

**Bart M. ter Haar Romeny**  
**Jelle Barentsz**

Jelle O. Barentsz  
 Dept. of Diagnostic Radiology  
 University Hospital Nijmegen  
 P.O.Box 9101  
 Geert Grooteplein 18  
 6500 HB Nijmegen  
 The Netherlands  
 phone: +31-24-361 4545  
 fax: +31-24-354 0866  
 e-mail: J.Barentsz@rad.umcn.nl

Bart M. ter Haar Romeny  
 Dept. of Medical and Biomedical Imaging  
 Faculty of Biomedical Engineering  
 Technical University Eindhoven  
 Den Dolech 2 - WH 2.101  
 5600 MB Eindhoven  
 The Netherlands  
 phone: +31-40-247 5537  
 fax: +31-40-247 2740  
 e-mail: B.M.terHaarRomeny@tue.nl

## How to design an attractive (electronic) poster

**Abstract** The ECR 2003 fully digital electronic poster submission and presentation system, EPOS™ is a primer with unprecedented importance. This paper presents a concise overview of the system, handy guidelines and hands-on instructions for efficiently submitting a poster through the internet, and suggestions for a professional layout presentation. The use of multimedia extensions as movies and animations is included.

**Keywords** computers, educational aid • computers, multimedia • images, display • education

### Introduction

The ECR is one of the first major conferences to introduce a fully digital submission and presentation system for scientific exhibits. The benefits of electronic posters are excellent: color, movies, animation, sound, and true interactivity are now possible; the presentation can be archived and made available on the internet; easy searching for particular topics of interest during the limited time at the conference is easy; expensive and often time-consuming printing in large formats is no longer needed; and the multimedia exhibits are easily uploaded from office or home to the ECR submission website. In addition, the task of the jury is facilitated, as the posters can securely be judged before the congress from any computer connected to the internet.

In this chapter, we will guide and explain the creation, submission, and presentation process of the scientific 'electronic poster'. We will discuss design issues related to the poster, technical issues such as image resolution and image/movie formats, and the inclusion of specific electronic multimedia elements as PowerPoint presentations and specially designed web pages. After this introduction, you will feel confident about submitting high quality digital submissions to the ECR.

A good introduction is given by Prof. Adams about the EPOS submission pages on the ECR website:

### Scientific Exhibition - Electronic Poster Online System (EPOS™)

*EPOS™ is a truly exciting undertaking, as it is the first attempt by a major radiological society to stage a paper-free scientific exhibition. I am sure that, like every new technological development, EPOS™ will not be perfect from the outset. IT experts, congress organizers, and authors will learn from each other over the years, leading to continuous and significant improvement. However, everything has been done to make the first all-electronic scientific radiological exhibition in the world successful, exciting, and fun.*

*We have made the process as simple as possible. Anyone using a computer for work or entertainment should be able to follow the clear instructions of our experts and submit an electronic poster. Do not be frightened of the process and approach it with an open mind. By abandoning traditional posters, we will undoubtedly lose something.*

However, we shall gain infinitely more. The ability to use moving images, to search quickly for particular subjects, to access linked websites, to e-mail interesting posters to yourself before you leave Vienna and to access EPOS™ from home after you get back, are just some of the many things you can do with computers that you cannot do with paper.

Open your minds to change and join us at the all-electronic ECR 2003!

