Focus on the *Shahnama*
Final Report

1. Project plan (Appendix A)

The original plan was to complete the project in three months (January-March 2009). The conservation report was written in January as intended and is included as Appendix B. The camera and digital back we proposed to use on this project were requisitioned in August 2008; this was a new model and at the time was still in production. We expected to take delivery by Christmas 2008, but in the event we did not receive the camera until April 2009. We decided to postpone the *Shahnama* digitisation until the arrival of the higher specification camera, rather than proceed with a lower specification model. The project timetable was amended accordingly.

2. Methodology

2.1 Images All the images were captured over ten days between May and June 2009. These were processed in June and uploaded into the image management system. The processed images are currently held on two University servers. The files have also been copied to a hard drive for additional security. The raw files are on tape. A work experience student spent a day with our photographer and produced a short report (Appendix C).

2.2 Data records The metadata records were completed in Luna Inscribe over ten days between May and June 2009. The images were subsequently uploaded by the photographer. Each record was then quality-checked by the Project Manager before clearance was given for publication in July 2009.

3. Outputs and Outcomes

1. The digitised *Shahnama* is now "live" and publicly accessible in the Rylands Collection. We have recently upgraded to a new web-based version of our image management software, LUNA[1]. Images are now also searchable via Google.
2. We produced a BLOG to publicise the resource and invite feedback[2].
3. A dedicated project website was launched in February 2010 to coincide with the millennium of the *Shahnama*.
4. The John Rylands University Library will hold an exhibition entitled *Heroes and Kings: The Shahnama of Ferdowsi* from February – June 2010 to celebrate the millennium of the *Shahnama*. An interactive unit will provide access to the digitised images via LUNA. An exhibition case will be dedicated to the project and recognise the sponsorship of TIMA. We will promote the project and the exhibition through the University Press Office and a programme of public events.
5. Carol Burrows and Caroline Checkley-Scott presented a paper at the 5th TIMA Conference in July 2009. This gave us opportunity for academic engagement and promotion within the TIMA community. Other papers have been presented at other digitisation events.

4. Fulfilling Objectives

We were successful in fulfilling the following project objectives:

- Digitise a complete Shahnama manuscript, including all folios and bindings, totalling approx. 1,200 high-resolution images;

- Make a high-resolution facsimile of the manuscript available on-line, taking advantage of the advanced delivery and display functions of Luna Insight 6;
- Produce metadata for each image using Luna Inscribe software;
- Create an attractive dedicated website with links to the images and metadata, and other online resources;

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[1]

http://enriqueta.man.ac.uk:8180/luna/servlet/view/search?sort=Reference_Number%2CImage_Sequence_Number%2CPage%2CTitle&q=Reference_Number%3D%22Persian+MS+932%22+LIMIT%3AManchester%7E91%7E1&pgs=50&res=0&cic=Manchester%7E91%7E1

[2] http://rylandsshahnama.wordpress.com/

- Internationally raise the profile of the Rylands Persian manuscript collections;
- Enable access, whilst reducing the need to handle the original, thus aiding preservation; and
- Create a pilot for a large-scale project to electronically catalogue our collection of Persian manuscripts (c.1, 000).

As we have held back on publicity to coincide with the Shahnama millennium and our exhibition it is too soon to evaluate the impact of the digitised resource on teaching, learning and research.

5. Budget

See Appendix D.

6. Conclusions

The success of the project wholly depended on the strength of the project team. To achieve our aims and objectives within the specified period we needed a core team who required no training and who could be effective in their roles immediately. Cooperation was our byword, and was

instrumental to achieving our goals. An alliance with Collection Care allowed us to develop a methodology which would ensure the safety and preservation of the manuscript, without compromising the quality of the digitised images. The Library's Information Services Dept developed and implemented the new version of Luna and assisted with all technical problems. The Publicity and Promotions Department developed the web site and helped to promote the resource. The Special Collections Public Programmes Department has been wonderfully supportive in the development of the *Heroes and Kings* exhibition and related public promotional events.

