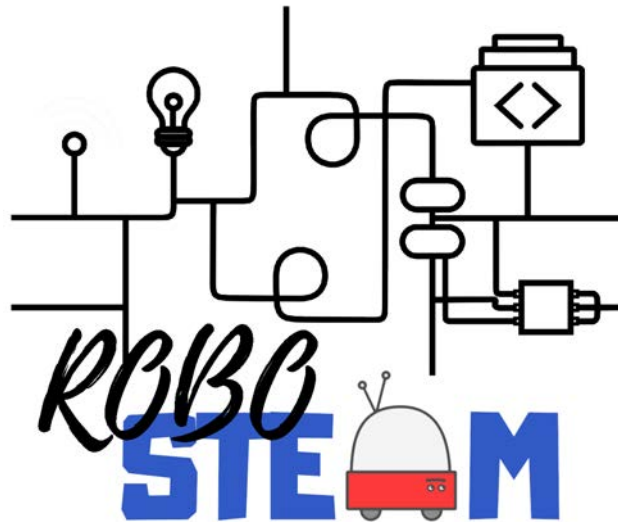

RoboSTEAM User Manual – O3.A3



Version	1.0
Date of issue	01/06/2019
Filename	ROBOSTEAM_O2A3_01062019.pdf
DOI	10.5281/zenodo.3522304
Nature	Service/Product
Dissemination level	PP (restricted to other programme participants)

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Project Number: 2018-1-ES01-KA201-050939

Version History

Version	Date	Comments
1.0	29/10/2019	Full manual version

1. O3. A3

This document describes part of the work of the Output 3 – RoboSTEAM Environment. The output aims to define an educational environment which will offer to schools and teachers a complete set of tools, activities, guides and support to manage the implementation of STEAM challenges. An important part of this output is to describe how to use the system. This is done through a user manual. The definition of this user manual is described as follows:

- “Collection of multimedia, video and HTML guidelines and tutorials for the use of the system. Special attention to accessibility requirements will be paid to facilitate the use of the environment to any user, regardless his/her technical expertise and/or eventual disabilities. These materials will be accessible in their own contexts as "help tips", but also in a specific section.
- Complete User Manual for teaching staff and students”.

2. RoboSTEAM Environment

The O3.A1 is devoted to design and implement a virtual environment, which means the technological ecosystem [1-5] for RoboSTEAM project [6, 7].

The RoboSTEAM technological ecosystem architecture is presented in Figure 1.

