PITHIA-NRF

Plasmasphere Ionosphere Thermosphere Integrated Research Environment and Access services: a Network of Research Facilities

Workflows Registration

at PITHIA e-Science Centre

User Guide

Version 1.1

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Table of Contents

1. Terminology and Abbreviations

API	Application Programming Interface
DAG	Directed Acyclic Graph
eSC	e-Science Centre
URL	Uniform Resource Locator
Data Collection	[*standard PITHIA vocabulary*]: top-level metadata document for registration of provided measurements and model computations (final Step #12 of the registration)
Data Resource	Single data service item and its associated metadata, available through the PITHIA-NRF system.
Dataset	Pre-computed or pre-processed data resource available for download.
ISO	International Standards Organisation
Metadata Model	[*science-neutral*]: Specification of different documents and their contents that are required for registration of data resources
Ontology	[*science-specific*]: A set of standard vocabularies for the selected domain of science
Phenomenon	[*standard ISO vocabulary*]: A physical observable (a.k.a. "Mother Nature"). Not to confuse with events; phenomena are not defined in time or space. The top-level phenomenon categories are Field, Particle, and Wave.
Workflows	[*standard PITHIA vocabulary*]: A combination of different interconnected data collections executed repeatedly in an orchestrated pattern to produce its output result. The pattern in its general form is a directed acyclic graph (DAG) and in its simplest form, a linear sequence of steps.

2. Introduction

This document provides detailed instructions on how users can register and publish Workflows at the PITHIA e-Science Centre (eSC).

As mentioned in the related interface in the eSC, a Workflow is "*a combination of different interconnected data collections executed repeatedly in an orchestrated pattern to produce its output result. The pattern in its general form is a directed acyclic graph (DAG) and in its simplest form, a linear sequence of steps.*".

3. Publishing Workflows

After logging in, registered users are presented with a landing page similar to the one shown in Figure 1. At the bottom of Figure 1, the user can see the institution they are a member of and select to manage their registrations (Figure 2), i.e. register new Data Collections, Workflows, and Static Datasets and/or edit the existing ones.

