

## The Science International Accord on Open Data in a Big Data World and the IUCr's response

Science is best served when access barriers to data (and publications) are low. “*Open Data in a Big Data World*”<sup>1</sup> is a response by the IUCr to an international *Accord*<sup>2</sup> by ICSU, IAP, TWAS and ISSC in an emerging scientific culture of big data on the values of open data that are *discoverable, accessible, intelligible, assessable and usable*. Technological advances in scientific instrumentation and computer technology have dramatically increased the quantities of data involved in scientific inquiry. It expresses the dependence of scientific assertions on supporting data and asserts that 'openness and transparency are the bedrock of modern science.' The IUCr supports this assertion, but argues that such data should also be subject to scrutiny through peer review and automated validation where possible to look for systematic bias or error. An overlooked challenge in handling ever-growing volumes of data is the need to apply the same level of critical evaluation as has historically been applied to smaller data sets. Any software implementations used to scrutinize such data should employ open algorithms where results could be cross-checked by independent implementations.

A major barrier to access is cost. Evaluating, storing and curating quality data is an expensive component of the scientific process, and care must be taken to understand how to obtain the maximum benefit from public funding of science.

[1] [http://www.iucr.org/\\_data/assets/pdf\\_file/0011/125687/OpenData\\_crystallography\\_web.pdf](http://www.iucr.org/_data/assets/pdf_file/0011/125687/OpenData_crystallography_web.pdf)

[2] <http://www.icsu.org/science-international/accord>

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