An Application for Associateship of the Royal Photographic Society in Research, Education and Application of Photography

Developing Common Procedures for Managing Projected Digital Images in Photographic Events

[Originally: Developing Standards for Projected Digital Images in Photographic Events]

by
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Stage Three - Supplementary Report February 2008

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<u>Introduction</u>

The author submitted an application in December 2007, entitled "Developing Standards for Projected Digital Images in Photographic Events". The Panel has commented on the application, and has requested further information, which is now contained in this document of February 2008.

In this document, the application of December 2007 is cited as the 'Original', and this document of February 2008 is the 'Supplement'.

Items included for reference with this Introduction, on the following two pages, are:

- A facsimile of the Panel's comments.
- A reprint of the Original, Annex D, page 5, which is the core outcome of the project. Otherwise, it is necessary for the reader of this Supplement to have access to the Original report to review citations.

The Panel has made two conditions, and the necessary responses are provided in two matching sections which follow this introduction. The comment by the Panel in their final paragraph is a compliment, but is not considered further.

[Facsimile of Panel's Comments.]





Dear Mark Buckley-Sharp

The panel recognises that a great deal of important work has been done by Dr Buckley-Sharp in an area where genuine understanding of the issue and implications of variations in the conditions under which digital projection is used is sadly limited, but expresses certain reservations about how this material has been presented to the panel. Most of our reservations emanate from the fact that material compiled for one purpose has been submitted for another. This makes the application difficult to read, and makes the outcomes difficult to discern amongst the repetition of procedural information from committee minutes which were a necessary part of his initial reporting.

The panel is also concerned that the submission claims to be about the establishment of standards, when in fact it is concerned with limited recommendations. In scientific and technical circles, the use of the term 'standards' implies carefully benchmarked and invariable requirements, when what this application is primarily concerned with is a set of procedural guidelines. The panel is also concerned that, despite the project title, Dr Buckley-Sharp recognises in his final paragraphs - by suggesting that a further committee be formed to progress the establishment of 'standards' - that the initial aim of the project has not been met. By changing 'standards' to 'guidelines' in his title, this contradiction would be eliminated.

The decision of the panel is, therefore, that Dr Buckley-Sharp's application be REFERRED until the following conditions can be met.

- That the submission be re-titled to omit the term 'standards', a new title being selected which more accurately defines what the scope and purpose of the project actually was.
- That Dr Buckley-Sharp prepares a 2500 word (approx) paper which summarises his achievements, draws clear conclusions from what he has undertaken, and proposes likely next stages towards the evolution of genuine standards, and their possible acceptance and implementation.

The panel is also of the opinion that should Dr Buckley-Sharp ultimately take the project forward to the development of more fully articulated 'standards', such a project would constitute a very worthwhile Fellowship.

Regards

Andy Moore

Deputy Distinctions Manager

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Projected Digital Images Standards for Events

[Refer to Title - Version for the status of these Standards]
[Refer to Introduction and Event Scope for the applicability of the these Standards]

For the Event Organiser:

- **A.01 Equipment.** The organiser <u>must</u> install and commission a digital projection system such that judges, and preferably any other audience, observe a fair and common representation of the authors' submitted images.
- **A.02 Data Governance.** The organiser <u>must</u> establish data governance policies and procedures for the event.

For Announcement to Authors:

- **B.01** Colour Model and Space. The organiser <u>must</u> state the colour model(s) and colour space(s) permitted for image data files.
- **B.02** Image Size: The organiser <u>must</u> state the maximum pixel dimensions (width and height) permitted for image data files.
- **B.03** File Name. The organiser <u>must</u> state the format(s) of file name permitted for image data files.
- **B.04** File Type. The organiser <u>must</u> state the file type(s) permitted for image data files.
- **B.05** File Size. The organiser <u>must</u> state any maximum permitted file size for submission of image data files. (Note limited scope of standard.)
- **B.06 Media.** The organiser <u>must</u> state the media permitted for submission of image data files; the organisation of files within the media; and how the media will be handled.
- **B.07 Metadata.** The organiser <u>must</u> state what information is required to be submitted with image data files, and in what format(s).
- **B.08 Publication.** The organiser <u>must</u> state if images from the event are to be reproduced in a catalogue, on CD/DVD, or on a website; and under what conditions.
- **B.09** Compliance. The organiser <u>must</u> state if entries will be rejected where authors fail to comply with particular requirements.
- **B.10** Advice. The organiser <u>may</u> issue advice to authors about how to comply with any specific requirements for the event.

