the countryside, usually to the fringes of Dartmoor.
" in this town that was wasting away in reddish trails of smoke, only a few citizens wandered at the others were still in hiding; or lay, all distress ended, under the ruins." —André Savignon on dawn, 21 March 1941.
In March 1941, the parish church of St Andrew's Church was bombed and badly damaged. Amidst the smoking ruins a headmistress nailed over the door a wooden sign saying simply Resurgam (Latin for I shall rise again), indicating the wartime spirit, a gesture repeated at other devastated European churches. That entrance to St Andrews is still referred to as the Resurgam door and a carved granite plaque is now permanently fixed there. Charles Church, destroyed by incendiaries on the nights of 20-21 March 1941, has been preserved in its ruined state as a memorial to civilian victims of the Blitz.
On the evening of 22 April 1941 during an attack on the central area, the communal air-raid shelter at Portland Square took a direct hit which killed 78 people. In the early 2000s this was commemorated by the University of Plymouth, which named a new building on the site after the incident, and also commissioned a local artist to create a commemorative piece. During the blitz the two main shopping centres and nearly every civic building were destroyed, along with 26 schools, eight cinemas and 41 churches. In total, 3,754 houses were destroyed with a further 18,398 seriously damaged.
Fred Logan
Turret Gunner
age 5

Fred Logan
Mid-Upper Gunner
Born 1925
Devon, UK


Bristol
Bath
Exeter
Plymouth
Newton Abbot
Exmouth
Torquay
Brixham
Salcombe
Stokenham
Fred Logan
Mid-Upper Gunner
Born 1925
Devon, UK

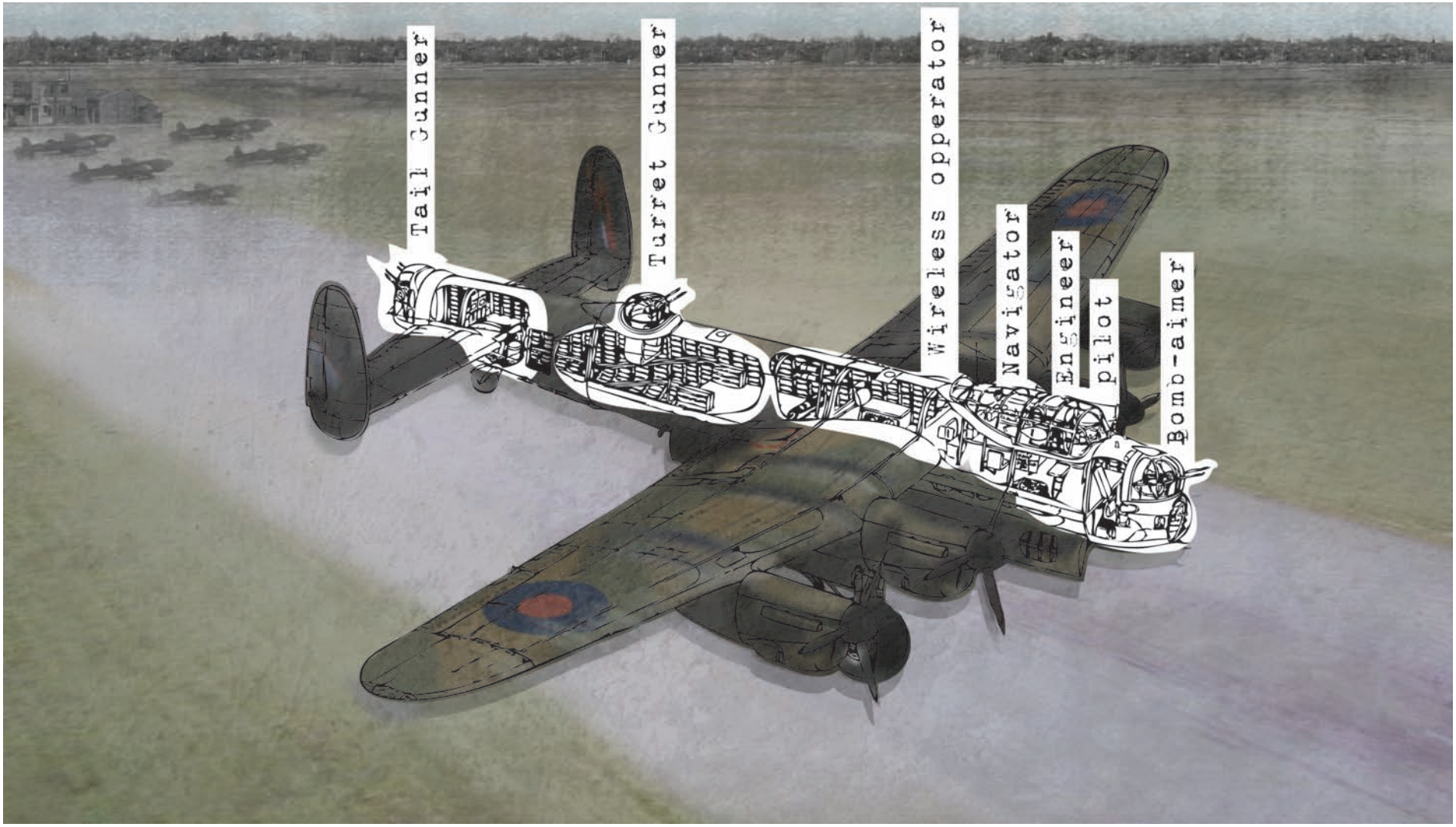

Bristol
Bath
Exeter
Newton Abbot
Exmouth
Plymouth
Dartmouth
Salcombe


Bristol
Bath
Exeter
Plymouth
Newton Abbot
Exmouth
Torquay
Paignton
Brixham
Dartmouth
Salcombe
Stokenham
Lannacombe



