



QUSTom

D5.3 – QUSTom Web repository

Version 1.3

Document Information

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Change Log

Version	Description of Change
V1.0	Initial draft for internal review
V1.1	Minor changes by Josep de la Puente
V1.2	Reviewer´s comments
V1.3	Review Meeting suggestions implemented and additional formal review

Table of contents

1. Executive Summary	4
2. Introduction	4
3. Zenodo QUSTom Software repository.....	5
4. Summary	9

1. Executive Summary

This document presents the open web repository (OWR) of the QUSTom project. This document describes the contents and organization of the OWR, considering that the actual datasets (and source codes and metadata) collection will be furnished as a “live” repository that will be periodically updated over the course of the project. Concretely, this deliverable describes the datasets and source codes that have been produced and/or collected during the first year of the QUSTom project lifetime.

This deliverable has been carefully developed to align precisely with the goals outlined in Objective 9 as well as to meet the specific criteria set forth in Milestone 8 of the project.

2. Introduction

This document presents the activity carried out to improve the accessibility to data and computing applications developed in the QUSTom project. Specifically:

- The creation of an open web repository (OWR) to store and share data, software, simulation toolkits, and their documentation.

It will enable researchers and stakeholder members to be more productive, leading to scientific excellence and economic and social benefit.

To implement the code repository, we had to consider the following constraints:

- Some of the QUSTom partner's codes and data already have a public repository (on GitHub/GitLab); in some cases, they are accessible through a web portal, a consolidated reference for a scientific community.
- Some codes are not open source and hence cannot be part of the repository. Some of the developments might not yet be publicly available.
- The repository should be flexible enough and sustainable beyond the duration of the QUSTom project (as stated in the data management plan - DMP, D1.2).
- It should satisfy FAIR (Findable, Accessible, Interoperable, Reusable) principles (as stated in the data management plan -DMP, D1.2 as well).

3. Zenodo QUSTom Software repository

Zenodo (www.zenodo.org) is a repository for research data hosted at CERN, allowing users to share their data according to the EU policies and make them citable by their own DOI. Zenodo is open to all science disciplines, and users can deposit any kind of data, such as spreadsheets, figures, reports, posters, presentations, and software, for free. The submission process is very user-friendly and offers many options for customising metadata.

The repository can thus be updated by QUSTom members in a non-centralised manner. Furthermore, it abides by OpenAIRE, thus ensuring a correct link between the products and the funding grant. Moreover, it will outlive the project, as hosting is provided for +20 years, following CERN standards.

Most of the metadata describing the QUSTom software is already implemented in Zenodo (v.gr. use the Zenodo repository). Table 1 reports the Child/subChild elements describing the QUSTom software.

By using Zenodo, the requirements of FAIRness and long-term sustainability will be guaranteed (<https://about.zenodo.org/principles/>).

The QUSTom software repository can be browsed at:
<https://zenodo.org/communities/qustom>

Child Element name	Sub-child name	Description
Basic Information	DOI	Digital Object Identifier
	Title	Model name or acronym
	Version	Release number
	Publication Date	Date of the last release
	Repository	Link to download page
Information	Programming Language	Programming Language
	Libraries	Required auxiliary software
	Requirements	Hardware requirements (e.g. minimum RAM, CPU/GPU architecture, storage)
	Description	Physical Model Description
	Algorithm	Mathematical Algorithm Description
Documentation	Implementation	Description of the Software engineering (including parallelisation model)
	Web page	Link to web page (if available)

	Related/alternate identifiers	Publication(s) of reference
	User Guide	Link to User Guide (if available)
	Reference Guide	Link to Reference Guide (if available)
	Gallery	Link to Image and Video (if available)
References		Related references
Copyright	Authorship	Name(s) of the authors
	Author ID	Author ID
	Affiliation	Institution
	Contacts	Contact email
	License	Text or Link to license page

Table 1. Metadata scheme for QUSTom software. In **red**, the “mandatory” elements requested in Zenodo are highlighted. In **orange**, the “recommended” ones. All sub-child elements in **black** can be inserted in one of the red/orange categories.

The following four images are screen captions of the current status of the QUSTom OWR.