First Condition

Title

The Panel requested that the title omits the term 'Standards', and this application has been retitled (see page 1) as:

Developing Common Procedures for Managing Projected Digital Images in Photographic Events

The revised title should be used in any reference to the application.

Nevertheless, it is not possible to remove the term 'Standards' from Original, Annex D (Projected Digital Images - Standards for Events), or as shown copied above at page 4, as this is a controlled document ratified by the Photographic Alliance.

Standards versus Procedures

The Panel has referred with concern to the Final Report of April 2007 (Original, Annex B) where the relevant wording is here in Box 1.

Box 1:

The Executive is recommended to:

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- Create a new Committee to oversee the definition of exact standards for PAGB projected digital events, leading to a timetable for implementation.

It is unfortunate that the Final Report was, of necessity, written in some haste in February 2007, and the Panel's reading of it now is not the original intention. Original, Annex D, page 3 is relevant, and is here in Box 2.

Box 2:

The Standards are brief statements, each showing what is to be achieved: there will be many ways to meet and comply with each standard. The standards are pragmatic; were abstracted from current practice; and are believed to be a complete and adequate set. By design, the standards remind organisers of all the requirements, and allow organisers to self-assess their compliance.

The 'Standards' were considered to be final at the time, and nothing since has altered that view. The Guidance associated with the 'Standards' showed many ways of complying with each 'Standard', and it was only the Guidance which was considered changeable in the light of experience and technical advance.

Any organiser setting up a new projected digital event has to consider how to comply with each 'Standard' by choosing from amongst many available options. As noted (see Box 2), the 'Standards' are both a reminder, and a means of self-assessment. The 'Standards' would also be a means of auditing compliance and be usable in accreditation, for example by the patronage systems offered by several photographic organisations.

The phrase '...exact standards...' (see Box 1) should more accurately have been written as '...an exact set of rules...'.

Indeed, the Alliance Executive adopted the closing recommendations of its Technical Standards Committee, and has produced a compliant set of rules for its first such event, the PAGB Great British Club Cup being held in February 2008. As might be expected when choices are to be made, there was much discussion over which rules should be adopted and published. For example, in relation to 'standard' B.02 (see page 4 above), it is agreed that most PAGB Clubs are equipped to show XGA images (1024x768 pixels), with only a minority equipped at SXGA+ (1400x1050 pixels), while technology change is heading for widescreen high definition television (1960x1080 pixels). The choice of SXGA+ therefore caused some controversy. But, nothing arose in the discussions to suggest that the 'standards' ratified by the Alliance might be either inapplicable or erroneous.

Second Condition

The Panel has asked for more information about the personal achievements of the author, and the outcome of the project. It is accepted that the inclusion of substantial documentation in the form of project reports did limit the capacity to comment and discuss the content without the Original becoming excessively long.

Initiation and Management

By 2004, the Photographic Alliance (PAGB) Secretary was receiving requests for advice on projected digital equipment. Affiliated Clubs clearly felt that PAGB was a national body and should be providing such an advisory service. This culminated in a formal request made at the PAGB AGM in April 2005. Conversely, the President at the time felt that the PAGB was not constituted to act as an arbiter of Club affairs, and anyway had no competence in projected digital images. The author was a PAGB Executive member, and a party to the discussions. The author also had experience in information technology, both software and hardware, evidenced by fellowship of the British Computer Society (BCS) and by being a Chartered Engineer through BCS nomination. The author had already completed one project for the PAGB, demonstrating digital storage for a possible permanent collection. The author therefore approached the PAGB President with a personal offer to break the impasse by seeing what information about projection equipment could be collected and perhaps turned into useful advice. This offer was accepted; the PAGB Technical Standards Committee was formed, with the author as chairman; and this was the published response to the original enquiries.

