



Online tools give access to the universe of nuclear science

Nucleonica and the Karlsruhe Nuclide Chart are freely-available information products providing structured, accurate information in the area of nuclear sciences. Whether we are nuclear scientists or not, nuclear science impacts many areas of life - it is for instance used to find cures for cancers and viruses, to explain the content and secrets of the universe and to determine the age of archaeological – or much more recent – objects.

Scientists working at the European Commission's in-house science service, the Joint Research Centre (JRC), have made a particular contribution to this effort. They have pioneered interactive on-line platforms sustaining the growth and development of nuclear knowledge communities globally. Their remit is to ensure that necessary expertise and practical work expertise is monitored, reported and shared. In so doing, they have fused the potential of modern web technologies with comprehensive scientific data.



Nucleonica and the Karlsruhe Nuclide Chart have users in approximately 100 countries. The on-line tools are a mainstay of International Atomic Energy Agency training programmes and a regular feature in laboratories and textbooks worldwide.

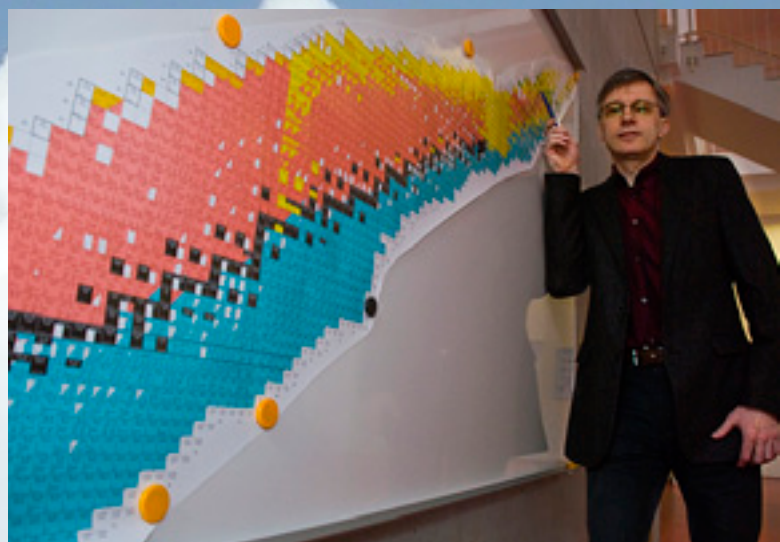
Joint Research Centre (JRC)
– the European Commission's in-house science service

Nucleonica and the Karlsruhe Nuclide Chart compile and make scientific data freely available in an educational, 'live' format which makes use of web crawlers, rss feeds, along with a discussion forum, a blog, a wiki and numerous tutorials.

Nucleonica is being used by professionals for everyday calculations, for obtaining quick results and testing, or for validating and verifying complex computer models. It employs cloud applications and IT tools within an integrated knowledge environment and a collaboration platform is at the core of a community of students and professionals where users not only access information individually, but can also interact.

The Karlsruhe Nuclide Chart is a living periodic table displaying all known isotopes of all elements and their radioactive data in a distinctly easy to navigate colour scheme.

The approach to both products is minimising the effort needed to find, access and process extensive amounts of data in real time. Their design also facilitates those new to the science to learn in a format which is more accessible, mobile and cost-effective.



Background

With its roots firmly placed in the European Atomic Energy Community (EURATOM, 1957), the JRC today draws on decades-long nuclear experience to invent solutions-orientated end-products.

With thousands of users in approaching 100 countries, Nucleonica has fast become one of the most popular nuclear knowledge sites worldwide. A spin-off company, established by a former JRC scientist in Germany in early 2011, aims to take this potential even further.

The Karlsruhe Nuclide Chart has been tracking new elements since 1958 and is the product of a longstanding partnership between the JRC and Karlsruhe Institute of Technology. Its history charts the discovery of new elements and decay models, neutrinos, quarks, antimatter and dark matter. At least 6,000 nuclides are believed to exist with 3,000 discovered so far.

Accurate information exchange is central to the success of niche science. Innovative repositories optimising advances in ICT technologies are best placed to reach those students, scientists, engineers, technical staff and policy-makers at the forefront of developments in health physics, nuclear and radiochemistry, astrophysics and other areas of nuclear specialism. The JRC and its partners are doing just that. Recent commercial tie-ups mean that these smart end-products will further evolve and respond to end-user needs.