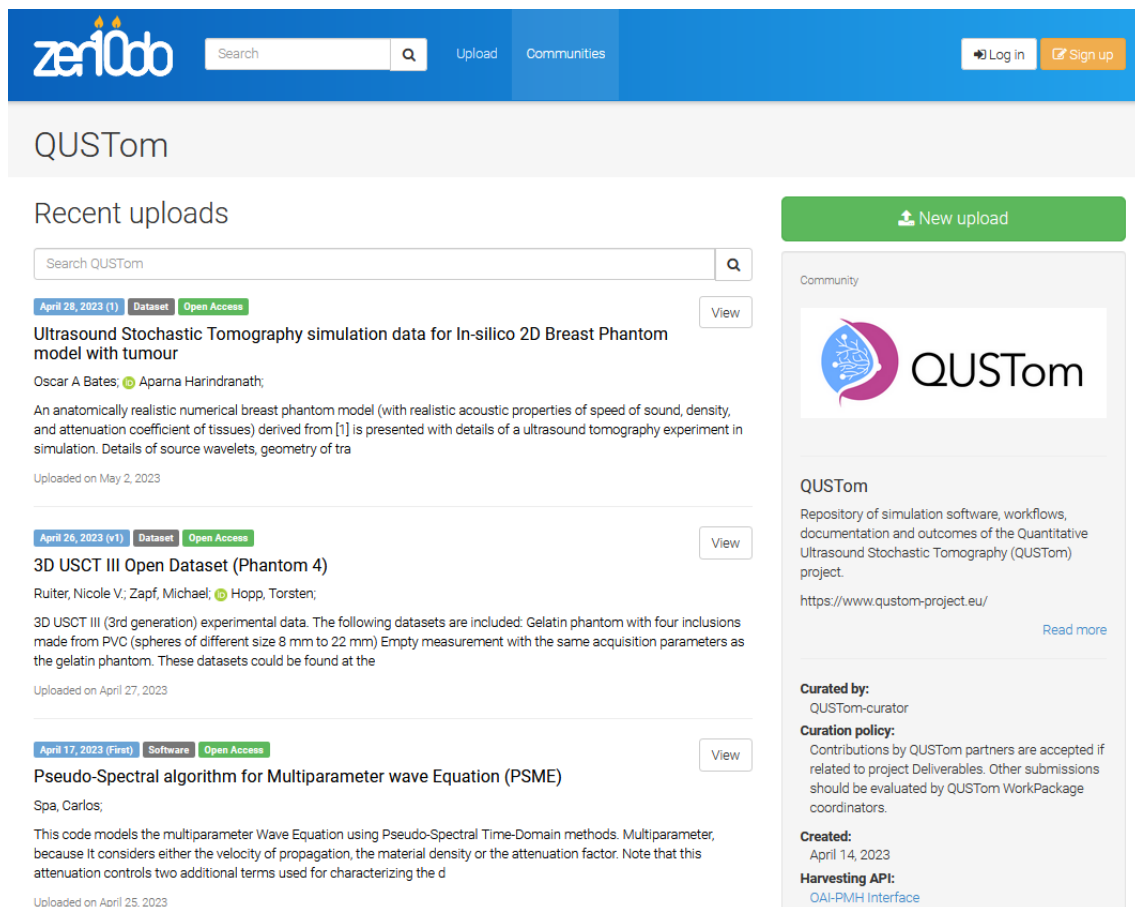
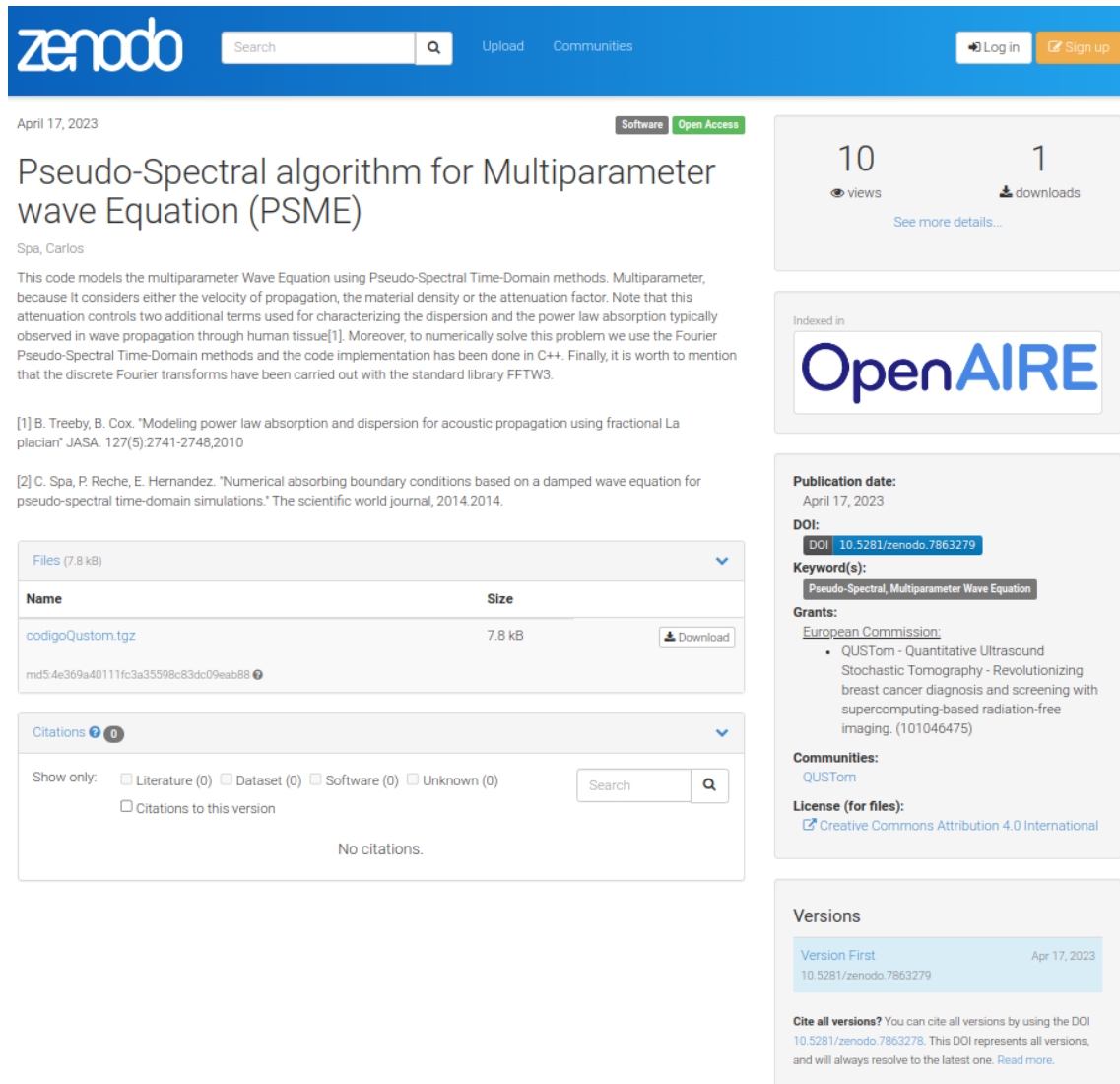