Having been given authority to act, the author considered both a realistic scope and the necessary means to run the project. The author had been involved in managing many projects, and always adopted, even if informally, the PRINCE management structures. While projects can succeed otherwise, a structured management is desirable to ensure tracking, reporting and, especially, the involvement of stakeholders. In this project, the team structure was:

- The author as the project manager;
- The PAGB Executive as the sponsor;
- The panel of correspondents, recruited by the author from those found to have experience and/or expressing an interest, in the roles of technical advisors and user advisors.

All the project documentation was held on a website created for the purpose, and open to the project members.

The author was solely responsibility for project initiation, and project management, as described above. However, the Society does not grant its distinctions for project management, which in this case was merely the means to the end. It is necessary to consider achievements which might be considered of value to the photographic community at large.

Collating Technical Information

The requests to the PAGB had been for advice on equipment, especially the purchase of digital projectors. But it was soon apparent that this was only a surface rationalisation of a much more profound lack of general knowledge about the digital presentation of images. If the PAGB was to prepare and issue advice, then it would have to cover a much wider area of technical information. Equally, to have any sort of authority, and to be proof against reasonable queries, any advice would have to be very soundly based.

From these requirements grew the need to search widely for published information about projected digital images. The Internet provided the obvious sources of reported national and international experience concerning photographic events, and of specifications of relevant equipment for projected digital images. These searches were not a passive process, as each source had to be assessed for relevance, and for consistency by comparison with other sources. The author's experience in information and data processing technology, as well as in organising photographic events¹, was essential in the reviewing process.

The outcome of collating all the recovered information was the Third Interim Report of the Technical Standards Committee, which was included at Original, Annex B. That Annex includes a summary of the chapters, where the author's contributions can be expanded on here.

Chapter 4 (Principle of Projection - Slides and Digital) compared and contrasted the use of slides and slide projectors versus the use of digital images and digital projectors. This is the author's work and is not taken from any external source. It remains highly relevant, and could usefully be read by anyone starting out in projected digital images. Even experienced users may be confused about the likely quality of digital projection, and may lack rudimentary knowledge of how a projection system must be set up so that all the adjustments are secured. Complaints that different digital projectors may give different results ignore the point that differences between slide projectors have been tolerated for years. It is not necessary to go further than the Society's website Forum to find misinformation about colour profiling as applied to projection systems.

Chapter 5 (Digital Projectors - Types) pointed out that projector manufacturers have little or no interest in the accuracy of colour, a topic which obsesses photographers. It became obvious that requests for advice on which projector to buy could never be given a precise answer: any advice would always be out of date because projector models have such short marketing lives. Even at the type level, there will probably be no resolution of the arguments between LCD and DLP projectors: their adherents are too well entrenched. In the end, and this is not shown in the Annex, the advice came down to some very simple principles.

- The Canon XEED series is the 'Rolls-Royce' choice, at a 'Rolls-Royce' price.
- Any alternative is a commodity choice, and no more than £1000 should be paid. Since then the advice is slightly modified.
 - The JVC I-LA series may equal the Canon XEED series.
 - No commodity projector should be purchased for more than £600.

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¹ The author has been involved in Club and regional competitions and exhibitions, and was also the organiser of the Photographic Alliance Inter-Federation Print Exhibition in 2004.

Chapter 6 (Digital Projectors - Common Features) elaborated on the specifications of projectors, and how these might lead to suitable choices. Of these, Luminance (Original, Annex B, Section 6.5) may be commented on further.

Research Project on Lumen Specification

In order to understand how many Lumens might be required in a purchasing specification, the author instigated a research project, which was publicised to allow data collection throughout the PAGB Club fraternity. At first the aim was to correlate the Lumen rating of a projector with an objective measurement of screen brightness and a subjective comment on acceptability. A procedure for measuring screen brightness was defined: while displaying a plain white image, a reflective reading using an exposure meter set at ISO100 is expressed in EV¹. During the project there was much discussion trying to relate the units of illumination ie, Lumen used for projectors, lux used for environmental lighting, and candela/sq.m. used for monitor displays.

The amount of data collected was not large, but enough to show that the best way to purchase the correct brightness in a digital projector is to ignore the Lumen specification, and instead set up the projector and measure the screen brightness. An EV (at ISO 100) in the range 7-9 is generally acceptable. Allowance has to be made if the projector may be used with significantly varying audience sizes requiring different display sizes. These conclusions were published with the guidance for 'standard' A.01 (see Original, Annex D, page 6).