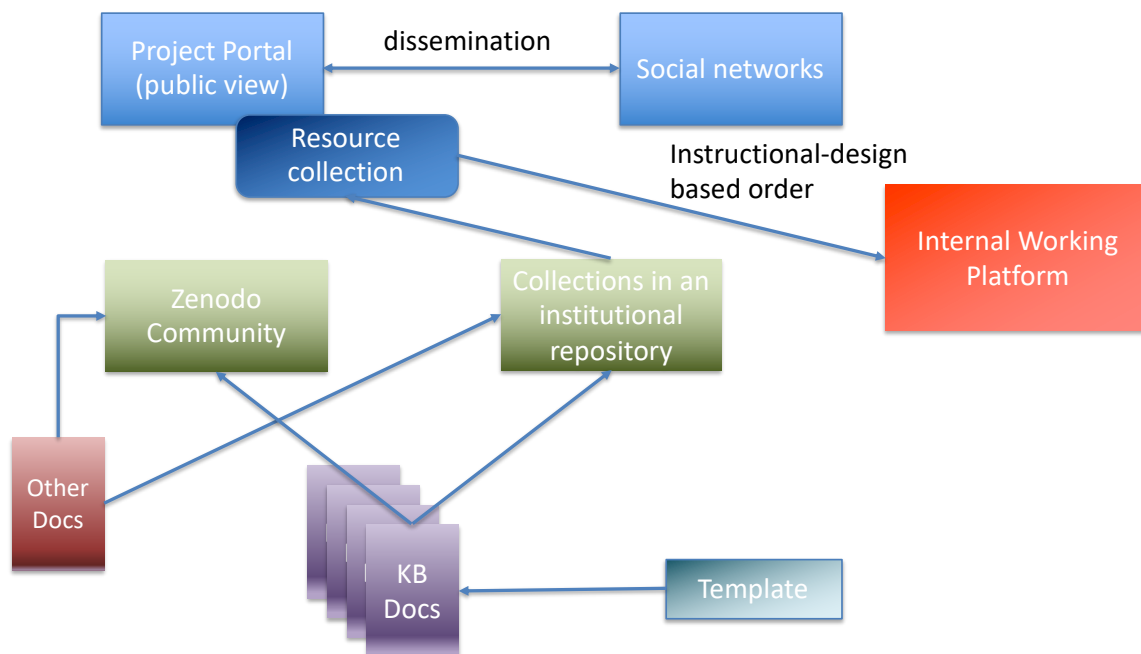


Figure 1. RoboSTEAM technological ecosystem architecture. Source: Based on [8]

3. RoboSTEAM Environment Manual

3.1. RoboSTEAM website

This is the public website of the RoboSTEAM project available at <http://robosteampoint.eu/> (see Figure 2). It is designed following the one-page metaphor and has links to the other main components of the technological ecosystem.