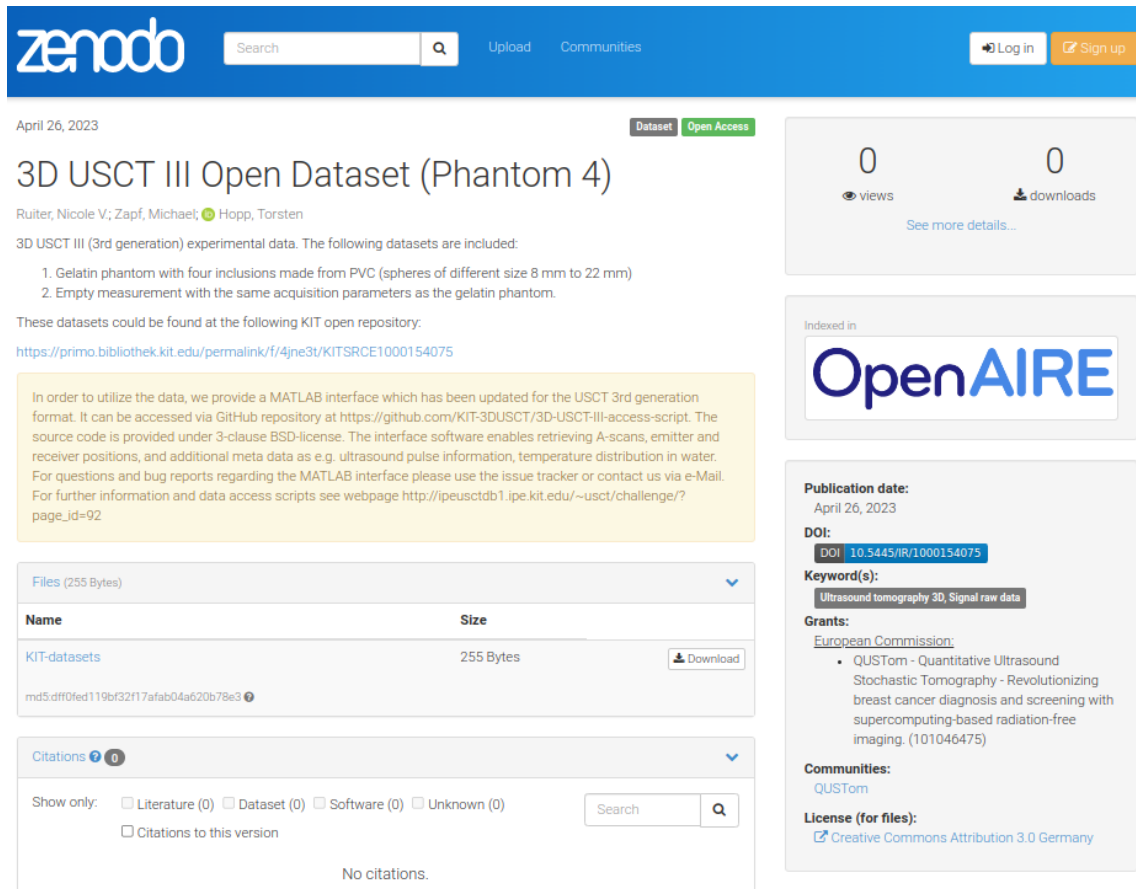


