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**JISC Final Report**

Freeze Frame: Historic Polar Images, 1845-1982

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The Freeze Frame project team of the Scott Polar Research Institute, University of Cambridge would like to thank the following individuals for their input into this project.

Credit goes to the academic members of our Steering Committee:

- Dr Robin Bassford, Head of Geography, Parmiter's School, Watford
- Michael Hambrey, Professor of Geography & Earth Sciences, University of Wales, Aberystwyth
- Martin Siegert, Professor of Geosciences, University of Edinburgh
- Dr Beau Riffenburgh, independent writer and polar historian
- Liam Nolan, Biology Lecturer, Cirencester College

We are also grateful to our Project consultants, without whom much of the technical development would not have been possible:

- Repository: Tom de Mulder (DSpace@Cambridge)
- Photographic and digital imaging: Don Manning (Manager, Cambridge University Library Imaging Services)
- Conservation: Nick Burnett, Museum Conservation Services Ltd (Imperial War Museum)
- Web design: Dan Sheppard and Mike Richardson (CARET); Martin Lucas-Smith (Computer Officer, CU Department of Geography)
- Metadata standards: Dan Sheppard (CARET)
- Portals: Angela Murphy (Consultant, Image Management and Rights Clearance)

All source materials form part of the Collection of the Scott Polar Research Institute, University of Cambridge. We gratefully acknowledge the assistance of Miss Lucy Martin, Picture Library Manager, for all her help and cooperation during the project.

The majority of the material was scanned and digitized by the technical members of the project team of Tim Banting, Jon Bird, Jenny Newbury and Sally Verrall, under the guidance of the Project Manager, Naomi Boneham and consultant Don Manning, Head of Imaging Services at Cambridge University Library.

Mr. Nicholas Burnett and his team from Museum Conservation Services Ltd at the Imperial War Museum, Duxford, scanned the Ponting negatives.

The images were catalogued by Mr Frank Bowles and Ms Willow Silvani and the resource packages written by Ms Mel Rouse.

Other individuals including Professor Julian Dowdeswell, Dr Huw Lewis-Jones, Dr Ian Willis and Miss Rebecca Stancombe have all made contributions.

Funding for this project was made available from the JISC and has been managed from JISC by Alastair Dunning, who has been a constant source of support and advice and on whose expertise in the area of sustainability we have relied. Other past and present members of the JISC have also given assistance, including Dicky Maidment-Otlet and Paola Marchionni.

## Executive Summary

The Freeze Frame project set out to conserve many of the historical photographic negative collections held in the Scott Polar Research Institute (SPRI), University of Cambridge. We were concerned to this material readily available to researchers and others without the need to travel to Cambridge in person.

Due to the fragile nature of much of the SPRI photographic collections, access was severely limited. The Institute's oldest photographs are daguerreotypes, a significant number are on glass plates, while other more modern negatives are, by their very nature, difficult to view. Research access to these collections has hitherto been negligible due to their format.

Through the Freeze Frame project we were able to address the issues of conservation, preservation and access. Conservation has been achieved through digitisation, providing high-resolution copies from the negatives, which can now be made freely available to user communities (UK Further and Higher Education in particular) through a dedicated web site, [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk).

The digitisation process has ensured that each image is preserved in its present condition for future generations to view. High-resolution tiff files are stored as digital preservation copies while smaller jpegs may be provided for research access.

Through the dedicated web site, related resource packages have been created to help users understand the polar world and to navigate their way through the photograph collections.

20,000 images from expeditions to the Arctic and Antarctic were chosen for the project. These include some of the earliest popular photography in the daguerreotypes taken of Sir John Franklin and his men prior to their voyage to the Canadian Arctic in search of the Northwest Passage in 1845. These are the last images ever captured of the men who all perished during the expedition. Famous images by professional photographer Herbert Ponting of Captain Scott's ill-fated South Pole expedition of 1910-12 form the most famous images to be included in the project, while the deposit of Sir Ranulph Fiennes' Transglobe expedition archive in the summer of 2007 - a late addition to the list of collections to be digitised - meant that the period covered could be extended to 1982. Sir Ranulph's collection also forms the link between the two Polar Regions as Transglobe, alone of all the collections, covers both the north and south poles.