An essential part of any project has to be careful planning. We were forced to delay the project due to the late arrival of the camera. This had an impact on the scheduling of work with other departments. In retrospect this was serendipitous as we are able to combine the official launch of the resource with the millennium and the exhibition, thus creating a greater impact.

Unforeseen problems arose which delayed our launch of Luna version 6.0, the new browser version, but again this has proved fortuitous in terms of the project launch. Following the TIMA conference, academics were able to work with the previous version of Luna, but we wanted to wait until Luna 6.0 was ready and fully tested before we encouraged the public at large to start interacting with the resource. We were reluctant for users to get used to one package, only for it to be replaced a couple of weeks later. We went live with LUNA in November 2009. Since then, public response to LUNA has been very positive.

The skills acquired and methodologies developed on this and other projects have enabled us to secure further funding to develop a Centre of Competence for Heritage Digitisation in the northern region of England. Our methodology for object-centred digitisation is of particular relevance to other Special Collections units and TIMA members. Too often the emphasis is placed on speed and quantity in digitisation initiatives, sometimes at the expense of the works themselves. We aim to redress the balance by providing an alternative strategy that focuses on the preservation of the original artefact. We will provide a service for institutions which own valuable research collections, but lack the equipment, expertise or finance to undertake digitisation. We encourage TIMA members to adopt this approach as best practice.

Carol Burrows
22/01/10

Appendix A

Focus on the *Shahnama*
Project Plan

1. Background

This project aims to digitise a complete, illustrated *Shahnama* manuscript, dating from the Safawid period. The high resolution images will be uploaded into the Rylands digital image collections which use the Luna software platform. They will be freely available for purposes of research, teaching and learning. The Cambridge *Shahnama* project previously digitised the illustrated pages; this project will reunite those pages with the full text of this epic. The project will also create a dedicated web page to signpost to the images and provide contextual interpretation of the manuscript's significance in Islamic culture.

The project will be sponsored by The Islamic Manuscript Association[1] (TIMA). At its inaugural conference TIMA affirmed its aspiration to facilitate the digitisation, accessibility and study of Islamic manuscripts. As it states, digitisation can "assist in the conservation of manuscripts, render them more accessible to scholars and offer new tools for codicology and textual criticism". Many digitisation projects concentrate solely on the highly visual, i.e. the illustrated pages of a manuscript. This project closely adheres to TIMA's ambition to open access to textual resources.

"This beautiful manuscript of Firdousi's immortal poem was the finest in the library of the King of Oude"; thus was Rylands Persian MS 932 described by Turner Macan in a note on folio 1a of the manuscript. It is dated to year 949 of the Hegira (CE 1542). There are 604 folios, with 4 columns of 23 lines to each page. In addition to beautiful illumination, there are 38 miniatures in the Shiraz style, ascribed by Robinson[2] to Painter A and Painter B. The text of this manuscript is of particular significance as it was one of the copies used by Macan when collating the first European edition of the Shahnama. A digitised version will provide free international access to this manuscript for Islamic scholars wherever they are based.

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[1] http://www.islamicmanuscript.org/
[2] B.W. Robinson, *Persian paintings in the John Rylands Library: a descriptive catalogue* (London: Sotheby Parke Bernet, 1980) p.163

2. Aims and Objectives

2.1 Aim

The projects aims to create and publish digital surrogates of Rylands Persian MS 932 to support teaching and learning, to develop new research opportunities, and to make this important manuscript accessible to wider audiences.

2.2 Objectives

The objectives are to:

- Digitise a complete Shahnama manuscript, including all folios and bindings, totalling approx. 1,200 high-resolution images;
- Make a high-resolution facsimile of the manuscript available on-line, taking advantage of the advanced delivery and display functions of Luna Insight 6;
- Produce metadata for each image using Luna Inscribe software;
- Create an attractive dedicated website with links to the images and metadata, and other online resources;
- Integrate the manuscripts into new teaching, learning and research opportunities;
- Internationally raise the profile of the Rylands Persian manuscript collections;
- Enable access, whilst reducing the need to handle the original, thus aiding preservation; and
- Create a pilot for a large-scale project to electronically catalogue our collection of Persian manuscripts (c.1, 000).

