# Building a Dynamic Review Journal (DRJ): Extending the Role of the Virtual Orthopaedic University

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**Objectives**: A digital library, together with its users and its contents don't exist in isolated splendour. There is a cycle of activities which provides the context for the library's existence, supporting various roles of information access, discovery, storage, dissemination, and preservation. The Virtual Orthopaedic European University (VOEU)[1], developed by a consortium drawn from six European countries, is dedicated to the ongoing professional education of Orthopaedic Surgeons across the European Community. VOEU supports experienced surgeons learning about and disseminating material upon surgical techniques in Orthopaedics, especially Image Guided Orthopaedic Surgery. The objective is to provide joined-up computer support across the research and educational cycles as these activities are intrinsically coupled as a part of the requirements of Continuing Professional Development.

**Method**: Within VOEU, the Dynamic Review Journal (DRJ) is designed to meet two main functions; to aid surgeons in preparing findings for publication, and to support the educational process. Orthopaedic trials typically run for extended periods (up to 2 years), with postoperative assessment results being collected regularly. The collated results are then analysed and discussed by a team before being disseminated to the wider orthopaedic community. We have extended the Virtual Orthopaedic European University (VOEU) Web site to incorporate DRJ support for this process.

**Results**: The following procedures were carried out in order to achieve this integration; DRJ Framework components combined with existing VOEU "look and feel", database initialised with a "Virtual Observatory" of orthopaedic data (clinical case information) & templates (schemas) added on by components of the VOEU system.

Data schemas for recording data describing shoulder and hip operations, plus follow-up outcome test scores have been developed. Experimental schemas describing typical orthopaedic clinical trial protocols and publication schemas describing the

submission requirements of the Journal of Bone & Joint Surgery (JBJS)[2] & British Medical Journal (BMJ)[3] have been used to evaluate the system. The user interface allows access to trials, logbooks, and papers that are in preparation. Pilot study results demonstrated 87% 'good' or 'very good' usability performance (n=8) with ongoing evaluation by 80+ clinicians.

**Discussion**: The web gives publishers a new medium for making their journal archives available [4], it also gave authors the means to break the so-called "Faustian bargain" and directly distribute their articles in pre- or post-publication from their own, institutional pages [5] or in organised "ePrints archives"[6]. The emergence of technical support for improving human communication in the form of highly collaborative, large-scale activities and analyses (the Grid, virtual universities) that is likely to precipitate significant change in the field of orthopaedic communication and significant changes in the way its communications are produced, curated and disseminated [7]. Users require a computing infrastructure for undertaking 'big science' [8] such as multicentre longitudinal studies. Beginning as a mechanism for applying statistical analysis to large-scale experimental procedures, this will be developed to encompass large-scale human collaboration [9], characterising many areas of orthopaedic endeavour. The VOEU managed learning environment for training surgeons consists of multimedia educational material (including problem cases and assessment), interactive simulators, and communication tools (moderated and asynchronous message boards) together with the Dynamic Review Journal. The pedagogy is designed to invoke active participation using these multiple resources in the shared learning environment.

**Conclusions**: The objective to build support for the digital library systems in orthopaedics, and in particular in the context of the Virtual Universities for computer-supported education and communication has been achieved. This was done by bridging the gap between the undertaking of experimental work and the dissemination of its results through electronic publication. This work addresses the cycle of activity in which a digital library rests. The authors argue that publishing / dissemination /research/learning are equally important parts of the scientific cycle of activities in orthopaedics. The DRJ is integrated into a Virtual Orthopaedic University learning environment and is an example of a system, which deliberately crosses the barriers

between the areas of experimentation, analysis, publishing, dissemination, discussion & education.

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