

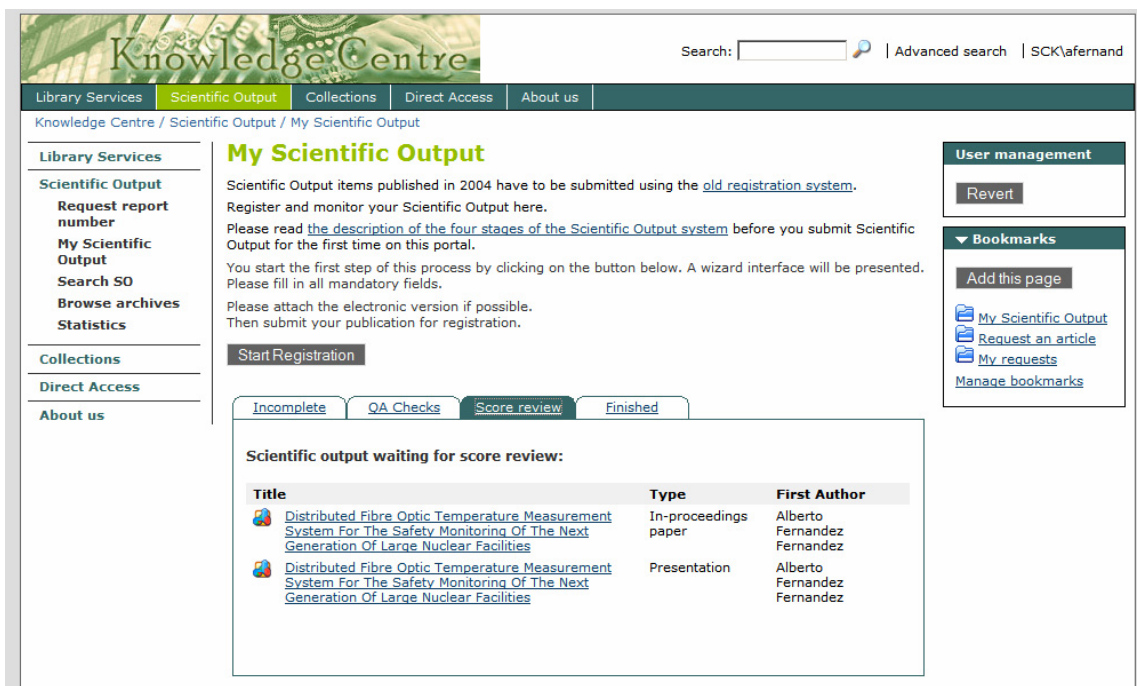
Since several years SCK•CEN has acknowledged the importance of Nuclear Knowledge Management. In recent years, a number of trends have drawn attention to the need for better management of nuclear knowledge. At the Lisbon European Council in 2000 the role of R&D was recognized as the driving force for a competitive and dynamic knowledge-based economy and linked to the economy's capacity to turn new knowledge into technological innovation. Knowledge management (KM) is therefore becoming more and more critical to exploit R&D results effectively and expect sufficient returns to balance the risk inherent in the large investments required by today's nuclear research.

The SCK•CEN practical approach towards Nuclear Knowledge Management is twofold. First, the capture of tacit knowledge before the loss of key individuals as well as the preservation of various knowledge repositories address the complex issues of aging of the nuclear workforce and reduction of the number of students taking nuclear subjects. Secondly, the set up of education networks at international level aims to prevent further dilution of nuclear education and training programmes while pooling nuclear research resources in order to meet future requirements for qualified nuclear staff. Knowledge management combines therefore different sources of information with human knowledge capital.

Managing Nuclear Information

Nuclear information management aims to get the best value from all the different types of information generated or used within an organisation. This information may be from internal or external sources, structured or unstructured, published or not, useful for a short time or longer period. Its format may be paper or electronic and its significance purely local and administrative or enterprise-wide and strategic. This variety calls for an effective information management system designed to support our staff in their day-to-day work. Consequently, the Knowledge Centre portal which integrated initially external scientific information sources with online library services has been upgraded to cope with the management of the SCK•CEN Scientific Output produced by our researchers (publications, conferences or reports).

Although based on a Quality Assurance (QA) procedure for the registration of publications implemented since 1991, the old repository system exhibited the well-known limitations of paper-based workflows: hardly accessible information stored in paper collections, duplicated storage of identical documents by different research groups and inconsistent or missing vital metadata. It provided therefore an inaccurate base to analyse the performance of on-going research projects.



The screenshot shows the 'My Scientific Output' page in the Knowledge Centre portal. The page is titled 'My Scientific Output' and contains instructions for submitting scientific output. It includes a 'Start Registration' button and a table of scientific output items waiting for score review.