3. Overall approach

3.1 Secondment
Carol Burrows will direct the project and report to TIMA. Records will be created and populated by Suzanne Fagan (Cataloguing Assistant), seconded 10 days FTE over a period of 12 weeks. The photographer, James Robinson, will also be seconded 10 days FTE over a period of 12 weeks. Mark Furness (Conservator) will be seconded for 2 days and technical support for 1 day to set up the website. There will be no new posts created as a result of this project, therefore no need for recruitment.

3.2 Conservation
Mark Furness (Conservator), a member of the JRUL's Collection Care team, will assess the manuscript prior to and post digitisation, and undertake any remedial work required. A full condition report will be included in the project documentation.

3.3 Image Capture
The JRUL has a dedicated imaging studio at its Deansgate site. Using a Phase One camera with a P65+ digital back, the photographer will capture, process, and name approximately 1,200 images during 10 working days. Each processed image will be between 80 – 120 MB. Our previous experience of digital image capture of fragile manuscripts has shown that this is a

realistic target when working with such large files. Each image will include a Kodak colour strip and scale rule.   The photographer will import a copy of each processed image into our proprietary image management system, *Luna Insight*[3] via its *Studio* software, which creates a JPEG2000 file for viewing purposes.

3.4 Data Capture
The Cataloguing Assistant will create a record for each image using Luna's Inscribe software. The image-level metadata, embedded in each image, will include any significant details about the folio, plus image capture information. Each record will be approved by the Project Manager prior to publication. Metadata for each image is held in an Oracle 10 database which underlies the Luna Image Management System. Both metadata and images can be downloaded or printed directly from Luna, or links embedded into web-based materials. Luna supports full Unicode to allow inclusion of non-roman scripts in the data records.

3.5 Website
We will employ a web designer to set up a dedicated website. Initially a spotlight on this particular manuscript, the website will have the potential to be further developed into a *Shahnama* web exhibition for 2010. The website will include an EAD-compliant description (Encoded Archival Description) of the manuscript. It will also provide links to related resources, such as the Cambridge *Shahnama* Project, and will credit the sponsorship of TIMA. Images will be displayed by the new LUNA viewer provided as part of Insight 6.0 software. LUNA is a web-based front end to Luna Insight, offering Web 2.0 concepts such as embedding and linking.

3.6 Timetable

Action	Jan 09	May 09	June 09	July 09
Conservation report on manuscript	■			
Image capture		■	■	
Cataloguing Assistant makes initial records		■	■	
Image processing			■	
Images uploaded into Luna			■	
Records upgraded and authorised			■	■
Web page construction		■	■	■
Web page and images published				■
Conservation report on manuscript				■
Exit strategy				■
Dissemination / Publicity				■
Report to TIMA				■

The Project Manager will oversee the progress of the project, liaising with team members and TIMA and monitoring workflow. She will be responsible for approving publication of the images, their records, and the website. She will manage the publicity and dissemination, liaise with the academic community and write the final report to TIMA.

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[3] Supplied by Luna Imaging Inc.

4. IPR

Copyright in unpublished manuscripts is perpetual under current UK legislation. However, the subject of this proposal was produced in the 16th century and is physically owned by the JRUL. We therefore regard the potential for a claim for rights infringement to be infinitesimally small. The photographer is an employee of the University of Manchester, and will therefore have no claim to copyright in the images.

5. Standards

Our basic standard for image capture follows JISC Digital Media's 'Guidelines for Image Capture and Optimisation'. Images will be catalogued to a locally developed application profile, based on and compliant with VRA 3.0 metadata standards. It is also UK-LOM Core and Dublin Core compliant and mapped to the Getty Crosswalk. Library of Congress Subject Headings and the Getty Thesaurus of Geographical Names are used for authority control. We adhere to JISC Digital Media's guidelines for the preservation of images. EAD is based on ISAD(G), the international standard for the description of archives. EAD has been adopted internationally as the standard encoding system for online finding aids. The use of an EAD Schema will enable us to embed a TEI (Text Encoding Initiative) Schema directly into EAD instances. This will allow us at a future date seamlessly to incorporate full-text transcriptions and editions of the manuscript into the EAD record.