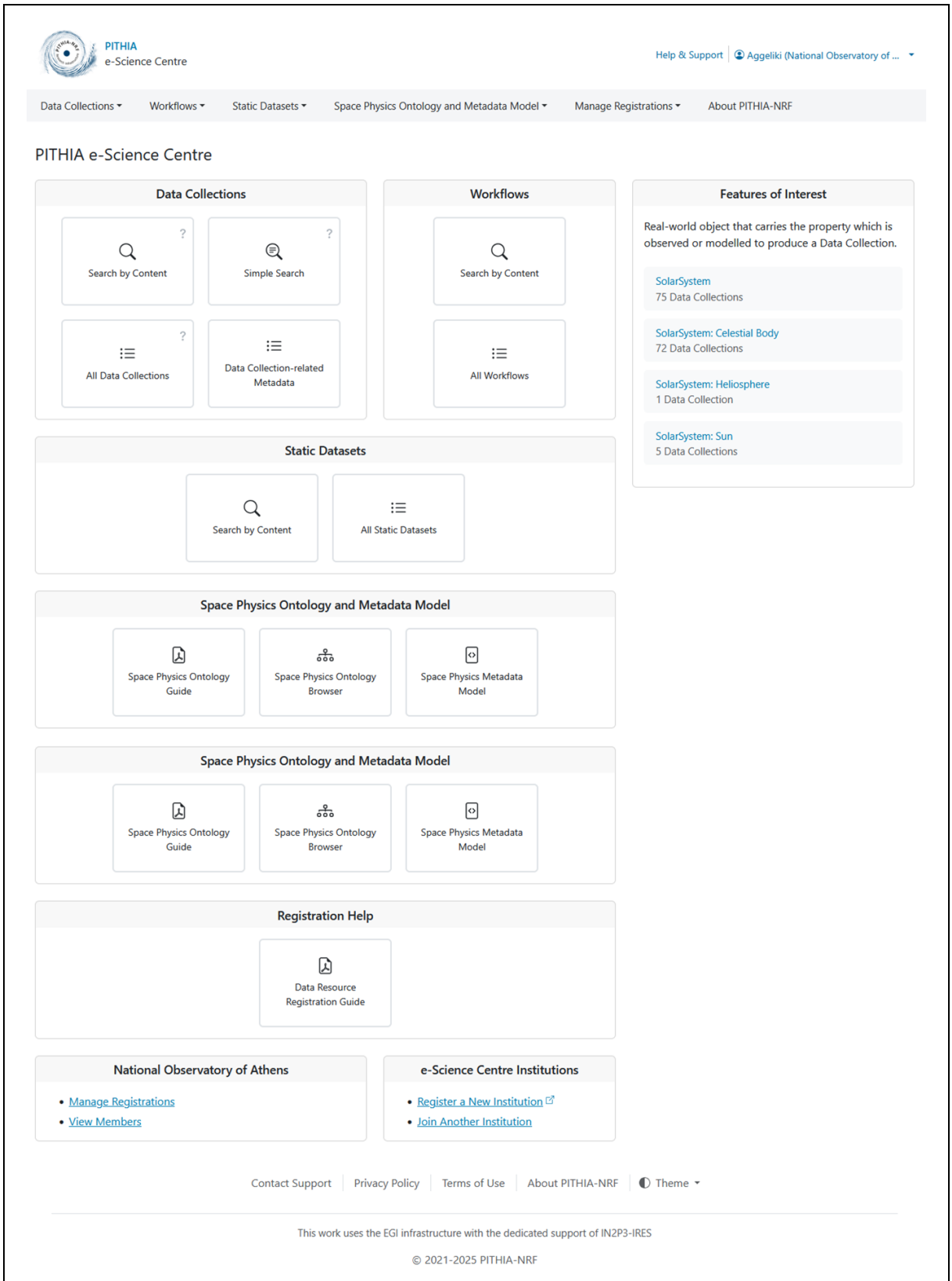

Figure 1 – Landing page of a registered user with an active membership in an institution

Figure 2 – Manage registrations option for a specific institution

For users to publish Workflows, they must choose the "Manage Registrations" option, which directs them to the corresponding page, as shown in Figure 3.

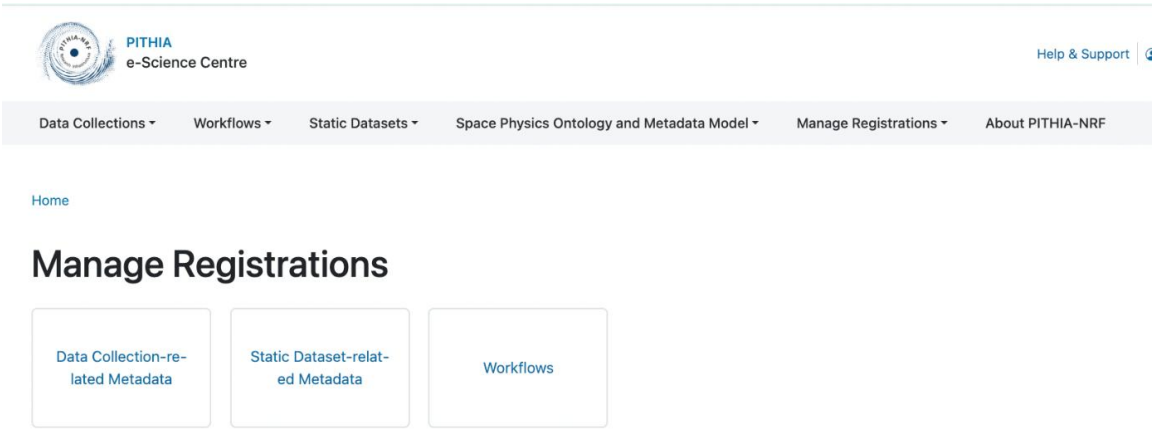

Figure 3 – Manage Registrations Page for a Specific Institution

As this guide focuses only on Workflows, the user must choose the option “Workflows”. This action directs users to the Workflow management page (Figure 4), where a user can register a new Workflow or update an existing one. This guide focuses on new registrations, specifically through the “Register with Wizard” option, which offers a graphical user interface.