Chapters 7 and 8 (Computers to Drive Projectors, and Computer/Projector Setup) aimed to dispel some myths eg, that a laptop computer is required, and also to comment on the need for setup of the combination of computer and projector. It is still common for users to talk of colour profiling a projector as if either that can happen in isolation, or it is a process which modifies settings in the projector itself.

Chapter 9 (Image Display & Event Workflow) was the result of much software testing, as well as obtaining information about specialised competition software, not all of which was tested by the author. It is now known that Chapter 9 has some errors. For example, Slide Show in MS-Explorer is colour aware, as is the whole of the MS-Office product including PowerPoint. Like projector manufacturers, Microsoft has been coy about the colour policies and capabilities in its products, probably since accurate colour reproduction is a minority interest. In general, Microsoft uses colour management in software when speed of display is not likely to be an issue, and it omits colour management when speed is required eg, in Thumbnail view and Internet Explorer. Slide Show in MS-Explorer also supports tif files when in 8-bit colour, but not in 16-bit colour. Since writing Chapter 9, other products have become available. Rather than argue the merits of every possibility, the author now prefers to divide all display software into two categories:

- General purpose display, such as MS-Explorer, and Google Picassa
- Special purpose competition software including, *inter alia*, display and scoring. Users should first decide whether they need the complexity of the latter group before expending the considerable effort required to evaluate such a product in detail.

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¹ For example, the Society's Distinctions Handbook (Jul-07 edition) notes on p10 that prints are illuminated at ISO 100 1/20sec @f4, which is ISO 100 EV8.

Chapter 10 (Data Files & Image Preparation) was based on a combination of the author's prior knowledge and some comments from event organisers. Of the topics covered, Section 10.3 (Sizing) still causes the most problem with authors. On the one hand, both organisers and authors claim to want simple instructions. On the other hand, it is clear from experience reported by the corresponding digital event organisers that all instructions require adequate background knowledge to be usable and effective. It seems that even the comprehensive description in the Society's Distinctions Handbook (Jul-07 edition, page 12) cannot secure compliance. The need for author education is ongoing, and is further considered below.

Collection of the technical information mainly took place between June and October 2005. Sources outside the author's personal experience are cited throughout Original, Annex B. Collation and writing of the report was done by the author. As indicated by some of the comments above, further information comes to hand regularly, and is used to reassess the technical summary report, although amendments are not published. The technical summary report (Original, Annex B) remains as a strong basis for effective advice. The author is not aware of any competing source with the same coverage or detail.

Final Project Report

Having completed and agreed the technical report (Original, Annex B), the sponsor's view (PAGB Executive) was that a checklist summary of requirements was needed. An analysis of the intended audience is at Original, Annex C.

In any photographic event, the author hands over the work to the organiser for display. With prints and slides, there is little the organiser can do to distort the author's work, although that does not mean there are no rules about presentation applicable to those media. With digital, as a relatively new medium, there is ample scope for the author to provide work which the organiser has difficulty in displaying, and ample scope for the organiser inadvertently to distort either all the works submitted or, perhaps worse, just some of them.

Organisers are used to promulgating rules for events, but the digital medium requires new choices from amongst many options. Although a long way from the original scope of this project, which was to advise on digital projection equipment, it was proposed by the author, and agreed by the sponsor, that a checklist which defined the interface between organisers and authors would allow organisers to make their choices and publish their rules, which would then guide authors to comply with those rules.

Obviously there were projected digital events already running at local through to international level at the time of these discussions in summer 2006, and there was no intention of disrupting any of them. So, what might be the use of promulgating a new set of procedures ('standards') for them to use? None at all if all those events were already using complete and consistent sets of rules¹. But, it took no time to show that was not the case, and that some events were also publishing technically incorrect rules.

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¹ 'Complete and consistent' here does not mean that all the rules for all the events were the same. It means that all covered all the topics which should be covered in a set of rules. For example, all should have a rule on image size, although the size used by one event might differ from the size used by another event.