6. Exit Plans

6.1 Sustainibility
The JRUL is a member of the Digital Curation Centre (DCC) Associates Network and DCC Forum, and we are in touch with their advice on best practice in the preservation of digital assets. A raw 48-bit file of each image will be archived on tape. 24-bit processed TIFF files will be archived on hard drives and on University servers. The University IT Services Division manage the data back-up system. The images will be included in the main Rylands Collection, managed by the Project Manager, who will also take responsibility for maintaining the web page.

6.2 Dissemination
Proposals for dissemination include:
- Website;
- Blog;
- Paper to 5th TIMA conference on creating a digital resource with due regard for conservation issues (if accepted);
- Article in *News from the Rylands*;
- Article in TIMA newsletter and on Projects web pages;
- Engagement with the University's Press Officer to publicise the project;
- Integration into research and teaching & learning activities of the School of Languages, Linguistics & Cultures, Middle Eastern Studies at the University of Manchester;

- Integration into public & web exhibitions to celebrate 1,000 years of *Shahnama* in 2010.

Digitisation is a two-way process with the research community. In return for making available such a resource we hope to encourage scholarly investigation and use the conclusions of the researchers to upgrade our records and improve our own understanding of the manuscripts in our care.

Appendix B

JRUL CONSERVATION DEPARTMENT
TEL. 0161 306 6524

CONSERVATION TREATMENT

Reference: Persian Ms. 932

Contact: Carol Burrows   Project: *Shahnama* Digitisation Project

Author : Ferdowsi   Title: Shahnameh

Year: 1542

……………………………………………………………………………..

Dimensions   (mm)   H 335   **W** 202   **D** 82

Brief Description: Modern European binding of original Persian manuscript pages. Bound in red/scarlet morocco, with the name and coat of arms of Dr Edward Craven Hawtrey gilt-stamped on the front and back covers.

Other Information: Contains 38 Shiraz type miniatures by two artists, a note from Turner Macan (first European editor of the Shahnama) and the order of the book runs from right to left.

Collation: 604 folios, hand written in the top left hand corner of the recto. The catalogue list 644 folios, the modern addition of flyleaves adjacent to the miniatures and endleaves could account for the 40 folios and are unnumbered.

TECHNICAL INFORMATION

Bookblock:
Original pages are Islamic paper pasted on to similar style paper, mixed with original pages and blank leaves of machine-made paper tipped in to protect miniatures. Machine-made paper and laminated, buffed paper flyleaves.

Boards & Board Attachment:
Strawboard attached to buffed paper laminated to endleaves, covered by doublure. Leather is red morocco.

Endpapers:
Machine-made paper laminated with buffed paper.

JRUL CONSERVATION DEPARTMENT

Binding Structure:
Modern rebinding (1830-1860).

Sewing:
Sewn on five recessed cords.

Head & Tail Bands:
Double core, triple coloured (white, light green, dark brown) both head and tail.

Ink & Pigments:
Carbon black, verdigris, gold, and others.

Finishing:
Gold and blind-tooled panelled lines on spine and covers. Crest stamped on both boards.
Lettered on spine "FIRDUSI / SHAH- / NAMEH / PERSICE / M.S.S. / EX BIBLIOTHECA /
REGIS / OUDE / ANN: HEDRÆ