Concepts for the physical interface consisting of a touch sensitive table and a back lit projection on a screen.

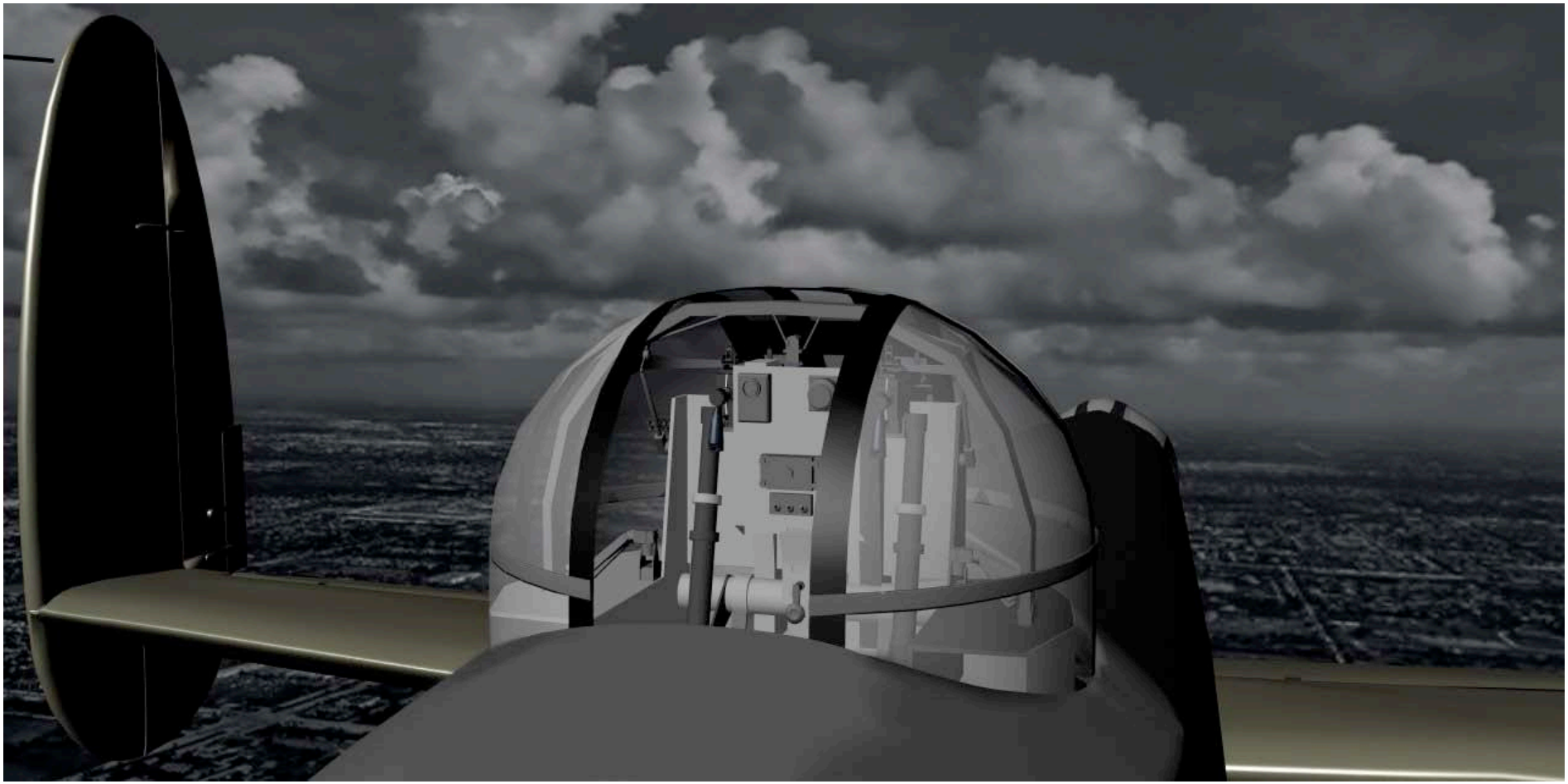
The table and screen configuration