Following the premise that a collection of many rule sets would be more likely to cover the total requirements than would any one rule set, the author analysed the content of rules published by a variety of events current in autumn 2006. Some rule concepts, like image size (see page 4, B.02) were universally present. Others, like publication (see page 4, B.08) less so. The commonest error was to have a rule about image resolution, which is irrelevant for display and projection. It was not too difficult to formulate the composite set of rule concepts which would be complete for projected digital events. Note that care was taken to avoid inclusion of any concept which was generic for all photographic events or all media, such as the organiser's address, or the event sections and eligibility. Moderation of the author's list by the panel of correspondents required only one minor change, and an agreed reordering to match an author's likely workflow when preparing images.

The outcome, which is a core result of the project, was the checklist of rule concepts shown in Original, Annex D, page 5, and copied here at page 4. This list was both a superset and a conceptualisation of all the rules being used in digital events at the time. Moreover, the checklist had been reviewed, and its validity accepted, by a wide range of expert practitioners in projected digital events.

Two issues then had to be covered in relation to the checklist for organisers.

The lesser issue was to publish the scope of events affected by the checklist. This was relatively simple. The PAGB is not able, and does not seek, to mandate any course of action on either its member Federations, or the affiliated Clubs which are members of the Federations. The PAGB has to run its own events, and it has a patronage system within which quality compliance could and should be enforced. These are the limits of the scope of events directly affected by the checklist. For anyone else, the checklist, and the associated guidance which is discussed below, is published and made freely available for use as might be desired.

The greater issue was to provide up to date guidance on each item of the checklist, so that organisers could quickly see how to achieve compliance in their event design and in publication of their rules. Obviously, the availability of the technical summary report (Original, Annex B) was a help. Wherever relevant, content from the technical summary was recast into the new order of the checklist items. This was far from being a passive process. Some content eg, most of Chapters 4 and 5 on projector comparisons, was not transferable. Conversely, the subject headings allowed expansion in other areas eg, data governance and publications policy. The guidance does not therefore replace the technical summary report, which still stands independently.

The Guidance sections (Original, Annex D, pages 6-19) are the author's own work. A first version was produced, which may be reviewed on the Committee's website as the Fifth Interim Report, and that version was subject to a consultation amongst the expert correspondents. The resulting consultation report may also be reviewed on the Committee's website to see the comments received and the author's decisions. Just over 30 comments were received, the majority of which resulted in some change or clarification of the guidance text. It was suggested that shall, rather than must is used in international standards terminology, which is correct. But, this change was rejected as must is used in international standards terminology, which is correct. But, this change was rejected as must would be more easily distinguished alongside should and may.

Guidance section A.01 (Original, Annex D, pages 6-8) included two areas which were extensively discussed.

- By consensus, a digital projector system for serious use in a photographic event should be colour profiled using a hardware system. Manual adjustments, or use of simple utilities like Adobe Gamma, are limited by the observer's capabilities.
- A whole series of processes within the projection system can result in uncontrolled processing of the author's image data. The author is indebted to a presentation by Dr Elizabeth Allen at the Society's Imaging Science Group symposium in December 2006 for drawing attention to 'inter-pixel processing' as a heading under which to group the relevant processes. The guidance describes the optimum ways of avoiding inter-pixel processing, leaving organisers to deviate at their own risk.

Guidance section B.01 (Original, Annex D, page 10) includes advice on colour space. Judging by authors' inability to comply with published rules, this is the second commonest area of misunderstanding.

Guidance section B.02 (Original, Annex D, page 11) deals with image size. This is the most common area of misunderstanding by authors. Even the most thorough descriptions by organisers seem insufficient. The Society's Distinctions Handbook was cited above.

Guidance section B.03 (Original, Annex D, pages 12-13) deals with file name formats. The file name format for an event must depend on both the structure of the event (entrants and sections) and the software used to display the images. It is not possible to mandate either of these, and the author would not expect a fixed file name format to be feasible for all events. The emphasis in the guidance is towards a proper analysis of the requirements for each event, which should then lead to an appropriate choice of file name format.

Most of the other guidance sections are fairly straightforward. There is a discussion on image security and avoiding plagiarism in section B.08 (Original, Annex D, page 18).

The Future

Under Condition 1, the author has hopefully clarified that the project did end, in a completed state, in April 2007. If that was all, then it would, like most degree dissertations, be fated to lie untouched on the bookshelves of only the student, the supervisor, and the university library. Instead, the project was always intended for widespread use, and it was handed over for implementation into PAGB events. The author left the PAGB Executive in April 2007 and, as recommended, the PAGB Executive set up a new group to manage the implementation.