A dedicated team was recruited to carry out the digitisation, metadata creation and to produce the educational resources to stand alongside the images. While the Franklin, Fiennes and Ponting images may be some of the most evocative, particular highlights have been the expeditions of the 1930s which mapped both the Arctic and Antarctic and whose photographs document both life in the polar regions and the development of science and technology in these hostile environments.

In July 2008 the Institute hosted an exhibition entitled *Face to Face: historic polar portraits*. This showcased 50 polar portraits, half from the modern photographic output of professional photographer Martin Hartley and half gleaned from the Scott Polar Research Institute's historical collections. Many of the historical images appear in the Freeze Frame collections and the remainder were discovered during the research for the project. This exhibition then went on tour to venues including Athy in Ireland and the Explorers Club in New York. It is presently on display at Discovery Point in Dundee, home of Captain Scott's first expedition ship.

A book to accompany the *Face to Face* exhibition was published by the Institute in 2008. This brings together over one hundred images from the collections. Alongside these stunning images are accounts of modern and historic polar photography and conversations with polar photographers. The book has been well received and featured in a number of national newspapers.

*Face to Face* provided a high profile accompaniment to the general outreach work carried out by the Freeze Frame team throughout the project. Education Resources Officer, Mel Rouse, carried out several engagements with students of all age groups, where she brought the Freeze Frame project and the JISC digitisation programme as a whole to the attention of our core audiences.

## Background

The Scott Polar Research Institute houses an internationally important collection of materials relating to British polar exploration. The photographic collection provides a visual record of the history of exploration and science in the Arctic and Antarctic which was hitherto little known and under utilized.

The printed photographic collection has been used by those researchers and authors who were aware of its existence. However, due to the nature of the negative collections, access to this part of the collection has been limited, and in some cases prohibited, yet it had the potential to widen the study of polar environments and the history of exploration and science in the polar regions.

The Institute was fortunate in having on its staff a number of people with technical expertise in managing historic photographic collections, as well as historians and scientists who were interested in promoting these collections to the wider research community.

Freeze Frame aimed to make a substantial subset of these resources available to all through a dedicated web site [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk). Alongside the fully catalogued images would sit a range of learning and teaching materials aimed at JISC's core audience, the higher and further education community, but packaged in such a way that they could be utilized by a variety of audiences, from schools to individuals interested in the polar regions.

The Institute is committed to widening access to its heritage collections through making catalogues and digitised content available to all without the need to travel to the Institute in Cambridge. As many of the Institute's collections are fragile, repeated handling is not possible. Digitisation has provided research access, which would otherwise be prohibited, to twenty separate expeditions for which the negatives were previously unavailable to scholarship.

Previous projects have seen the detailed cataloguing of over six hundred items from the Institute's outstanding collection of objects made by the indigenous peoples of northern Canada, Greenland and Alaska, as well as the collection of scrimshaw and associated sailors' art. Alongside the catalogue, each item was photographed providing a visual record of the collections. Work has also been completed on a similar project to produce a fully illustrated listing of the Institute's art collection, including the watercolours of Dr Edward Wilson from both of Captain Scott's Antarctic expeditions. These projects were viewed as a pilot programme, providing proof of concept for Freeze Frame, in the transfer of images and metadata from the Institute's collections management system to a customised web interface.

Freeze Frame provides access to a range of the photographic negatives that sit alongside these artefact and image collections, providing researchers with detailed information on the heritage collections held by the Institute.

Through Freeze Frame, the Institute can address the concern that many potential users, particularly from northern communities and from outside Higher Education, are unaware of our existence or unable to travel to consult the collections in person.