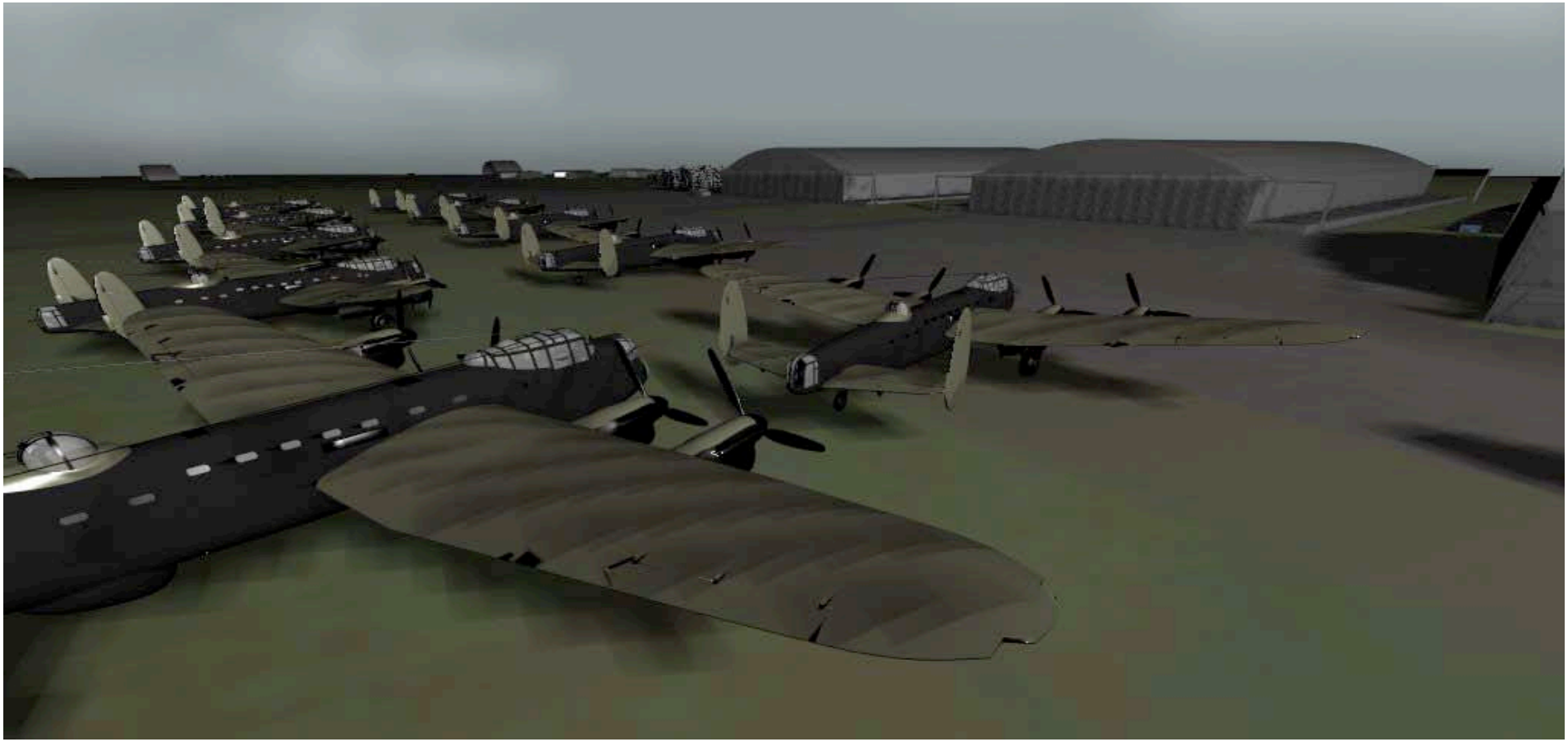
Designation selector development

The Fifth concept - the background resembles a pin board which memories are attached to.