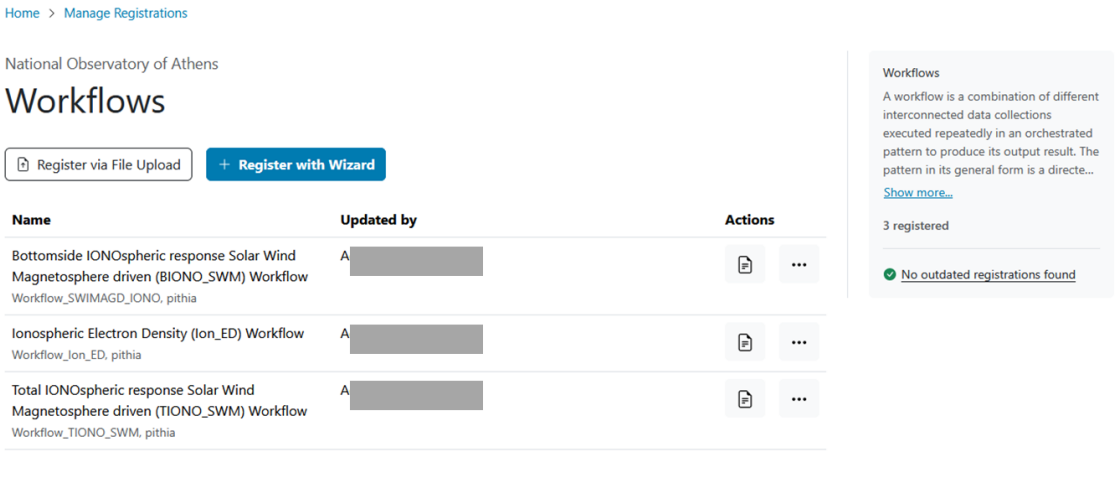

Figure 4 – Workflows Management Page

Having selected the "Register with Wizard" option (Figure 4), users see a form where they must enter all related information. The mandatory fields are indicated by a red asterisk.

The information is divided into the following categories:

1. **New Workflow** (Figure 5), where users must:
    a. Provide the name of the Workflow.
    b. Select from the drop-down list the associated organisation.
2. **Identifier** (Figure 6), which includes dynamically generated information specifically for the eSC. Here, the users can only modify the metadata version.
3. **Description** (Figure 7), where the user describes the registration that will be shown when someone finds and reads the specific registration-related information.
4. **Data Collections** (Figure 8), where you select the Data Collections associated with the Workflow from a drop-down list, namely those that comprise the Workflow. A full list of the eSC registered Data Collections can be found at https://esc.pithia.eu/data-collections/.
5. **Link to an OpenAPI Specification** (Figure 9), where users must:
    a. Provide an OpenAPI Specification URL, through which the Workflow runs.
    b. Provide a brief description of what the API can do.
6. **Workflow Details** (Figure 10), where a file with further details on the Workflow, including a graph diagram of the flow, must be provided either by uploading a pdf file or by providing a link to the file.

7. **Validate and Register** (Figure 11), once all the above options are complete the user clicks the “Validate and Register” button, and the eSC completes the registration providing a confirmation message.