Prof. Dr. Andreas Adam  
Chairman of the Scientific Exhibition

This chapter will discuss the following topics:

1. Submission procedure
2. The basic scientific poster
3. The educational poster
4. The multimedia poster
5. Focus points to make an effective exhibit
6. Technical issues

## Submission procedure

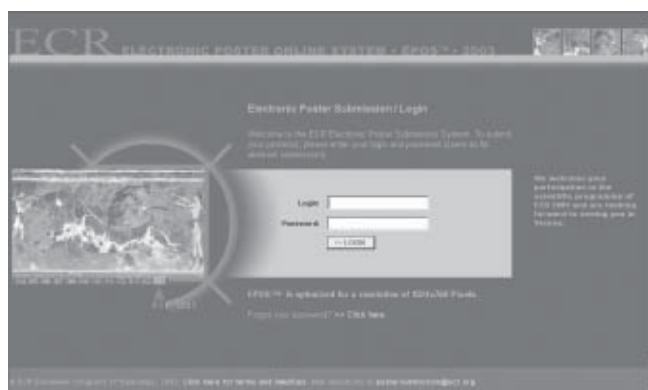
The electronic submission process occurs in two stages: first, you submit your scientific exhibition abstract via the electronic abstract submission system on the ECR website, which will be available from early July on. The internet address of the ECR homepage is: [www.ecr.org](http://www.ecr.org). The deadline for this submission is mid-September. You will be notified of acceptance or rejection of your scientific exhibition abstracts by the end of November. Exact dates are published each year on the ECR website and the Call for Papers. If your abstract is accepted, you submit your complete electronic poster in a second step, via EPOS™.

The submission of the poster is done exclusively over the internet. No floppy disks or CD-ROM disks can be sent to the ECR office.

After entering the main page, the interactive "EPOS-Guidelines for electronic poster submission" are available to guide you step-by-step through the submission process.

The general idea is that the main text, with images, captions, movies and/or animations, are "uploaded" to the large ECR server in Vienna. A maximum of 20 MB (megabytes) of disk space is available per poster. After uploading, you will be able to adjust the poster until the closure deadline of the submission.

Several well-explained steps take you through the submission process. The poster is in a predefined structure, where you just have to add your text, images, and movies.



From the EPOS™ webpage:

All abstract authors whose poster abstract submissions are accepted by the Scientific Exhibition Committee will receive an e-mail notification with details on how to use EPOS™ and a link that will lead you to the login page of EPOS™. To access EPOS™, type in your personal login and password provided in the notification.

The overview page will display each of your abstracts that have been accepted for poster submission. To start a submission, choose either "Scientific poster" or "Educational poster" as the poster type (below the referring poster title). The submission status will also be displayed: "To do" for posters you have not worked on yet, "In progress" for posters partially edited but not finished, and finally, "Completed". At any stage, you can re-enter the system and continue your work or make corrections, up until the EPOS™ submission deadline.

Please remember that all exhibits must be in English. A good poster takes many hours to prepare. Allow yourself enough time for design and production.



The edit mask allows quick and easy compilation of your digital poster by providing applications very similar to widely available word processing programs. You are prompted to copy and paste text from your word processor into the text fields. Formats will be maintained. Further formatting (such as font size, bold, italic, underline, font color, list format, and adding/deleting links) can be carried out with the help of the toolbar.

---

## The basic poster

The basic poster consists of structured text, with the opportunity to include images and movies. The general structure of the poster consists of the following sections:

### Purpose

Clearly state in a concise manner your objectives and/or your purpose (= main message).

### Introduction

Keep this message in mind and define in your introduction your research questions/objectives accordingly.

### Materials and Methods

Give a short and comprehensive overview of the data and the material you used.

### Results

Give a short summary of the acquired data. If possible, use simple short tables or graphics.

### Discussion

Discuss concisely, in relation to relevant literature, your results and mention strengths and weaknesses. At the end, clearly summarize your (take-home) message.

### Figures/Videos

Use only the most beautiful images or videos you have. Too many examples make your exhibit too long and boring. The images and videos should be functional and support your main message. Captions should be clear and easy to understand. Together with the captions, the images and videos should be self-explanatory.

### References

Give a short list (max 15) of references.

---

## The educational poster

The format of an educational poster is unstructured, and can be structured as a tutorial, a set of course notes, a teaching file, or an illustrated atlas, etc.

