Recording research software in Pure

Background

Research software is an eligible REF submission. However, the majority of REF submissions are research publications. Indeed, refereeing research software is a difficult task, and reviewers may not have clear guidelines for its evaluation for the REF purposes (something else we need to work on), and many researchers prefer the safer route of submitting papers. As a result, software outputs are not always being recorded in Current Research Information Systems (CRIS) used by universities. The first step here would be to help to research software developers to find a way to record their outputs in CRIS. This may not always be obvious, so on this website we provide general guidelines and step-by-step system-specific instructions for doing this.

Recording research software in CRIS is useful for many purposes, not only for REF, and we encourage developers to report all your software outputs there. A survey of 15 Russell Group universities found that 92% of researchers use research software, 67% find it fundamental to their research, and 56% develop their own software. To get further information, for example, an overview of all research developed at an institution, in the research group or by an individual developer, one could use CRIS or their public views (e.g. research portals), provided they contain relevant records. This will provide further evidence that software is vital for research, should be treated as research output, and will make a stronger case for the campaign for the recognition and adoption of the RSE role within academia, lead by the UK Research Software Engineer Association.

UCISA regularly survey UK Higher Education Institutions about the systems they use, including CRIS. The 2017 results are available online; the 2018 results are pending.

Elsevier’s Pure is the most widely-used CRIS in the UK, followed by Eprints and Elements/Symplectic, Converis, IRIS, Worktribe/RIS, Vidatum

There are several broad categories of software which should be recorded in a CRIS.

- Open-source software
- Closed source software for which executables can be made available
- Software projects which are unable to make any outputs available, but which can be publicly acknowledged
- Software projects which can not be publicly disclosed

You may wish to create a single record for a piece of software, or multiple records for different versions of that software.

For open-source software, we suggest that the project is archived using GitHub’s integration with Zenodo (or similar), which will provide a DOI.

A CRIS typically classifies a software output as a kind of research output, effectively treating it as a special kind of paper. The exact details will depend on the system in use and how it has been configured.
If open source software has been archived elsewhere, you should reference that in the CRIS record; otherwise you can reference the source code repository.

If executables are to be shared, you can upload them to the CRIS or link to them if they are hosted elsewhere.

You should be able to apply access restrictions to the record as appropriate.

Other useful resources:

- The Software Sustainability Institute has published Software Deposit Guidance for Researchers.
- GitHub’s integration with Zenodo provides a powerful and user-friendly mechanism to archive software and get a DOI, including automated tracking of future releases.

This guide has been written with reference to the Pure instance at the University of St Andrews, which is version 5.13.1 at the time of writing, by the hackday project at the SSI’s Collaboration Workshop 2019. The team are:

- Louise Brown, University of Nottingham
- Alexander Konovalov, University of St Andrews
- Patrick McCann, University of St Andrews

How to report software outputs in Pure

Create a new Research Output from template **Non-textual form->Software**

Then you will see the following input form:
Enter details for Publication status and dates. Published and Unpublished are likely to be the relevant options, with Published being appropriate for open-source software.
Enter the publication information. Note that the mandatory Original language field does not refer to programming languages.
Leave **Media of output** as **No value**, or specify **Online** for software publicly available for downloads.
Add Contributors. Here you can search and add an internal contributor by their name, or create an external person.
After choosing an internal collaborator, you will see the next window.
The list of roles here is not really suitable for software projects (this is something to ask Pure developers in the future), so for now Author is likely the most useful role. There is no suitable role for maintainers, testers and other contributors who are not authors - for these, you should use Other.
After adding a new author, you will see the extended list of authors:
Change the Managing organisational unit if necessary.

Add Publisher information.
Potentially relevant options such as GitHub and Zenodo may already be available, or they can be created. If the software is available from its webpage, but not published via some repository, you can leave this field blank.
The next section, **Electronic version(s), and related files and links**, is where you can link to an external resource and/or upload files. In particular, if you have a DOI you should add it here, along with details of the applicable license.

For example, below is what is used for the release of the GAP system, version 4.10.1:
This is a link to the downloads page for the official GAP distribution:
This is a link to the corresponding tag in the GAP repository on GitHub:
If adding any keywords, try and be consistent with what you have used elsewhere (e.g. on GitHub) but try and avoid creating new keywords unnecessarily.

Add details of any Relations the record has to any existing records in Pure

- **Research Outputs** (papers), **Activities**, **Projects**, **Datasets** etc.
Finally, set the **Visibility** according to how you wish the record to be available and press **Save**.