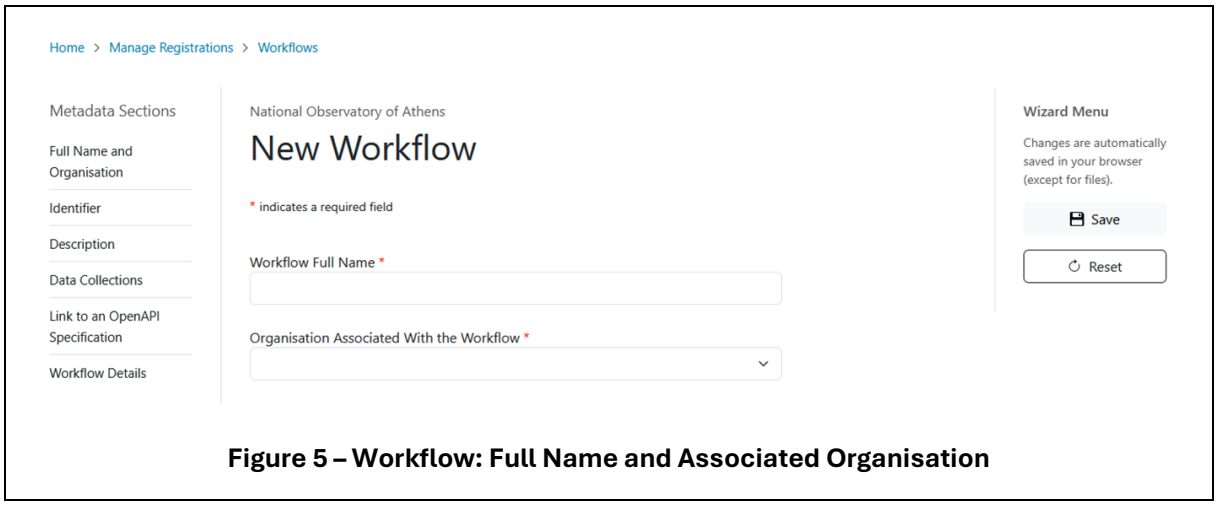

Figure 5 – Workflow: Full Name and Associated Organisation

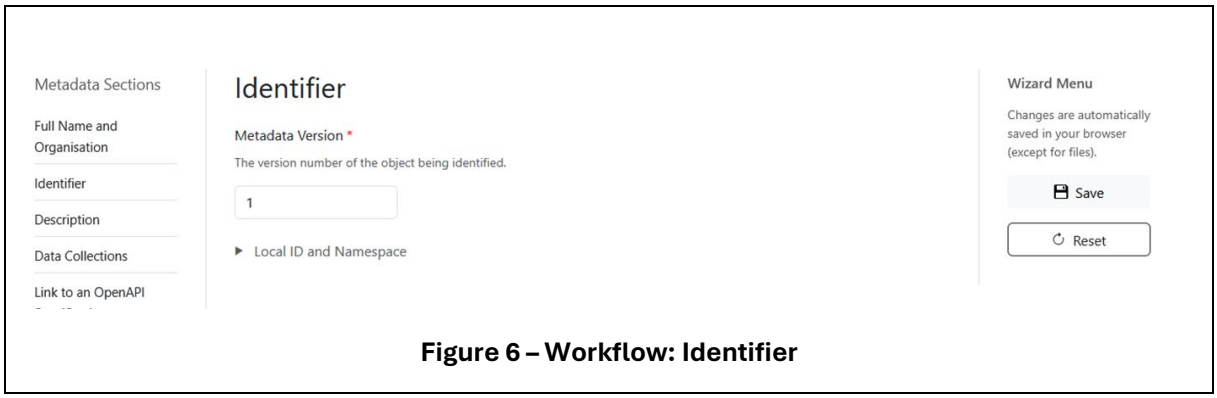

Figure 6 – Workflow: Identifier

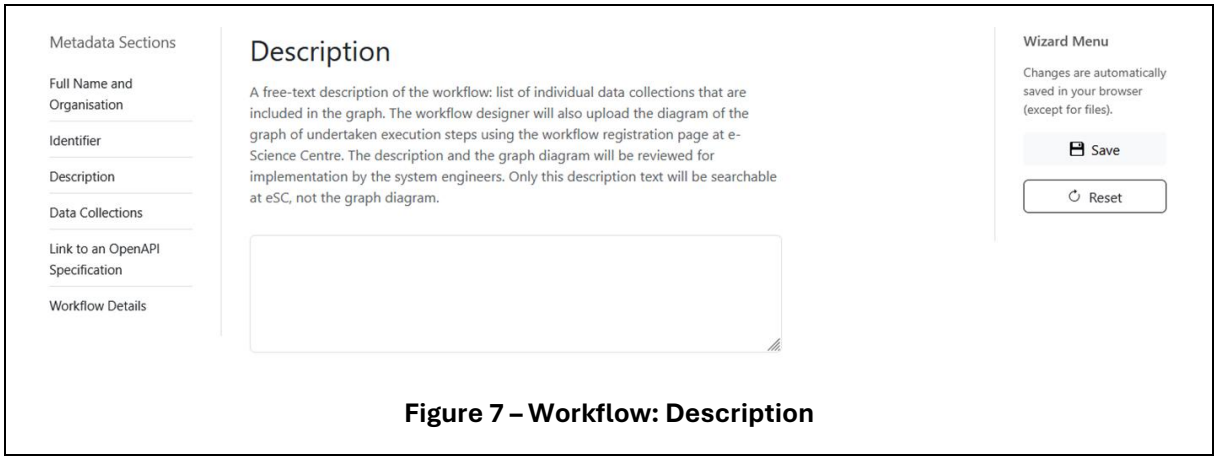

Figure 7 – Workflow: Description

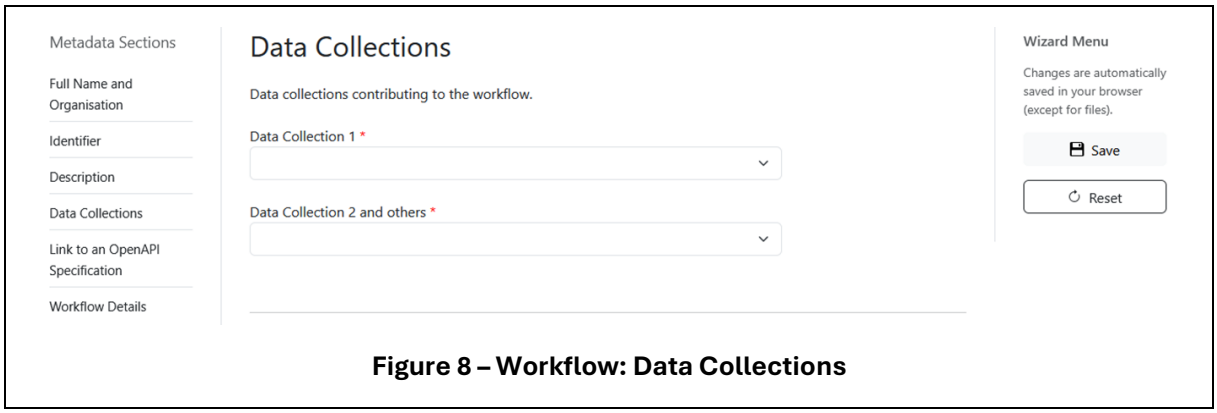