---

## The multimedia poster

The text of your poster may contain so-called hyperlinks. These are the "clickable" areas on the screen, typically keywords or icons, from which you can jump to another location in the poster, or to an accompanying file that you add to the upload. It is here where you can make virtually limitless use of modern multimedia possibilities. Some examples include:

- include *PowerPoint presentations*;
- include *links* to interesting web pages on the internet, such as the homepage of your institute, to scientific papers, to your personal homepage, etc.
- include *web pages* of your own design

Keep in mind the limit of 20 megabytes for your total poster. This limit is imposed to enable a manageable distribution (there are hundreds of posters) and reasonable upload and download times on the internet.

---

## Optimal design: focus points to make an effective exhibit

### Preparing your material

Every year, ECR Scientific Exhibits become more professional in their execution. Most make use of resources such as medical artists and/or photographers, typesetters, paste-up artists, exhibit builders, and so on. Although the services of these outside professionals add to the costs of exhibit preparation, they can save you time and frustration. But such technical assistance is secondary to the inspiration, written text, selection of visual materials, and format, which are provided by you, the author.

### Keep it simple

Clearly state the purpose of your exhibit. Establish your objective, define it with a simple, unambiguous title, and stick to your focus throughout your presentation. Be particularly succinct in the summary of results or conclusions drawn. A scientific exhibit is not a scientific paper; keep it short and to the point. Keep your main message in your mind all the time!

### Present points in a logical sequence

Haphazard arrangements will cause confusion. Avoid placing items out of sequence just to achieve attractive design.

### Avoid complexity

If you are working with a complicated subject, your goal should be to make it as simple and straightforward as possible with a well thought-out organization. Use contrasts: for instance black on yellow background, black on orange, green on white, red on white, white on black.

### Catch attention

The attendees will focus their attention on whatever portion of the exhibit catches the eye first; for a radiologist, this usually means an interesting image. The scientific exhibit is primarily a visual teaching aid and not a scientific manuscript. Arresting, visually attractive exhibits make the potential audience stop to look further. Too much color, undue exaggeration, and too many details will turn off the audience.

## Remember your audience

Visitors need to see many posters in a reasonable time. Prepare your presentation in such a way that a quick overview can be acquired (by using proper headings and attention-catching images, as well as more depth in the accompanying text). Count on a visiting time from 2 minutes to 10 minutes (maximum) per poster.

## Keep in mind the traffic pattern

The default reading is sequential, from beginning to end. Keep in mind that the electronic poster can have hyperlinks, enabling the reading to quickly jump from place to place in your story. Make the captions of images, tables, and movies self-explanatory.

## Make it self-explanatory

The exhibit itself should include sufficient text and captions to carry your message. At the same time, keep the text to a minimum and of a size that is easily read. Select a letter style of type (Helvetica for example) that is easy on the eye. Avoid small-size text. Text should be minimal (less than half for publication) with a text-to-illustration ratio of no greater than 1:1. Choose print size, contrast, and color to make the exhibit easy to read. Avoid color combinations like red type on blue background, which cannot be read by attendees who are color-blind.

## Images, graphics, movies, and animations

Graphs should be very simple. Figure size should be the same size as the explaining text blocks. Points of interest should be clearly marked by arrows or annotations on the figures. Avoid artistic accessories, as they distract the observer. Do not mention commercial sponsors in your abstract or in the exhibit.

## Handouts

Handouts are no longer required. The visitor will have the option to have your poster e-mailed to him.

## Check the quality and mechanical performance

As this is a new technology, check the performance of your poster, by asking a colleague to thoroughly test your electronic poster. Movies may not run, images may be displayed at insufficient resolution, or a hyperlink may take the reader to the wrong location.

## Technical issues

### Image formats

Images are stored on the computer in a variety of formats, such as BMP (bitmap), TIF, GIF, and JPG. The formats GIF and JPG incorporate data compression, and are the preferred formats to include in your presentation. Most diagnostic display and evaluation consoles are capable of exporting selected images in these formats. It is easy to change from one format to the other.