## **Aims and Objectives**

The main objective of the project was to contextualise the Institute's visual holdings to assist in teaching, research and understanding of the polar regions. Freeze Frame aimed to continue the Institute's commitment to making accessible, via remote use, collections not previously available to the public and to ensuring the preservation of that material for present and future use.

The project aimed to provide access to the entire photographic negative collection for twenty-five separate expeditions. Some 20,000 historic polar images would be digitised; and a range of web-based educative components made available to the public.

The web-based collection of digital images would be used to exemplify and promote understanding of polar history, science and exploration for use in a range of educational contexts.

The main aims set out in the project plan were:

- To develop a series of interpretative web pages, e-learning and online learning resources.
- To encouraging discovery and interpretation of resources by users with a range of educational requirements and skills.
- To bring to public attention, through the provision of digital surrogates, aspects of the SPRI's collections that are unknown or inaccessible.
- To preserve original, rare and fragile materials before reproduction is no longer feasible.
- To make use of appropriate technology to enable on-line close scrutiny of objects, which are normally too fragile to be handled.
- To make image resources and metadata freely available to as wide an audience as possible.
- To create a scalable resource, allowing the addition of digitised images and texts beyond the funding requested.
- To enable the long-term sustainability and preservation of the resources through innovative collaboration with partners within the University of Cambridge and other UK HEIs.

At the outset, the project team developed a number of objectives:

- New digitisation of the photographic negatives and significant related manuscripts and other materials held by the Institute.
- Aggregation of existing digital image collections.
- Creation of new standards-based metadata records.
- Enhancement and standardisation of existing metadata records.
- Creation of a supporting suite of learning and teaching materials.
- Delivery of the above via a sustainable Open Source system.
- Engagement with partners outside Cambridge, e.g. Higher Education Academy Subject Centres.
- Assessment of learning outcomes and integration of research and evaluation as part of the development and continuation of the project.

As the project advanced, it became apparent that the images would become the backbone of the digitisation and that extracts from the diaries would be used within the education and information packages. The digitisation schedule placed time constraints on the technical staff, reducing the period available for the scanning of manuscript material, as originally envisaged. In addition, it was decided by the steering group that the time which would have been required to produce transcripts would be better spent on resource development.

Although we had envisaged working with Higher Education Academy Subject Centres, in practice we found that there were many other sources of advice readily available to the team, both from within our academic steering committee and from other groups and individuals engaged in education and dissemination.

## **Methodology**

The project was conducted through a thoroughly planned workflow programme of image selection, conservation, digitisation and interpretation. The critical success factor was the provision of access to 20,000 polar images by the end of the project timetable, early in 2009. The collections were not easily quantifiable as not all were fully recorded. The archival collections are complex and often lacking full documentation. This made it essential that the selection process should be guided by those familiar with the range of materials available in the Institute (and elsewhere in electronic format) and with an understanding of their value to academic constituencies. The academic steering group was required to make final decisions on selection, using criteria provided by the Project Manager.

Our methodology for materials selection was designed and undertaken using the specialist subject knowledge of Institute staff and will be informed by published guidance, for example, the Joint RLG and NPO Preservation Conference Guidance for Selecting Materials for Digitisation (<http://www.rlg.org/preserv/joint/ayris.html>). The Project Manager established conventions for evaluating the quality of existing digital image collections and metadata. In addition, consultancy was available for digital imaging, conservation, longer-term preservation, content packages and web technologies. All project staff were trained to be aware of the conservation needs of materials and their suitability for digitisation.

The first phase of the project was one of research and discussion amongst the Institute's specialist staff, image consultants and technical consultants. Research Curator, Dr Huw Lewis Jones, worked with the Deputy Project Director, Mrs Heather Lane, Project Manager, Ms Naomi Boneham and Picture Library Manager, Ms Lucy Martin to gain a clear understanding of the photographic negative collections and the work required to provide metadata for each image. From this work, a detailed list of collections was drawn up, covering the various Arctic and Antarctic expeditions. This list was presented to the steering committee and formed the basis for the digitisation and documentation timetables that were to follow.