Figure 8 – Workflow: Data Collections

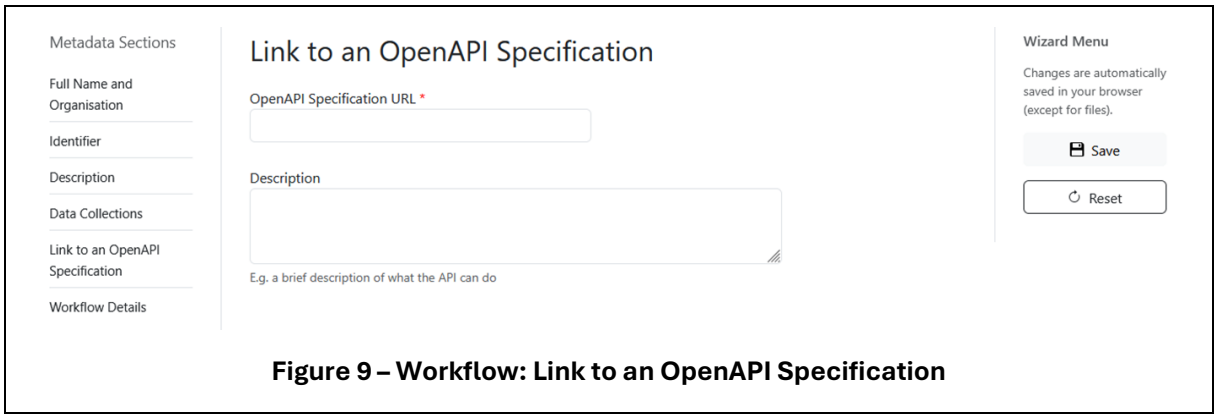

Figure 9 – Workflow: Link to an OpenAPI Specification

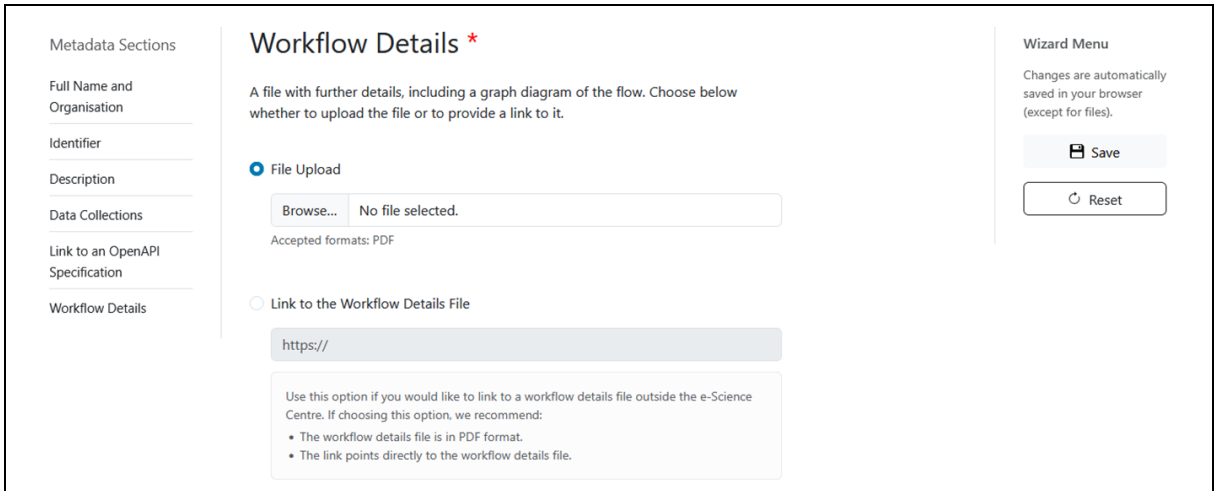

Figure 10 – Workflow: Workflow Details

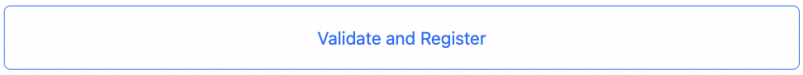

Figure 11 – Workflow: Validate and Register