CONDITION

Bookblock:
Overall solid in its shape, however the folios are weakened along the spine edge from rebinding
into a western style. Mounting of original panes of manuscript onto a contemporary style paper
has caused deformation and weakening of the miniatures.
ff. 1 verso. Good condition
ff. 2 recto. Good condition
ff. 7 verso. Good condition
ff.15 verso. Good condition
ff.18 verso. Small tear, fair condition
ff. 27 verso. Blue pigment fading, fair condition
ff. 42 recto. Blue pigment, good condition
ff. 64 recto. Blue pigment fading at edges, good condition
ff. 70 verso. Good condition
ff. 78 recto. Historic repair, good condition
ff. 87 verso. Imprint of the text pane on the recto is creating a deformation along the foredge of
the miniature, gold in the top right is cockling with the paper and risks flaking away. Previous
damage also in the top right hand corner. Fair condition, treat with care
ff. 96 verso. Fading of blue pigments, imprint of recto text pane. Good condition
ff. 112 verso. Fading of blue pigment, imprint of text pane on the recto visible, verdigris flaking
off central fallen figure. Good condition, treat with care

ff. 122 recto. Imprint of text pane from verso visible and distorted face of central character of bottom left trio. The outline of the central gold image has become brittle, damage follows the black pigment to outline the image. Large portions of the image are missing and infilled. Poor condition, very fragile treat with utmost care

ff. 164 verso. Image distorted from the repairs on the recto, paper under tension from repairs, crack in the paper in the gold decoration in the centre of the miniature. Poor condition treat with care

ff. 193 verso. Particularly damaged, evidence of 'offensive' material being previously covered. Distortion of image from impression of text pane on recto. Pigments and images faded and worn, edge repaired and guarded. Fair condition, treat with care

ff. 211 recto. Imprint of text pane on verso visible, pigments slightly faded towards the foredge. Gold fragile, cockling with paper toward foredge. Verdigris damage on the bottom central figure. Fair condition, handle with care

ff. 226 recto. Impression from verso partially visible. Tear in the middle of the spine edge of miniature. Fair condition, handle with care

ff. 247 verso. Visible impression from recto, image has creases towards the foredge, small holes from verdigris degradation. Good condition

ff. 273 recto. Good condition

ff. 291 recto. Historic repair, fragile. Poor condition

ff. 292 recto. Good condition

ff. 301 verso. Verdigris is causing brittleness and holes, very fragile towards the lower edge. Fair condition, handle with care

ff. 308 recto. Image worn along impression from the verso. Good condition.

ff. 318 recto. Good condition

ff. 329 verso. Cracked to the left of page center and along the verdigris on the pagoda, fragments of verdigris missing, smudged face of figure second from the left at the bottom of the page, Poor condition, treat with care

ff. 355 recto. Missing section of mounted archer on the left of image infilled due to deterioration of the substrate by verdigris pigment. Poor condition, page fragile, treat with care

ff. 371 recto. Paper cracked along spine edge of miniature. Poor condition, treat with care

ff. 381 verso. Flyleaf missing, remnants present. Verdigris is causing embrittlement, small sections missing and infilled. Poor condition, treat with care

ff. 385 recto. Paper split around edge of text window near the spine edge

ff. 387 recto. Paper split around edge of text window near the spine edge

ff. 389 verso. Archer on the left has sections missing that are infilled due to verdigris deterioration. Fair condition, treat with care

ff. 394 recto. Paper split around edge of text window near the spine edge

ff. 402 verso. Cracks from verdigris deterioration, paper very fragile. Poor condition, treat with care

ff. 408 recto. Large gilt section. Good condition, handle with care

ff. 433 verso. Small holes, previous insect damage. Good condition

ff. 449 verso. Cracked and embrittled paper from verdigris damage. Distortion along foredge causing cockling of paper and pigments. Fair condition, handle with care

ff. 460 recto. Good condition

ff. 477 verso. Good condition

ff. 510 recto. Severe degradation of verdigris pigment cracking the paper and heavily staining the verso. Poor condition, handle with care

ff. 525 recto. Pigments cracked and flaking. Spine edge has been repaired for tears. Fair condition, handle with care

ff. 539 verso. Good condition

ff. 561 verso. Good condition, handle with care

ff. 574 recto. Good condition

ff. 591 verso. Skinned patches around the margin of the miniature. Good condition.

ff. 604 recto. Edge of text pane is lifting in places and is at risk of losing material

Care should be taken with all the miniatures but also all folios toward the front and back of the book as the stresses of rebinding will have made tears more likely.