Be aware of the resolution of the images as they are displayed on the screen during the ECR or afterward. Most screens have a resolution of 1024 x 784 or 1200 x 800, so a larger resolution of your images will not be displayed. Most browsers down-sample the image when the resolution is too high. The consequence is that the transfer and storage requirements are compromised. When your image is 2000 x 2000 pixels, all these pixels will be stored, but only a small selection will be displayed. The solution is the inclusion of the images in the poster at the resolution you want them on the final display.

### Annotation and image manipulation

Many image processing packages exist to add annotations to the image such as text, region of interest contours, and arrows. Examples are Adobe™ "PhotoShop" and Jasc™ "Paint Shop Pro".

These programs allow zooming, contrast and brightness setting, color adjustment, and cut-outs, etc. With these applications, it is also easy to grab an image from the screen interactively. Shareware versions can be downloaded from [www.download.com](http://www.download.com).

### Movies

Movies need to be played with a special program on the computer. As there are many formats for movies, this often leads to failures during the presentation, when the appropriate replay software is not installed. The EPOS™ computers at ECR will be equipped with the software to play movies in MPG, MPEG, and AVI format, as well as Apple™'s Quicktime MOV format. Note that MOV format is not supported in PowerPoint. Any other format is supported.

An interesting format is Apple™'s Quicktime VR (Virtual Reality) format, MOV. The Quicktime VR player recognizes mouse movements, and selects images from a pre-calculated 2D array of movie frames. Thus, mouse motion left-and-right plays the frames from a row, and mouse motion up-and-down plays the frames of a column.

See e.g. <http://www.worldserver.com/turk/quicktimevr/>.

---

## PowerPoint

It is easy to include in the poster a hyperlink to a PowerPoint file, which is uploaded additionally. One can even upload several PowerPoint files, as long as the limit of a total 20 MB is not exceeded. With PowerPoint, it is easy to make animated and self-playing presentations (see one of the chapters in this syllabus).

## Webpages

Webpages can be included by adding in the poster a hyperlink to an HTM or HTML file. Webpages are actually files written in the HyperText Markup Language, a language with style directives for the browser to display the page properly. These webpages can exist anywhere on the internet, as all EPOS™ computers that display your poster are connected to the internet. You could, e.g. point to webpages with your research results that are on the server of your home institute.

You can also upload your own webpage, so it will be "local" at the ECR.

Web page editors exist that let you create web pages in a "WYSIWYG" fashion ("what you see is what you get"), such as Microsoft™'s "FrontPage", and Macromedia™'s "Dreamweaver". FrontPage is a member of Microsoft™'s Office Suite and works very similarly to Microsoft™ Word. Such programs are the easiest and fastest way to edit web pages without having to know the HTML language.

Another possibility for creating web pages is to create them in Word or PowerPoint, and save them as HTML files. These files can then be viewed in any internet browser, and multimedia items can be easily added.

Sophisticated tools exist for web pages to display interactive presentations and 3D views. The only limitation is your imagination. Here you can call upon professional web design companies, which can create high quality web pages with a broad spectrum of multimedia content. A small selection of options:

- Java applets, little programs written in the language, Java, to display or interact with multimedia content;
- VRML (Virtual Reality Markup Language), a 3D language to describe 3D objects that can be real-time manipulated in the internet browser.

## Submit your electronic poster

The digital era in poster creation, display, and distribution will certainly make you creative. ECR looks forward to receiving your professional multimedia poster.

---

## Summary

The guidelines in this paper may assist you in preparing, submitting, and presenting a professional multimedia poster about your scientific or educational work. Taking care about the optimal design issues indicated, and using the seemingly limitless multimedia possibilities with caution and care, and taking into account the targeted audience, will all help to make this new epic feat a success, for you and your audience.

---

## Reference

Online resource: <http://ublib.buffalo.edu/libraries/units/sel/bio/posters.html> contains a wealth of references and informative websites.