

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF ENGINEERING
DIVISION OF COMPUTER SCIENCE
RESEARCH SOFTWARE ENGINEER
VACANCY REF: S&E-015625

Salary: Grade 6 £32,816 to £40,322 per annum (according to relevant experience)

Hours: 1 FTE

Duration: Fixed term from 01 October 2020 until 31 March 2022

Location: Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

Manager: Shoaib Sufi,

Email: shoaib.sufi@manchester.ac.uk

BACKGROUND

[SYNTHESYS+](#) is a pan-European collections infrastructure project and the fourth iteration of the SYNTHESYS programme, funded by the European Commission. It aims to lay the foundations for the [Distributed System of Scientific Collections](#) (DiSSCo), a scientific infrastructure project, which will see 115 European Museums from 21 Countries able to physically and virtually collaborate with their collections.

As part of the work of sharing collections the project aims to improve the quality of and increase access to digital collections and data within natural history institutions by developing virtual collections. Technological approaches, such as computer vision, data mining and machine learning, to rapidly enhance minimal natural history specimen records using images (e.g. of labels, specimens or registers) and unstructured text at scale. These approaches will be largely automated to make a Specimen Data Refinery (SDR).

In order to handle automation the project will use workflow management systems, running the workflows on an execution platform portable to local or shared cloud infrastructures. A registry of tools and workflows will be created and the workflows, tools, data and metadata will be packaged using state of the art [Research Objects](#), as a contribution to creating a Specimen Digital Objects. To support sustainability, this work will be in partnership with the ELIXIR Tools

ecosystem, which includes the Galaxy workflow management system, the Common Workflow Language, Biocontainers, and the [Workflow Hub](#) registry which is developed at Manchester and is an instance of the [FAIRDOM-SEEK](#) platform. [ELIXIR](#) is the pan-European infrastructure project for Life science data, a sister to DiSSCo.

Overall Purpose of the Job:

The Primary role of the post holder will be to support image-processing, text mining and machine learning experts compose their tools into workflows or pipelines, and assist with their execution using data from disparate sources with deposition of results into databases. The post holder will set up the workflow platform and enable the running of the infrastructure on cloud platforms, including those provided by the European Open Science Cloud ([EOSC](#)) where appropriate. They will assist in the identification and implementation of data storage solutions. They will extend and configure the FAIRDOM [SEEK](#) platform to support the project. They will aid in the open source development of SEEK. The SEEK platform is the basis for the SDR.

The post holder will liaise with an international consortium of natural history museums, who will provide the data, tools and the algorithms to be used. The provenance of the data and of the algorithms run must be captured. The post holder will assist in the design and development of workflows, including the incorporation of the tools into the workflow management system. They will work with project partners on the definition and collection of appropriate metadata and support the standardisation choices of the project for the inputs and outputs of the tools.

The development of the platform will be incremental. The post holder will be responsible for the testing and versioning of the platform, including migration and documentation.

Key Responsibilities, Accountabilities or Duties:

Coordination and reporting

1. You will maintain and develop partnerships with the member organizations and coordinate a workflow focus group from the organization.
2. You will report to the project management and prepare deliverables and milestone documents.
3. You will attend meetings to discuss the development of the platform.
4. You will organize meetings with the workflow focus group.

Technical Roles

5. You will be responsible for establishing the workflow management platform, in the first instance evaluating the capabilities of the Galaxy system and the Common Workflow Language.
6. You will be responsible for assessing, setting up and running the compute and storage infrastructure for processing the workflows.

7. You will be responsible for enabling the tools developed by the project partners and their processing pipelines to be incorporated into the workflow platform, and workflow research objects to be created and consumed by the workflow management system.
8. You will be responsible for registering workflows, tools, metadata and data in a SEEK-based workflow hub.
9. You will be responsible for designing new SEEK functionality where necessary, and coordinate with other SEEK developers to agree schedules, development, and overseeing acceptance testing and evaluation with careful consideration to reliability, repeatability, usability and software best practices.
10. You will maintain existing infrastructure. This will include identifying and co-fixing issues within the codebase and ensuring the smooth and secure operation of all necessary computing infrastructure.

Community Roles

11. You will ensure the future development of SEEK meets the needs of the Synthesys+ consortium.
12. You will be responsible for reporting progress, activities, and blockers to the Synthesys+ consortium and to the local Manchester team.
13. You will respond to requests for support and other related queries from the consortium.
14. You will liaise between the ELIXIR Tools Platform and the Synthesys+ consortium.

Communication roles

15. You will write and improve technical documentation for SEEK to: allow developers to contribute to the project; facilitate 3rd parties utilizing our APIs and other technical outputs.

PERSON SPECIFICATION

Essential Knowledge, Skills and Experience:

- Have had a technical development role on a full-stack web development system/project; including knowledge of web frameworks, user interface design, authorisation systems and deployment skills.
- Excellent software development skills (ideally in Ruby on Rails but other languages acceptable) a focus on web development is a must (e.g. experience in CSS, HTML, Javascript and a web framework).
- Have worked with software development best practice (e.g. version control, testing, continuous integration, documentation, release management)
- Have been through all software development life cycle stages (requirements, prioritisation, specification, design, code and test).
- Delivered code in an iterative project management-based context.

- Worked as part of a team of engineers (two or more concurrently) working on a codebase.
- Understanding of cloud-based infrastructures, such as AWS and Azure, including deployment and authorization.
- Excellent communication and interpersonal skills
- Excellent time management and organisational skills
- Ability to work independently and as part of a team
- Ability to liaise confidently and effectively with a range of individuals
- Willingness to learn and develop
- Ability to meet deadlines
- Understanding of diversity issues in teams
- A good BSc. (2:1 or better) in Computer Science or other related subject with a strong computational component or equivalent experience
- Ability to travel: approx. 20 days of travel a year, trips would be 1-5 days long, 3 days on average and mainly in UK/Europe and could be to the USA or other regions.

Desirable Knowledge, Skills, Experience and Qualifications:

- Knowledge of Workflow Management Systems and concepts
- Have worked with APIs, both their use and their development and documentation.
- Any staff supervision
- Junior Project Management skills
- PhD. In a computing, computing related subject, or equivalent experience