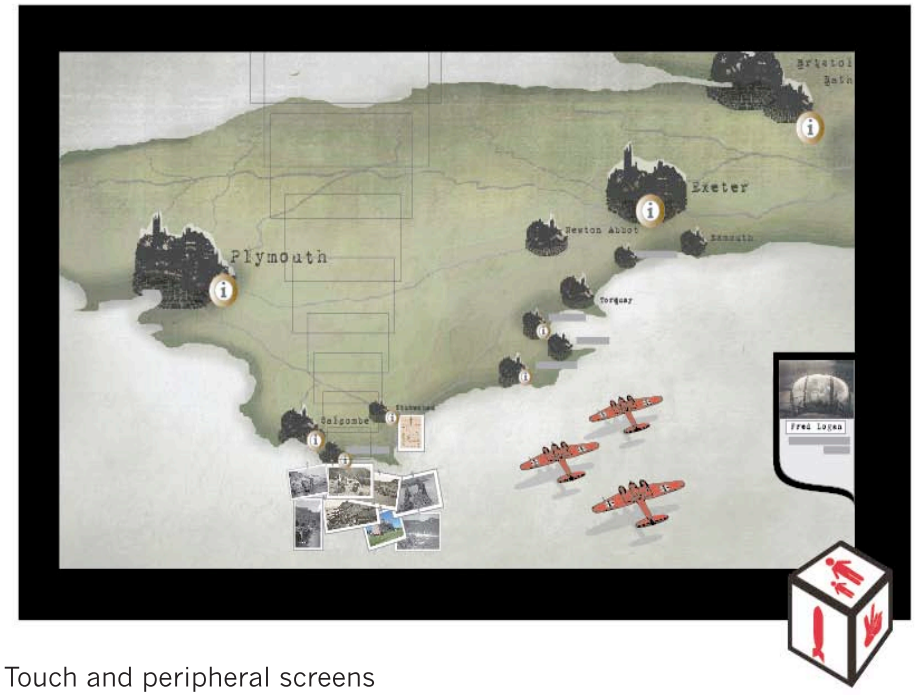

Fred Logan
Mid-Upper Gunner
Born 1925
Devon, UK



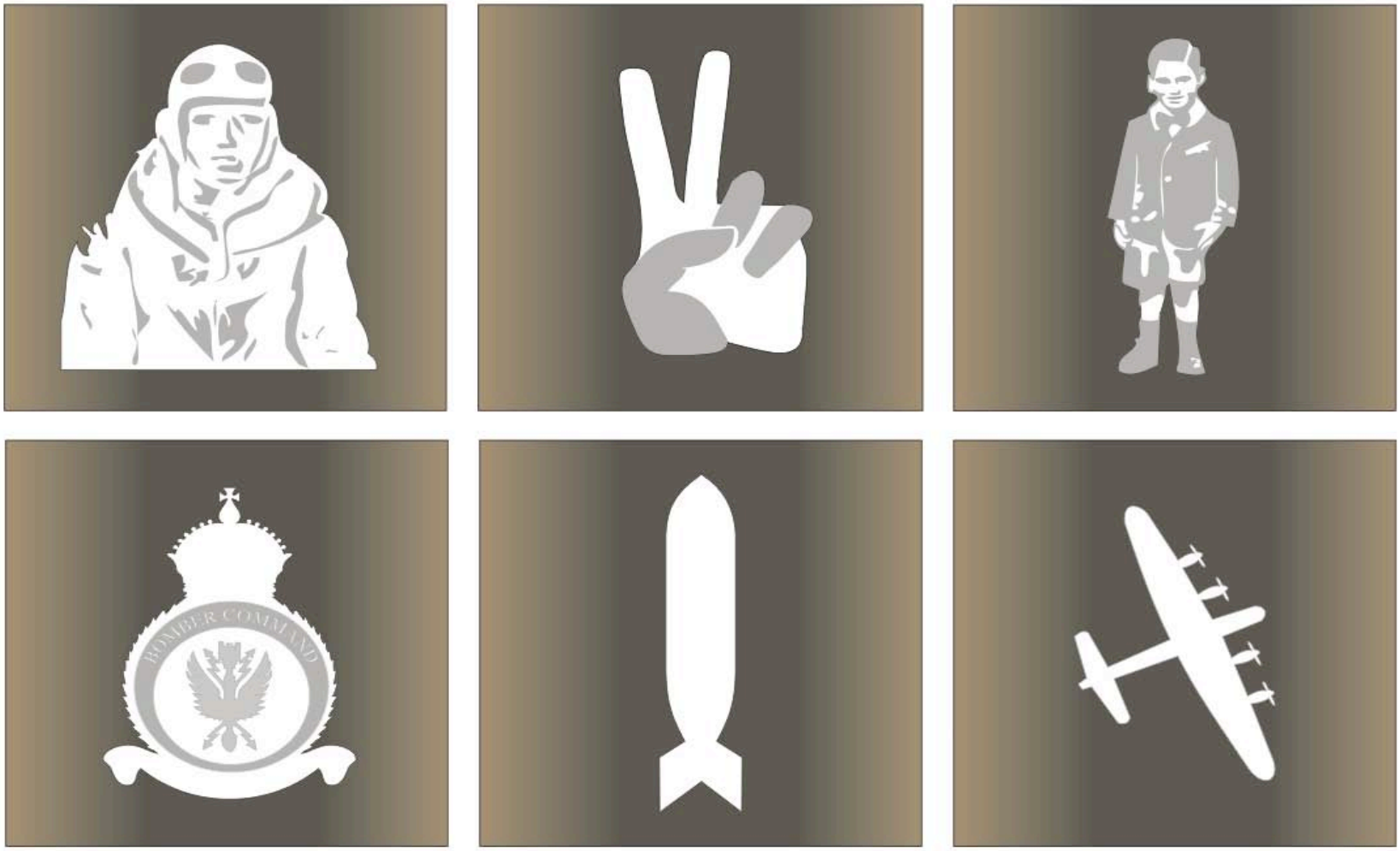
Initial environment renders



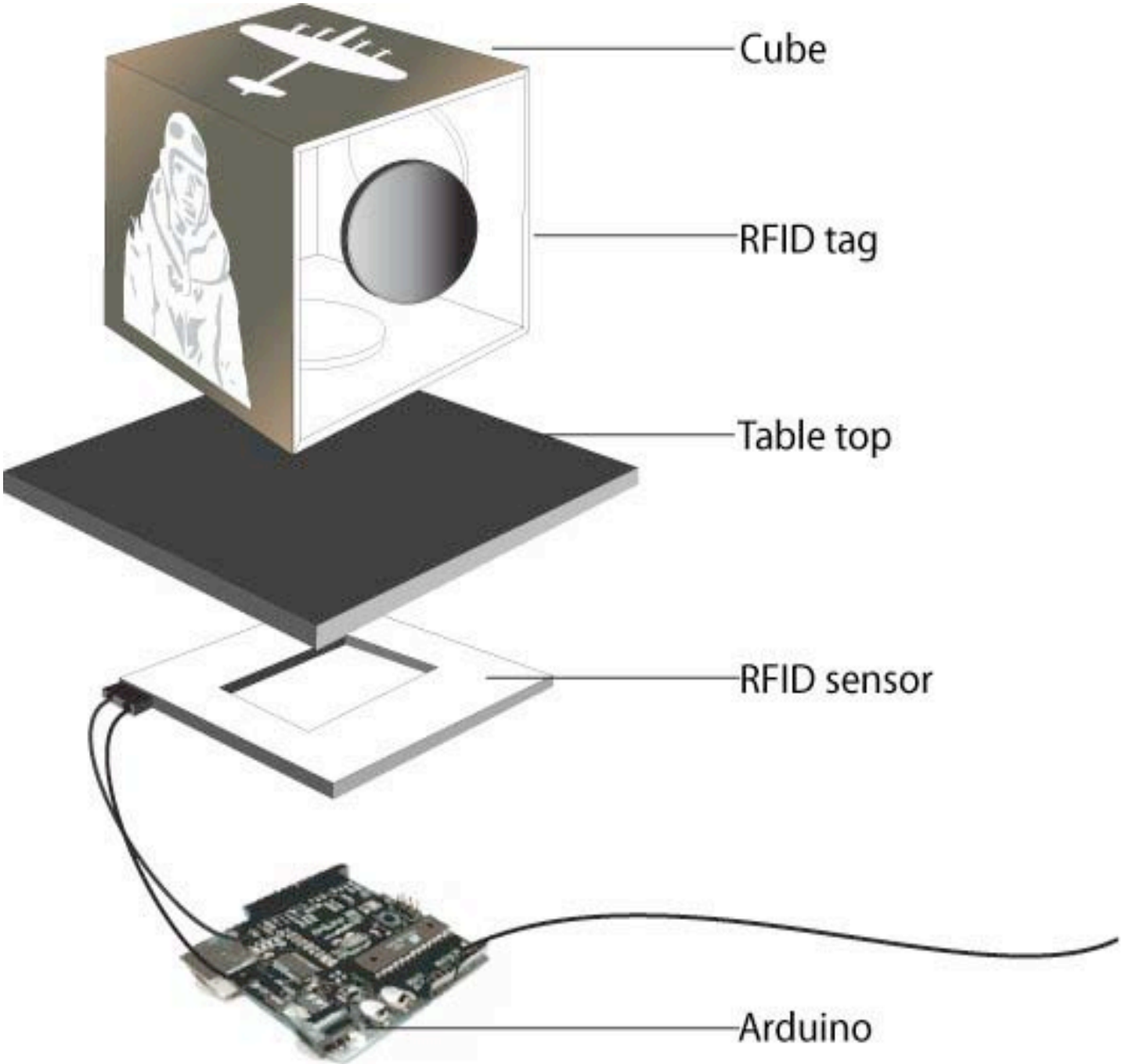

Fred Logan
Mid-Upper Gunner
Born 1925
Devon, UK



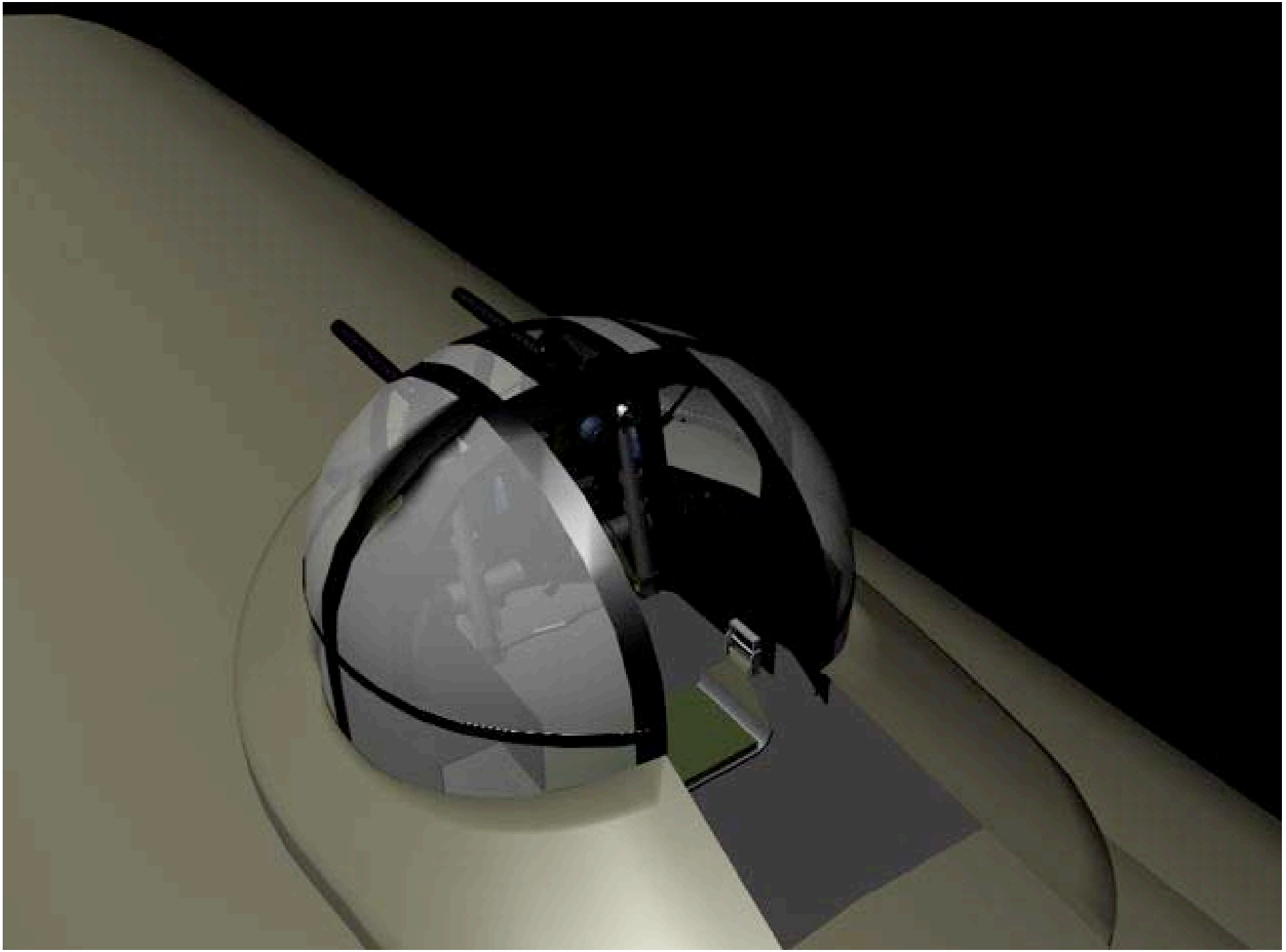