Discussions between the Deputy Project Director, Project Manager and Picture Library Manager with Mr Don Manning, Head of the Imaging Service at Cambridge University Library, Mr Tom de Mulder of [Dspace@Cambridge](mailto:Dspace@Cambridge) and Mr Mike Richardson and Mr Dan Sheppard of CARET provided information on requirements for the digitisation, preservation of digital material and creation of the web interface which would support Freeze Frame.

Outline policies and related documentation were created during this period and continued to be reviewed and amended throughout the project's lifetime.

In September 2008, the digital imaging assistant and documentation assistant joined the Freeze Frame core team and began work in earnest on the image capture and related metadata creation. In the first instance it had been envisaged that the post processing of the images would be carried out away from the Institute. However, it soon became clear that this process was better handled within the Institute and staff were employed accordingly. This allowed for the whole process from image capture through to metadata documentation to be carried out in house, with a team working closely together and thus minimising mistakes and providing on the spot knowledge of each component part of the project.

**Image capture:** Each individual negative was scanned on the Kodak IQSMART ES Supreme II scanner, using an XY stitch scanning method with a maximum optical resolution of 5,600 x 14,000 dpi. This produced a tif file of around 400dpi which became the basis for all subsequent work. When digitising a negative the requirement is to provide a Raw and Master image.

**RAW:** A raw image is essentially an untouched version scanned in its entirety to include borders, slide numbers and film marks. This is achieved by opening the file produced by the scanner, adjust the orientation of the image to ensure it is the correct way up and then crop to the edges of the image leaving all available information in the image, e.g. boarder, slide numbers and film marks. The resulting image is then resized and saved to the agreed project specification as determined in the technical policy.

**MASTER:** When creating a master the image is cropped thus excluding any borders or extra information. The brightness, contrast and tonal range are then adjusted using levels or curves. Using Photoshop the most obvious imperfections, for example, scratches, handling marks, age spots and chemical degradation are picked out and corrected. This is done using a mixture of the spot healing brush, patch and clone stamp tools all of which allow for areas to be cloned from the image. These cloned areas are then used to overlay the damage and are blended with the areas around the damage or marks. The different tools allow this to be accomplished in different ways, for example the spot healing brush is good for removing small spots or blemishes where as the patch tool can be used to clone and recover larger areas such as damaged sky.



An example of a raw image on the left and a master on the right



**An example of a raw un-restored image on the left and a fully restored master on the right**

More complex restorations can include images with larger amounts of damage, such as the example image above, where the emulsion has split and the image appears to be in pieces. To repair this we first carry out the basic post processing as above. After this a decision has to be made as to whether the image can be restored by using careful application of cloning and blending or if we need to resort to cutting the individual pieces out from the image and reassembling them so they meet as closely as possible. After this the joins can then be blended so that the joins are hidden.

**Web site development:**

The Freeze Frame project is delivered through a bespoke web site [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk). Development of the web site was carried out within Cambridge University by CARET with close liaison with the Freeze Frame project team.

The Freeze Frame website was delivered through Wordpress. This allowed the easy addition of modern browsing functionality such as social book marking, tag clouds, and so on, and a fully customizable design and style. The use of a popular open-source software product allowed the use of third-party development at minimal cost.

However, Wordpress needed to be customised extensively to meet the demands of a picture library project. The plugin architecture was sufficiently flexible to meet these demands, and meant that technology was not allowed to stand in the way of user interface and user experience issues. Many of the plugins developed could be reused in similar projects, and are currently being prepared for such use.

Data is stored in DSpace@Cambridge, and accessed via a DSpace SOAP interface being trialled at the university. Metadata was stored alongside images in an XML based format, parsed, and used to generate pages. PHP Lucene was used for advanced search, and a batch job synchronizes DSpace@Cambridge with the website.