The future of the project now lies in three directions:

- Implementation within the PAGB itself.
- Diffusion into general practical use.
- Personal actions by the author to encourage and educate.

As noted, the scope of events mandated to use the new procedures includes only the PAGB itself and events accepting PAGB patronage. The PAGB events to be considered, and the progress made to date, include:

- The Inter-Federation Slide Exhibition. The PAGB has indicated that this will become a mixed media (slide and projected digital) event from autumn 2008.
- The Inter-Club Slide Championship. The PAGB has indicated that this could become an all projected digital event from summer 2009, provided that logistical issues concerning rapid submission of entries can be resolved.
- To these established events, the PAGB has recently added the new Great British Club Cup event in spring 2008. This is designed to parallel, in eligibility terms, the recently introduced FIAP World Club Trophy. Although the FIAP event was in slides, the PAGB event is in projected digital from the start.

For events outside the mandated scope there can only be a process of information and suggestion. The author has corresponded with several event organisers, including the Society's International Projected Images Exhibition 2007 (Mrs R.Wilman). It may be some advantage that the author can do this in a personal capacity and not as an appointee of the PAGB. However, there is now relatively little that organisers need to do for their published rules to be fully compliant (Original, pages 23-24).

Where organisers are steadily improving their experience, and are reforming their procedures and published rules, the same cannot be said of authors. There are vastly more authors than there are organisers, and there will always be new authors joining the ambience of projected digital image events. For all media, there are conventions for artistic and craft based skills required for effective participation in any photographic event. The skills for prints and slides are no less arduous merely because they are commonly understood by a wide user base. Skills in these well-founded media can be picked up by the novice from many sources of experience. Learning the skills of projected digital images is more difficult, not because it is intrinsically more complicated than, say, mounting a print, but because there are so few who know enough already to be authoritative sources.

The issue of author education has already been discussed at Original, page 25, although the topic might more properly be called author training if what is mainly required is to follow a set of instructions. There was a time during the project when the production of author training materials was contemplated (see Original, Annex C). This did not happen in the available timescale, although it was recognised as an ongoing requirement (Original, Annex D, page 3).

Given the number and disposition of digital image authors, it is improbable that a single source of training would be sufficiently responsive to the need. Like training in other digital skills, such as Photoshop, there will be many courses and many trainers.

Since concluding the project, the author has maintained a personal interest in projected digital image events, and advises where possible. Examples of personal commitment and advice to date include:

- Help is given to two writers of popular competition software in testing their products and in fault resolution.
- An event on the preparation of digital images for projection was organised through the Society's Thames Valley Region in February 2007: the principal speaker was Mr Tony Riley, who was one of the project's correspondents.

- As reported (Original, page 25), the author designed and delivered a course to Harrow Camera Club in August 2007, and the course materials are published.
- The PAGB Great British Club Cup used the principles of file naming (Original, Annex D, pages 12-13) creatively, to devise a completely new format with exactly the properties required for their event in February 2008.
- The Chilterns Association will hold a Club training day in March 2008.
- Technical errors concerning image resolution have been noted in the Society's Distinctions Handbook, and in the Society's website members' area.
- Through registration on the Society's website Forum, information on projected digital images can be corrected where required.

Outcome

As described, the project was initiated because of the accumulation of individual enquiries. For novices in projected digital image events, information was too fragmented to be effectively available without disproportionate effort. For experienced users, it was difficult to keep up with developments elsewhere. Nowhere was sufficient information assembled and available for widespread use.

The project has:

- Collated technical information about projected digital images.
- Published a complete and validated set of rule concepts addressed to the organisers of projected digital images events.
- Published guidance on the options available for choice by organisers when setting up and running a projected digital images event.
- Provided the wider photographic community with the resource it needs to make progress in the management of projected digital images for photographic events.

Despite the narrow mandated scope of the project's published guidelines, working with the imprimatur of a national association required a thoroughness and attention to detail which would position the guidelines for a much wider audience.

The importance of the project as a whole lies in its open publication of a comprehensive body of experience.