Touch and peripheral screens

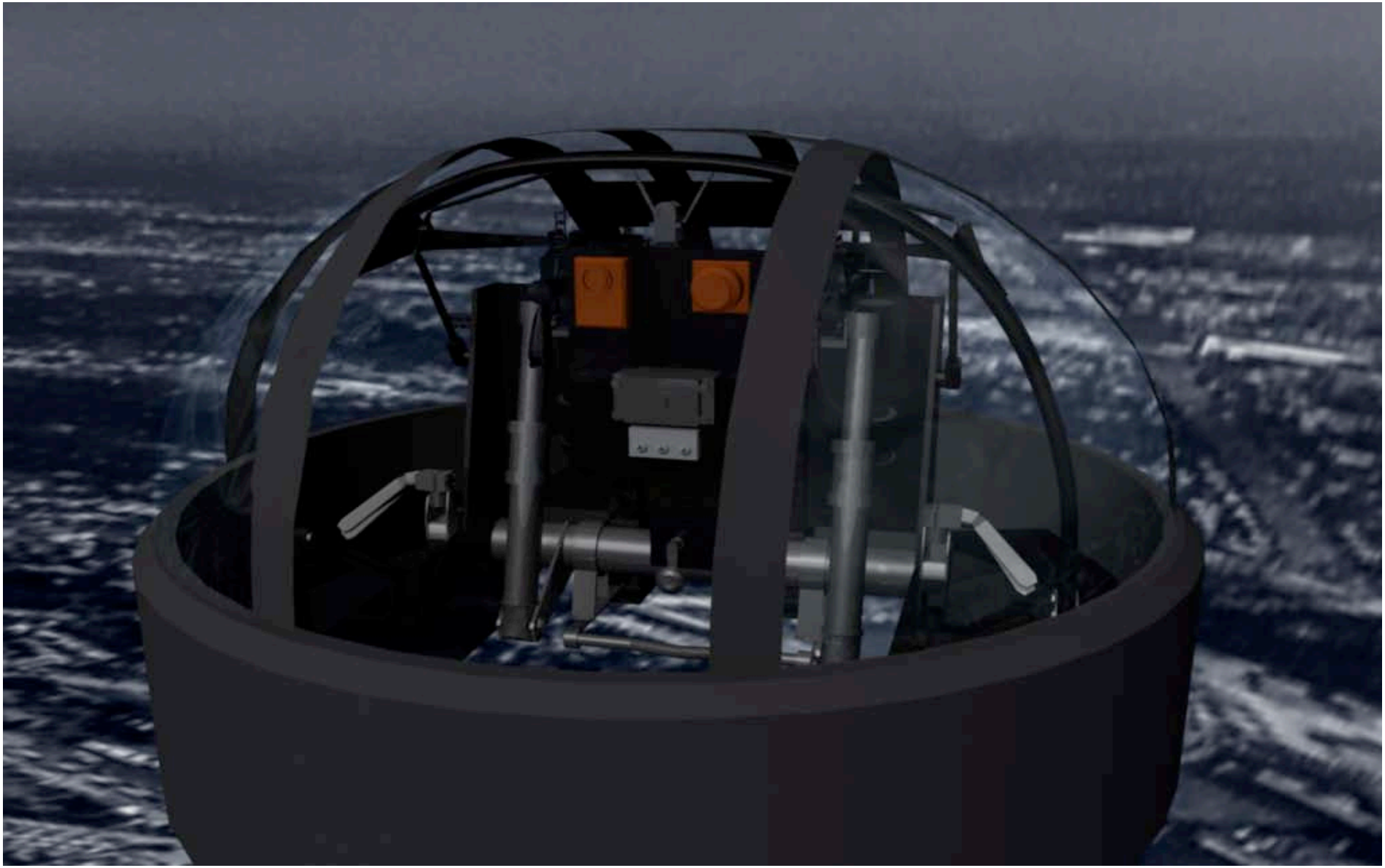


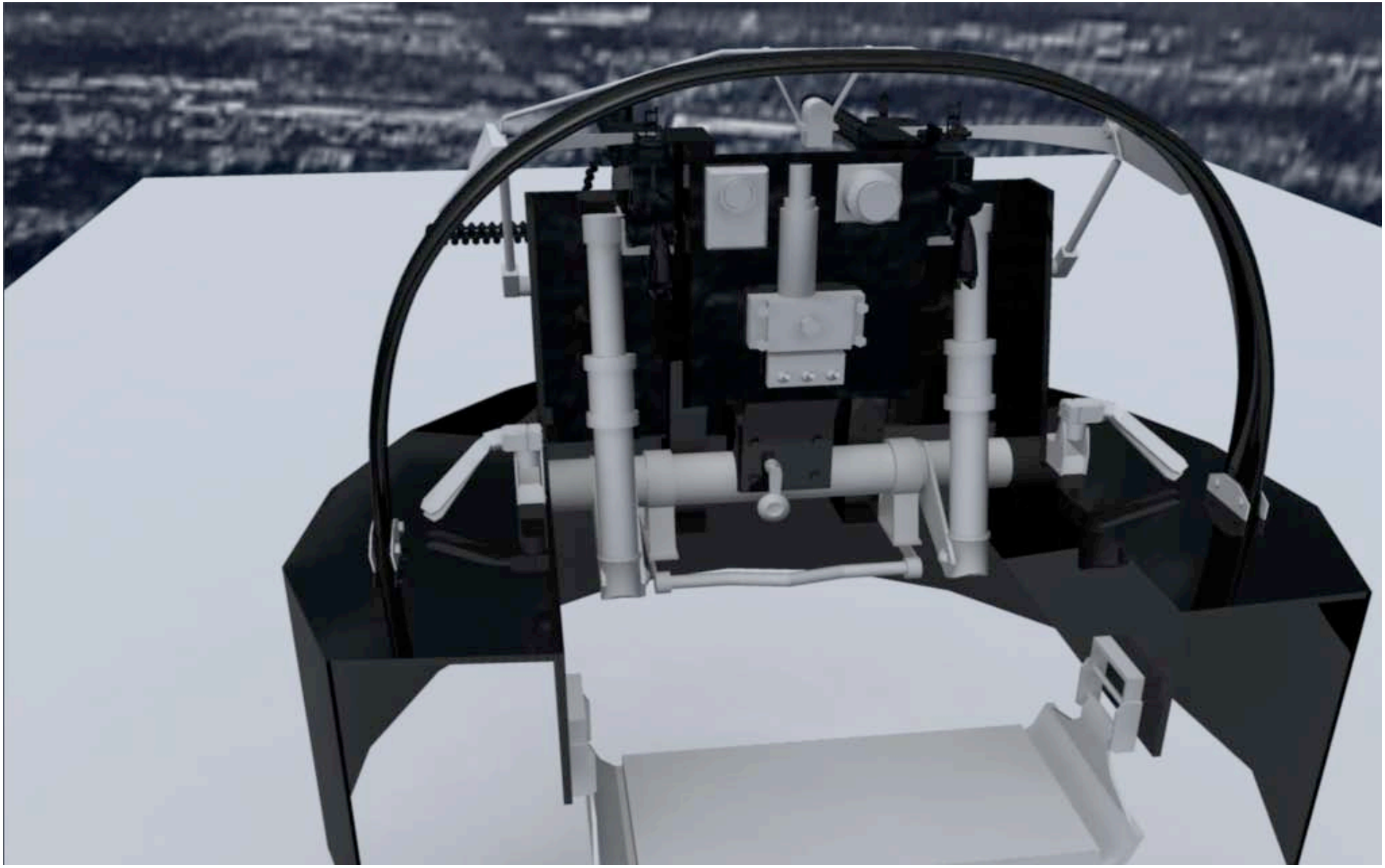
Cube icon design



Physical computing development



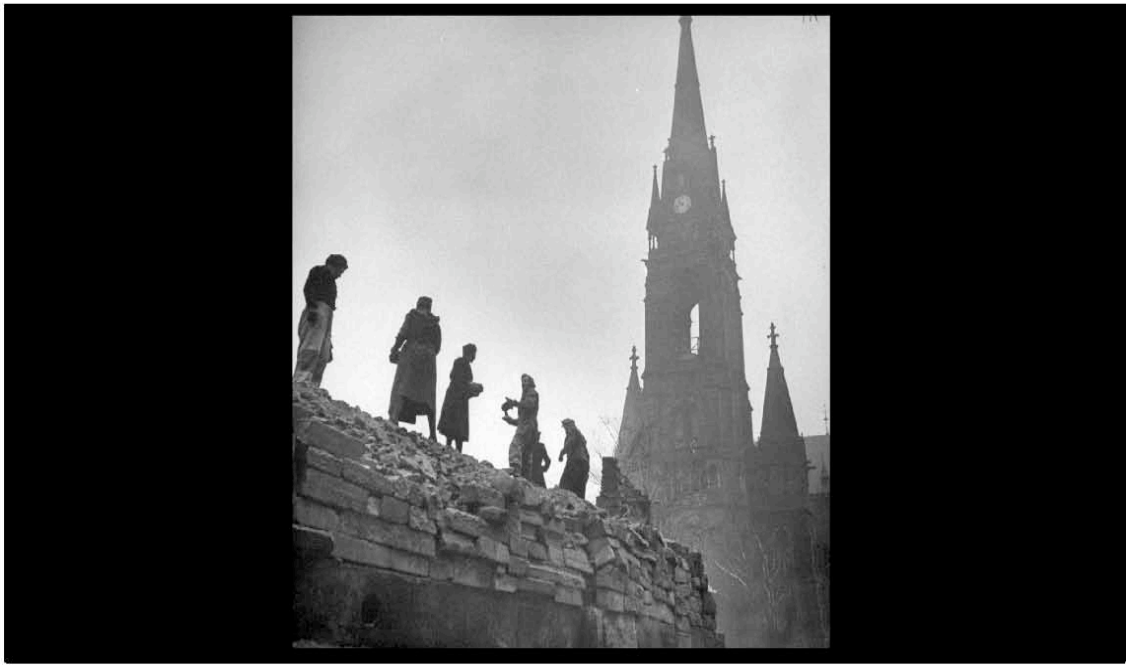




Final concept development


Lancaster crew spends VE Day in Swedish hotel