My Scientific Output

Scientific Output items published in 2004 have to be submitted using the [old registration system](#). Register and monitor your Scientific Output here. Please read the [description of the four stages of the Scientific Output system](#) before you submit Scientific Output for the first time on this portal. You start the first step of this process by clicking on the button below. A wizard interface will be presented. Please fill in all mandatory fields. Please attach the electronic version if possible. Then submit your publication for registration.

[Start Registration](#)

Workflow: [Incomplete](#) | [QA Checks](#) | **[Score review](#)** | [Finished](#)

Scientific output waiting for score review:

Title	Type	First Author
Distributed Fibre Optic Temperature Measurement System For The Safety Monitoring Of The Next Generation Of Large Nuclear Facilities	In-proceedings paper	Alberto Fernandez Fernandez
Distributed Fibre Optic Temperature Measurement System For The Safety Monitoring Of The Next Generation Of Large Nuclear Facilities	Presentation	Alberto Fernandez Fernandez

Screenshot of the personalized Scientific Output system with workflow

In February 2005 we launched an improved Scientific Output registration system. This system provides primarily a central repository for collecting and preserving SCK•CEN scientific publications and reports. As the integration of a knowledge management tool into everyday work is a prerequisite for its success, it supports the review processes through a web interface matching the original QA workflow.

The positive effects are reduced information handling costs and optimized process time. The author can assess at any time the status of a registered publication and receives automatically by e-mail the results of the review process. Secondly this system acts as an efficient performance assessment tool in terms of project evaluation by year. More accurate management information is offered through real-time detailed statistics organised by author, by project or by organizational unit. Furthermore the Scientific Output system will not only open new ways for preserving and assessing but also for promoting SCK•CEN research by selecting the most outstanding research results through an Open Access institutional repository of published and unclassified material.

The necessity to share information and knowledge among organizations in times of diminishing resources is manifest in the establishment of international and European networks. Participating in networks of excellence funded under the Sixth Framework programme (FP6) is an invaluable source of accessing knowledge at outside organizations. SCK•CEN is not only participating in different networks through scientific work packages but actively promotes the use and dissemination of this knowledge by coordinating and setting up web-based knowledge portals and communication websites. In 2005 SCK•CEN successfully launched the collaboration portal of the Network of Excellence on Micro-Optics (NEMO), with an e-inventory of the pooled equipment infrastructure and experts and e-spaces for collaborative work (www.micro-optics.org).

Networking Education and Training

SCK•CEN initiated different European and national efforts to address the need for greater numbers of qualified and trained nuclear staff. In 2005 the European 5th Framework Programme project European Nuclear Engineering Network ([ENEN](#)) evolved itself into the European Nuclear Education Network (ENEN) Association, a non-profit-organisation according to the French law. Its main objective is to foster the international exchange of students and teachers. The different ENEN members offer courses according their expertise in the field of nuclear engineering, while putting at disposal of students the unique experimental and training nuclear infrastructure throughout Europe. SCK•CEN is currently ensuring the Association's Secretary. Moreover, the Nuclear European Platform for Training and University Organisation (NEPTUNO) was created under the European 6th Framework Programme. This project coordinated by SCK•CEN focuses on harmonising the approach for nuclear engineering education and training in Europe and on better integrating both national and industrial resources and capabilities. Finally, the FP6 project ENETRAP started with the goal to integrate existing Education & Training activities in radiological protection across European countries providing the necessary competence and expertise for the continued safe use of nuclear radiation by industry, medicine and research.

In September 2005 started the fourth academic year of the Belgian master program in nuclear engineering under the umbrella of the Belgian Nuclear Education Network ([BNEN](#)), initiated by SCK•CEN and five Belgian universities. The programme extensively benefits from the staff, laboratories and lodging facilities of SCK•CEN. The courses of BNEN programme on Nuclear Reactor Theory, Nuclear Thermal Hydraulics, Radiation protection and Nuclear Measurements, Operation and Control, Reliability and Safety were successfully opened to ENEN students in order to encourage participation of foreign students. Furthermore in order to provide reactor operators with a basic understanding of the main concepts relevant to nuclear reactors, SCK•CEN continues the tradition to organise a course on Nuclear Reactor Physics at the request of the Belgian Nuclear Industry. The theoretical lectures on are followed by practical sessions on the BR1 and VENUS research reactors at the SCK•CEN site.

Recently the Faculty of Medicine of the Catholic University of Leuven initiated a graduate in radiation protection for occupational medical practitioners, students in medical physics, specialists in radiotherapy and specialists in nuclear medicine. Thanks to its extensive knowledge and expertise in radiological protection SCK•CEN experts lecture academic courses on the organisational, legal and risk communication aspects regarding radiation protection.

The retirement of senior scientists and experts could lead to further reduction of the available core competencies. By contrast, maintaining innovative edge requires developing new ones while attracting young blood and retaining staff. In this context, the effective management of the pool of our corporate knowledge as a strategic resource is required. Our knowledge management approach tries to tackle the Nuclear Knowledge Management issue not only inside SCK•CEN but also through research networks, education and training platforms at national and European level.

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