Figure 1. As of May 12th, the current status of the QUSTom OWR on Zenodo.



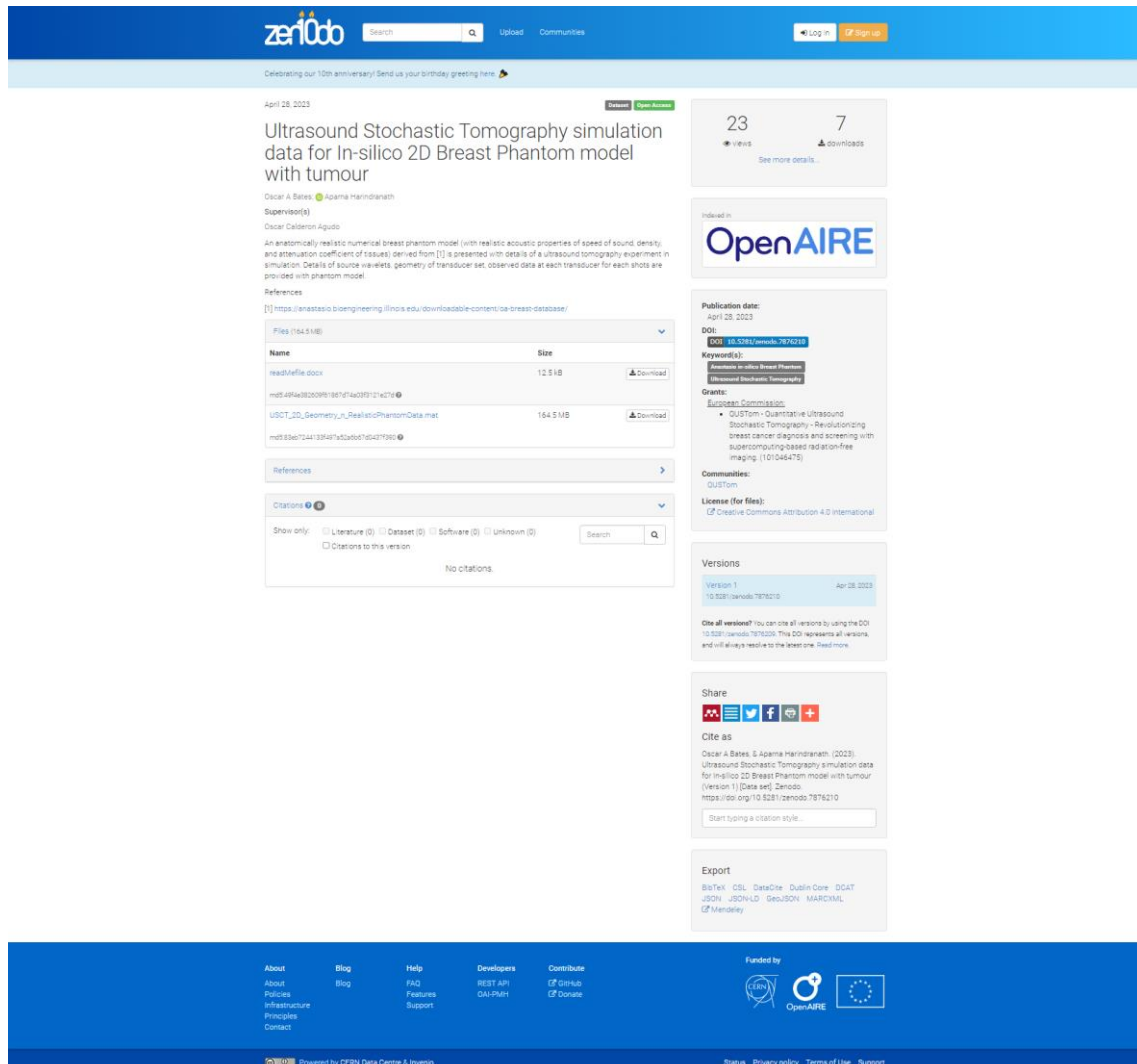
The screenshot shows a Zenodo repository page for a software upload. The header includes the Zenodo logo, a search bar, and navigation links for 'Upload' and 'Communities'. The page is dated April 17, 2023, and is categorized as 'Software' and 'Open Access'. The main title is 'Pseudo-Spectral algorithm for Multiparameter wave Equation (PSME)' by Spa, Carlos. The page displays 10 views and 1 download. The software file 'codigoQustom.tgz' is listed with a size of 7.8 kB. The page also includes a description of the code, two references, and metadata such as the DOI (10.5281/zenodo.7863279), keywords, grants, and license (Creative Commons Attribution 4.0 International). A 'Versions' section shows the current version as 'Version First' from April 17, 2023.