## **User Engagement**

Through the steering committee, the Freeze Frame project team were able to discuss the development of the project and how it would meet the needs of the target audience. Steering group member Michael Hambrey, Professor of Geography & Earth Sciences, University of Wales, Aberystwyth, volunteered his first year polar studies class to test the website during the autumn term 2008. This group was granted early access to the development website where they were asked to provide detailed comment on its usability as well as whether it met their expectations. Their feedback on the range of resources that they considered would be of use to an undergraduate audience was used to determine the style and content of the education packages. Education Resources Officer, Mel Rouse, also worked closely with the Institute's own students and teaching staff, particularly in the field of indigenous populations and environmental change, developing resources in response to criticism of early drafts.

All feedback on content and website design from students and researchers was reported to the project team, who incorporated suggested improvements into the development process. The web site provides a contact page where users can comment and this information is used to continue development strategy.

Throughout the project, the Freeze Frame team undertook outreach work with a variety of audiences from Key Stage Two through to adult education groups to engage them with the project. Deputy Project Director, Mrs Heather Lane, Project Manager Ms Naomi Boneham, Research Curator Dr Huw Lewis Jones and Education Officer, Ms Mel Rouse have delivered lectures and conference papers, published a book and a number of articles and hosted events throughout the project to promote user awareness. Feedback has been reported to the project team at every stage.

## **Implementation**

Freeze Frame developed through four key stages; the first of these was the theoretical and research phase. During the first months of the project, work was carried out to gain a clear understanding of the collections, both their physical conditions, and the background to the expeditions they covered. This led to discussions on which collections should be included and a timetable of the order in which they should be digitised.

The research phase also covered the initial discussions regarding the digital image capture, metadata standards and the outline aims for how the material should be presented via web delivery.

Technical developments were undertaken in conjunction with the research. Discussions with both the teams from CARET and DSpace@Cambridge were essential to the design of the project as a whole. A robust methodology was vital to ensure that the planned implementation proceeded on schedule. Proof of concept was provided at an early stage when CARET ascertained that metadata and images could be extracted from DSpace@Cambridge using the customised SOAP interface developed for the project.

With the arrival of the digitisation and documentation assistants, work moved on to the operational stage where the digitisation and metadata documentation for the 20,000 images took place. This work continued to the end of the project in March 2009.

The fourth stage began in earnest in March 2008. This saw the planning and delivery of the resource packages, to sit alongside the images and documentation metadata and provide a background to the collections and an avenue for further research.

## Outputs and Results

In February 2009, the project reached its target of 20,000 scanned images covering both famous and little known polar expeditions. On 4 March 2009, the project web site [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk) went live, providing access to the first phase of the digital images and related resources.

The website delivers content by combining database driven results from the DSpace@Cambridge repository with textual resources developed using Wordpress. The education packages are illustrated with relevant images taken from and linked back to the parent collections. Additional features include image of the day and this month in polar history to keep the front page refreshed. News feeds are available and social networking tools are embedded on every page. Users are encouraged to save their favourite images by creating their own personal galleries, which can be updated at any time. Well over one hundred had been created by the end of March 2009. The project team has access to these galleries, which will inform future decisions on the use of popular images within the site.

Resources and images can be saved in pdf format by the end user and the content repurposed under the terms of the education user licence.

One additional feature still in development is the ability to link from any individual image directly to the Institute's commercial picture library. This will be implemented at the completion of negotiations to adopt a fully automated method of producing prints, mounted and framed if required, off site.

Over the last weeks of the project additional images and resources were made available through the web site. Related resources included biographies of expedition leaders, outlines of the expeditions covered and a history of photography in the Polar Regions. Alongside these information resources, packages were designed to examine survival in extreme environments, environmental change and the indigenous peoples of the north. Further resources on science in the polar regions are planned.