Boards & Board Attachment:
Boards are in good condition and the leather is in good condition but worn at the corners, along the spine edges and the head and tail of the spine. Back board, endpapers and folio 604 are loose of the bookblock but still attached to the overall structure.

Endpapers:
Excellent condition though dirty.

Binding Structure:
Solid and intact

Sewing:
Excellent condition despite the loose board and attached folio at the end of the manuscript

Head & Tail Bands:
Excellent condition

Ink & Pigments:
Good condition overall. Verdigris and some yellow pigments are at various stages of deterioration throughout the manuscript. Gold illumination is at risk of coming away in some places due to distortion of the substrate.

Finishing:
Good condition

TEL. 0161 306 6524

TREATMENT

Digitisation

MATERIALS USED

Conservator: Mark Furness

Date: 16/1/09

Appendix C
Lucy Johnson
John Rylands Library Work Experience Report

June 2009

I began organisation of the work experience when I expressed interest to photographer James Robinson. James had briefly explained to me the purpose and working scheme of the library, and as a student about to embark on the final year of a BA Honours course in photography, I decided this would be a good opportunity for me to discover what work could be available after my graduation. I was aware that James photographed manuscripts and various book collections, but did not fully appreciate the extent of the collections or the digitizing projects, until my visit.

Upon arrival I was taken through the building and introduced to all the staff working in every area of the library. Everyone I met, kindly took the time to explain what they were doing, and patiently answered any questions I had to ask.

The photographers happened to be attending a training session in book handling, in which I was allowed to participate. Previously I had not known the specific requirements for book handling. Although I had a basic idea, this was only based on common sense. However, my common sense was proved wrong, underlining just how precise and attentive the handling process really is. This was greatly stressed at the training session, and the photographers seemed to really understand the importance of the information they were given. I was very impressed at the genuine care for the work being undertaken, and the enthusiasm from all the staff.

I was taken around the building by James, and he explained all of the resources available and gave me a brief history of the library. I was not aware of the extent of collections housed in the library, and was very pleased to know that students had access to study in such an environment. The University where I study does not offer resources like the ones given here in Manchester, and so I really appreciated this. I spent some time observing James carry out some digitization work on a Persian manuscript, the *Shahnama*. Every step was explained to me in detail. I then took over from him, to gain a practical understanding of his work. From this, I learned several skills to meet specific requirements for working on such material. Again, I was fascinated to learn of the intricate attention to detail required when undertaking this work.

Although I did not have a great knowledge or understanding of the library prior to my work experience, I cannot blame this on inadequate publicity as I live and study a considerable distance from Manchester. However, I would hope schools and other Universities are well informed of its existence.

My overall experience was greatly rewarding. I was hugely impressed by the commitment from staff and the genuine appreciation of the library and everything it holds. I left the day inspired and motivated, grateful of my experience and furthered knowledge of such a worthwhile resource. I hope to return in the near future to discover more, and offer help where I can.

Appendix D: Budget

Expenses	Local Currency	Pounds Sterling
1 x 1TB External hard drive for back-up @ £. each		62 .08
1 x 80 GB tape for archival raw files @ £. each		37.93
Web design and artwork		345.00
Server support and storage		750.00
Photographer: 10 days		1086.62
Cataloguing Assistant: 10 days		997.07
Project manager: 5 days		1007.64
Conservator: 2 days		230.45
Technical support: 1 day		213.93
Total		£4,730.72

The price of an 80 GB tape has increased since the bid was submitted. However this has been offset against the cost of the hard-drive. We budgeted for a 1 TB hard-drive, but actually only needed a 250 GB drive.

The original quote for web design did not include VAT, hence the slight increase.

Some salary costs have risen due to an annual pay increase greater than predicted and personal pay rises. The cost of the Cataloguing Assistant has fallen as the person targeted for the role moved to a new post and her post was back-filled by someone at a lower point on the pay scale.

Web page construction was assigned to the Web Services Manager, a more senior role to Technical Support. We allowed for one day, although in the event construction of the web pages will take somewhat longer.

We have overspent on the project by a sum of £221.29. The John Rylands Library will cover this.