Figure 2. One of the uploaded software created during the QUSTom project.



The screenshot shows the Zenodo interface for a dataset titled "3D USCT III Open Dataset (Phantom 4)". The page includes a search bar, navigation links for "Upload" and "Communities", and user options for "Log in" and "Sign up". The dataset is dated April 26, 2023, and is marked as "Dataset" and "Open Access". It has 0 views and 0 downloads. The authors listed are Ruiter, Nicole V.; Zapf, Michael; and Hopp, Torsten. The dataset description states it is experimental data for the 3D USCT III (3rd generation) and includes two items: a gelatin phantom with four PVC inclusions and an empty measurement. A link to the KIT open repository is provided. A yellow box contains information about a MATLAB interface available on GitHub. The "Files" section shows a table with one file named "KIT-datasets" (255 Bytes). The "Citations" section shows no citations. On the right, there is an "Indexed in" section for OpenAIRE, a "Publication date" of April 26, 2023, a DOI of 10.5445/IR/1000154075, a keyword "Ultrasound tomography 3D, Signal raw data", a grant from the European Commission, and a license of Creative Commons Attribution 3.0 Germany.

Figure 3. Dataset updated during the QUSTom project.



The screenshot shows a Zenodo dataset page. The title is "Ultrasound Stochastic Tomography simulation data for In-silico 2D Breast Phantom model with tumour". The author is Oscar A. Bates. The page includes a description of the dataset, a list of files (readMefile.docx, USQT_ID_Geometry_in_RealisticPhantomData.mat), a references section, a citations section, and various metadata fields like DOI, keywords, and grants. The page also features a share section and an export section.

Figure 4. Dataset updated during the QUSTom project

4. Summary

The QUSTom community repository of data, codes, and products is now accessible at:

<https://zenodo.org/communities/qustom>

We expect the QUSTom community to add new entries and include updates to existing ones throughout the project's lifetime and beyond.

Participant no.	Participant organisation name	Part. short name	Country
1	Barcelona Supercomputing Center – Centro Nacional de Supercomputación	BSC	Spain
2	Karlsruhe Institute of Technology	KIT	Germany
3	FrontWave	FrontWave	Spain
4	Vall d’Hebron Institut de Recerca	VHIR	Spain
5	ARCTUR	ARCTUR	Slovenia
6*	Imperial College London	IMPERIAL	UK (associate)

Table 2. QUSTom’s partners