

**Data Evaluation for Atomic, Molecular and Plasma-Material Interaction Processes in Fusion****SUP@VAMDC****Uniting the international atomic and molecular data community****N J Mason**

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Atomic and molecular (A+M) data are of critical importance across a wide range of applications such as astrophysics, atmospheric physics, fusion, environmental sciences, combustion chemistry, health and clinical science including radiotherapy and underpin a range of industries ranging from technological plasmas to lighting. Accordingly in the past decade the wider research community has appreciated the need to collate and make available the A+M data that describes fundamental atomic and molecular processes recognising how access to such data is central to achieving scientific breakthroughs across a range of disciplines. However such increasing demands by the research community for large amounts of A+M data present major challenges to the expert research teams in Europe, the USA, Asia and elsewhere that measure, derive and collate such data as demand outstrips supply. The interface between the producers of A+M data and the wide body of users of that data has therefore been a major bottleneck, slowing discovery and hence slowing economic growth. The VAMDC e-infrastructure ([www.vamdc.eu](http://www.vamdc.eu)) was developed to remove this bottleneck by designing/implementing interoperable protocols among a wide range of disparate databases A+M databases and providing a single portal through which users can access A+M data whilst providing data providers and compilers a large dissemination platform for their work. To date VAMDC has been mainly confined to those partners providing the databases for the shared platform and thence their established users.

The concept of the SUP@VAMDC programme is to establish the necessary coordination methodology required to formulate the roadmap that will ultimately combine VAMDC with complimentary infrastructures organised by existing international bodies/committees/networks dealing with the production, evaluation and dissemination of A+M data ultimately leading to a global e-infrastructure for the assembly, curation and access of the immense amounts of atomic and molecular data that will underpin the development of the scientific knowledge base that will be required to meet (and overcome) the great scientific challenges of the early 21st century (e.g climate change, space exploration, human health and crucially, the continued technological advances that will drive the global economy).

SUP@VAMDC will therefore develop a strategy that will allow A+M databases/data centres (especially those outside the EU) to adapt their pre-existing structures to those fashioned by the VAMDC e-infrastructure whilst providing the mechanisms and tools for new data centres/databases to be developed such that they are immediately compatible with the recently developed VAMDC platform extending their reach and thence facilitating the adoption of such data centres/databases amongst a wider range of user communities spanning across academia, higher education, citizens and industry. Furthermore SUP@VAMDC will explore both the necessity for, and practicality of, an open e-infrastructure - Open VAMDC – that will takes a product based on e-science technology and primarily used by its established users, and transforms it into a worldwide product shared across communities from academia to citizens, with the inherent opportunities for training and exploitation that such a product brings.