Lancaster crew spends VE Day in Swedish hotel




gettyimages®

Final concept development · Veteran Select

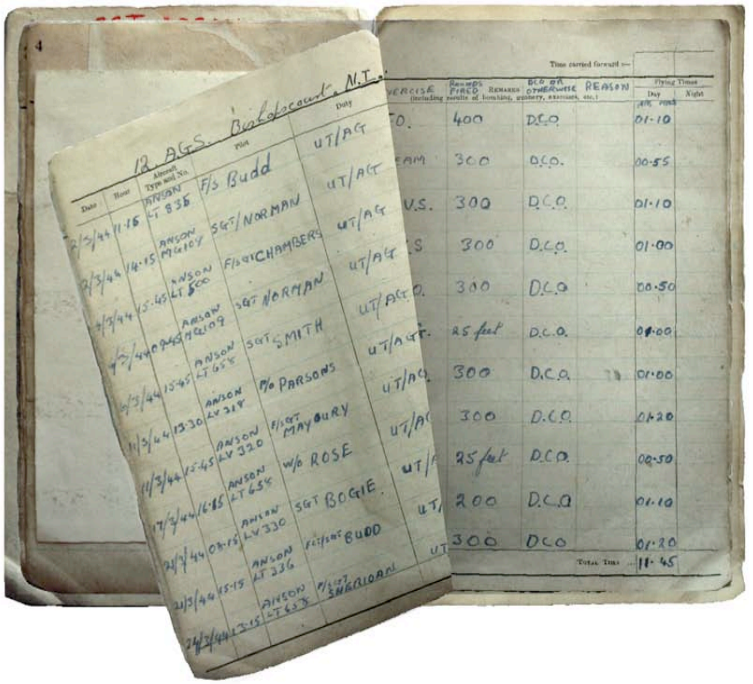
Final concept development · Before the war

Final concept development · Designation

Final concept development · On Operations

Final concept development · Squadron life

Final concept development · After the war



Interface components · the magnifying loupe, bake-lite switch and the book

Final product

Massey University
COLLEGE OF CREATIVE ARTS
Toi Rauwharangi

Declaration Confirming Content of Digital Version of Thesis

I confirm that the content of the digital version of this thesis

Title: Storytelling Memories: A Tangible Connection to Bomber Command Veterans

is the final amended version following the examination process and is identcal to this hardbound copy

Students Name: Tanya Marriott

Students Signature:

Date: 29th March 2009