## Outcomes

Through Freeze Frame the Institute has created a web-based resource providing easy access to digitized images of historic polar photographs. Standing alongside these images are resources created from the Institute's wider holdings.

The digitised visual and related text resources and metadata made accessible via web delivery provide access to a wider audience than ever before, for use at all educational levels. Through [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk) the Institute is providing access which is no longer limited to those able to make a personal visit to the Institute in Cambridge. By including a mixture of more famous polar expeditions alongside those less well known, it enables people to research across the range of polar scientific exploration from the mid nineteenth century through to the late twentieth century.

For the Institute, Freeze Frame has provided the means of preserving and conserving the fragile negative collections.

### *Face to Face:*

Written to accompany a touring exhibition, this unique book is the first to examine the history and role of polar exploration photography and showcases the very first polar photographs of 1845 through to images of the present day. Focusing on portraiture, *Face to Face* draws attention to the collections of historical images held by the Scott Polar Research Institute, which have been captured and preserved in digital form by the Freeze Frame project. Almost all the historic imagery - daguerreotypes, magic lantern slides, glass plate negatives and images from private albums - have never been before the public eye. The book also looks at the contemporary polar world with a range of new commissions by the leading expedition photographer, Martin Hartley.

The accompanying exhibition was launched at SPRI on 25 July 2008. It has been hosted by the following venues

- 25 July to 13 September 2008 SPRI
- 24 October to 21 November 2008 Athy, Ireland
- 12 January to 23 January 2009 Explorers Club, New York  
[http://www.explorers.org/calendar/view\\_entry.php?id=10749&date=20090115](http://www.explorers.org/calendar/view_entry.php?id=10749&date=20090115)
- 7 March to 24 May 2009 Discovery Point, Dundee  
<http://www.rrsdiscovery.com/index.php?pageID=182>

It will move to the National Geographic Store in London's Regent Street later in 2009.

#### *Metrics for web site post-launch:*

The Freeze Frame web site launched with an initial set of seventeen collections from twelve expeditions and related education packages on 4 March 2009. The site received 39,159 visits with 554,086 page views and 2.3 million images served in various sizes and resolutions (Google analytics)

Publicity surrounding the project also boosted the number of page requests for the Institute's web site. For the three days 19-21 February 2009, which followed a press event held to celebrate the capture of the 20,000<sup>th</sup> image, hits rose to 35,572. The daily average for the Institute is 6,000.

For the week 4 March, when the Freeze Frame web site was launched in a blaze of publicity, the Institute recorded 105,657 page requests.

#### *The SPRI Museum:*

The research carried out during the project has provided an additional range of easily accessible imagery which will be incorporated into the permanent displays when the new polar museum opens in June 2010. The freeze Frame resources also provide a wealth of information for use by the education officer with school and other community groups as part of the Institute's outreach provision.

#### *The Werner Herzog film:*

The Institute has been in discussions regarding cross-promotion of Freeze Frame with the production company for Werner Herzog's documentary *Encounters at the End of the World*, which was filmed at the McMurdo Station, a 1,000-person research settlement in Antarctica. We will be providing a member of staff to discuss science and imagery at a Question & Answer session the London launch of the documentary in April 2009.

#### *Digital portals:*

The rich collections of images produced through Freeze Frame have led JISC to suggest that SPRI looks into the work of embedding some of the content into suitable national and international portals.

One of the projected outcomes of the project was to investigate ways of promoting online resources to encourage use and reuse of the images by the UK Further and Higher Education community, teachers, students, lifelong learners, the media and for commercial use. Through the web portals project we will develop this work further.

We envisage that this should increase the number of visitors exploiting the digitised content and a study is under way to devise methods to measure the effectiveness of each portal in doing so.

The Freeze Frame portals project manager is presently in discussion with representatives from the following portals, with a view to embedding a selection of its images amongst them.

