**Citing Scientific Software Using Digital Object Identifiers**

Peter Parker1, Tom Griffin1, Nick Draper1,2

1ISIS, RAL, UK

2Tessella, 26 The Quadrant, Abingdon, Oxfordshire, UK

A significant problem that affects academic scientific programmers is how to get recognition and measure the impact of their work. The traditional approach is by publishing a paper covering the design and functionality of the system, but this does not necessarily suit all projects – particularly long term projects where contributors change over time.

Digital Object Identifiers (DOIs) have proven to be an effective alternative to this approach, and as such have seen widespread use in the scientific community for the purposes of citing data.

DOIs consist of a name and some accompanying metadata which together describe and uniquely identify digital resources. A DOI name effectively offers a stable placeholder for the resource, since while metadata or the resource itself can be changed over time, the name will always remain the same. DOI metadata provides key information about the resource – such as a list of authors – and this information is searchable in a publicly-available online database.

At ISIS, we generate DOIs for data. This includes raw and processed data, as well as for the parent investigation the data belongs to. This offers our users an easy way to reference specific data sets.

In Mantid[1], we also use DOIs for referencing releases of our software. The process is scripted, automatically pulling in author lists and other information from our code repository before sending it all off to be registered. Mantid users can then easily cite the specific version of the software they have used.

Further afield, DOIs have gained traction for referencing software via integration with other services. GitHub[2] have integrated with the Zenodo[3] scheme, which offers developers a convenient way to generate DOIs for any software they have publicly shared on the site. ORCID[4] is another scheme that provides a way to uniquely identify researchers, which allows for linking to documents with DOIs.

An overview of DOIs will be presented, along with how they are currently used in Mantid and at ISIS, and some available options for others looking to create their own DOIs to track citations of their work.

**References**

1. http://www.mantidproject.org/
2. https://guides.github.com/activities/citable-code/
3. https://zenodo.org/
4. http://orcid.org/

Email corresponding author: peter.parker@stfc.ac.uk Preference: Oral/Poster

Key theme: Best Practices in Software Engineering