- Vision and Sound Materials - <http://vsm.edina.ac.uk/vsm/vsm.asp>
- Europeana - <http://europeana.eu/>
- Flickr – <http://flickr.org>
- OAster – <http://www.oaister.org/>
- Centuryshare –  
[http://www.jisc.ac.uk/fundingopportunities/funding\\_calls/2008/06/bbcukcenturysharepilot.aspx](http://www.jisc.ac.uk/fundingopportunities/funding_calls/2008/06/bbcukcenturysharepilot.aspx).

Work on this will continue after Freeze Frame comes to an end on 31 March 2009. A report into the portals project will be submitted to JISC at the end of August 2009.

## **Conclusions**

Freeze Frame has shown that, within the context of a small academic institution (fewer than 25 permanent staff), a well-trained, dedicated team is capable of delivering a carefully planned set of project outputs on time and in budget. Much of the success can be attributed to the ability of the staff to work in close co-operation and to the detailed work plans devised by the project's management team. However, the enthusiasm of team members to develop new skills and to be involved in improving and promoting the project also played an important part. The continuous review and amendment of the project plan to take in to consideration unforeseen circumstances allowed the project to progress to a successful conclusion.

## **Implications**

We hope that the project may provide a model for other institutions of a similar size wishing to undertake digitisation of underused resources. It is already evident from feedback that there is an enormous appetite for visual resources of this nature, from a far wider user community than we had originally envisaged. Other projects may wish to consider the level at which they provide associated resources, to make the collections readily accessible beyond the FHE audience. The Institute is fortunate in being able to reuse much of what has been developed for Freeze Frame for a more general audience within its Polar Museum.

If further funding were forthcoming, we would wish to increase the corpus of images available, sourcing material from our print collections and increasing the quantity of archival documents available in digital form. We would build on the existing education packages by providing further resources specifically on scientific topics. We are keen to work with researchers in a range of disciplines to enhance the intellectual content of the web site and to publish research studies on all aspects of the image archive.

Other projects should consider carefully the resource implications of a project of this size on the organisation as a whole. On reflection, it would have been advisable to have applied for substitutional funding to ensure that the project manager's role in running a full archive service could be covered by an additional member of staff. This would have increased the time available for dealing with some of the peripheral issues which arose, such as marketing, press and publicity and the aftermath of the launch.

## **Recommendations (optional)**

From our work on the education packages we gained feedback from people beyond our initial user group. The Institute has its own Museum and a dedicated schools liaison officer, who works primarily with school groups visiting the Institute and provides outreach sessions in the classroom. The Freeze Frame education officer worked closely with the schools liaison officer to develop education resources around themes within the National Curriculum, but aimed at different age groups. Feedback from teachers has suggested that they prefer non-specific resources, which they could tailor to individual classes, rather than detailed lesson plans which did not always fit a particular class or style of learning. The resources have proved popular for cross-disciplinary work.

## References

Freeze Frame: Historic Polar Images 1845-1982  
[www.freezeframe.ac.uk](http://www.freezeframe.ac.uk)

NPO Preservation Conference Guidance for Selecting Materials for Digitisation  
<http://www.rlg.org/preserv/joint/ayris.html>

JISC Digital Media (formerly TASI)  
<http://www.jiscdigitalmedia.ac.uk/>

SPECTRUM standard  
<http://www.mda.org.uk/spectrum.htm>

ISAD(G)  
<http://www.ica.org/en/node/30000>

## Appendixes

Acronyms used:

Acronym		Note
CARET	Centre for Applied Research in Educational Technologies	
DSpace		Institutional repository of the University of Cambridge.
EAD	Encoded Archival Description	
ISAD(G)	General International Standard Archival Description, Second edition	
MODES		collections management system
SOAP	Simple Object Access Protocol	Simple Object Access Protocol for use in web delivery
SPECTRUM	Standard ProcEdures for CollecTions Recording Used in Museums	
SPRI	Scott Polar Research Institute	
TASI	JISC Advisory service	