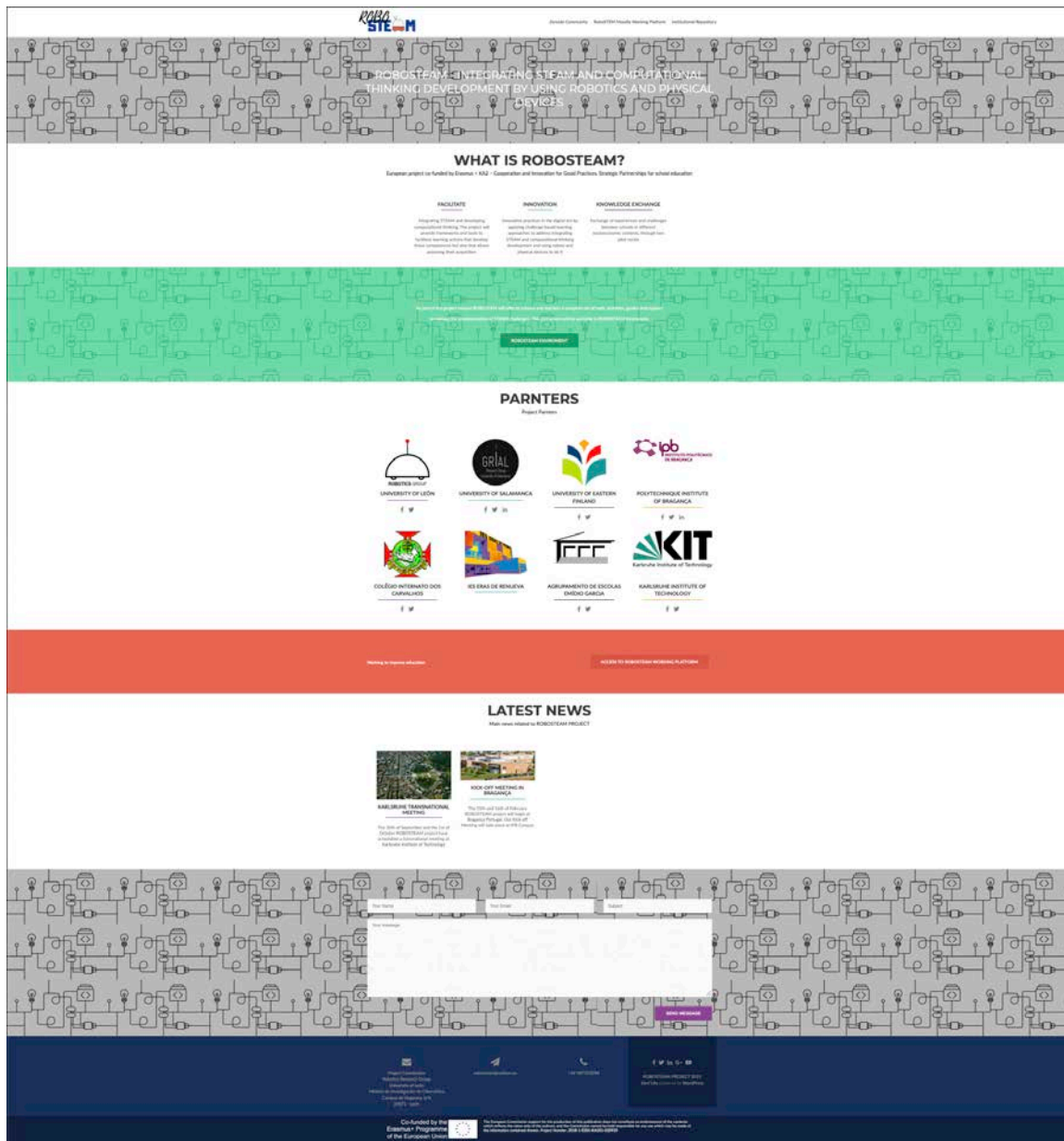


Figure 2. RoboSTEAM web site. Source: <http://robosteampoint.eu/>

3.2. RoboSTEAM internal working platform

It is the system for internal communication for the project partner and is based on a Moodle Learning Management System. This platform is accessible throughout the project website or directly throughout the URL <http://robosteampoint.eu/moodle/>.

This is not a public-accessible site, this means that only the registered users from every partner will have access through user and password (see Figure 3).

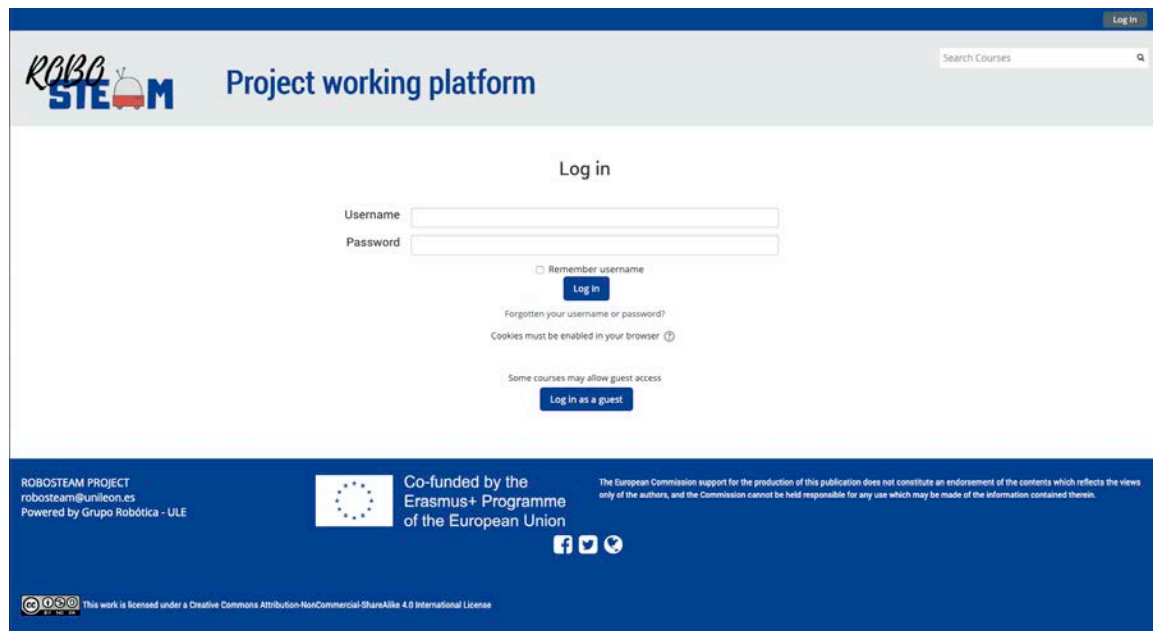


Figure 3. Login page of the RoboSTEAM internal working platform. Source: <http://robosteampoint.eu/moodle/>

Once the users are authenticated in the system, they have access to the project documentation, forum threads and pending tasks (see Figure 4).

Figure 4. RoboSTEAM internal working platform

3.3. RoboSTEAM community in Zenodo

A public community has been set up in Zenodo (<https://zenodo.org>). This community is accessible at <https://zenodo.org/communities/robosteam/> (see Figure 5) or throughout the project website.

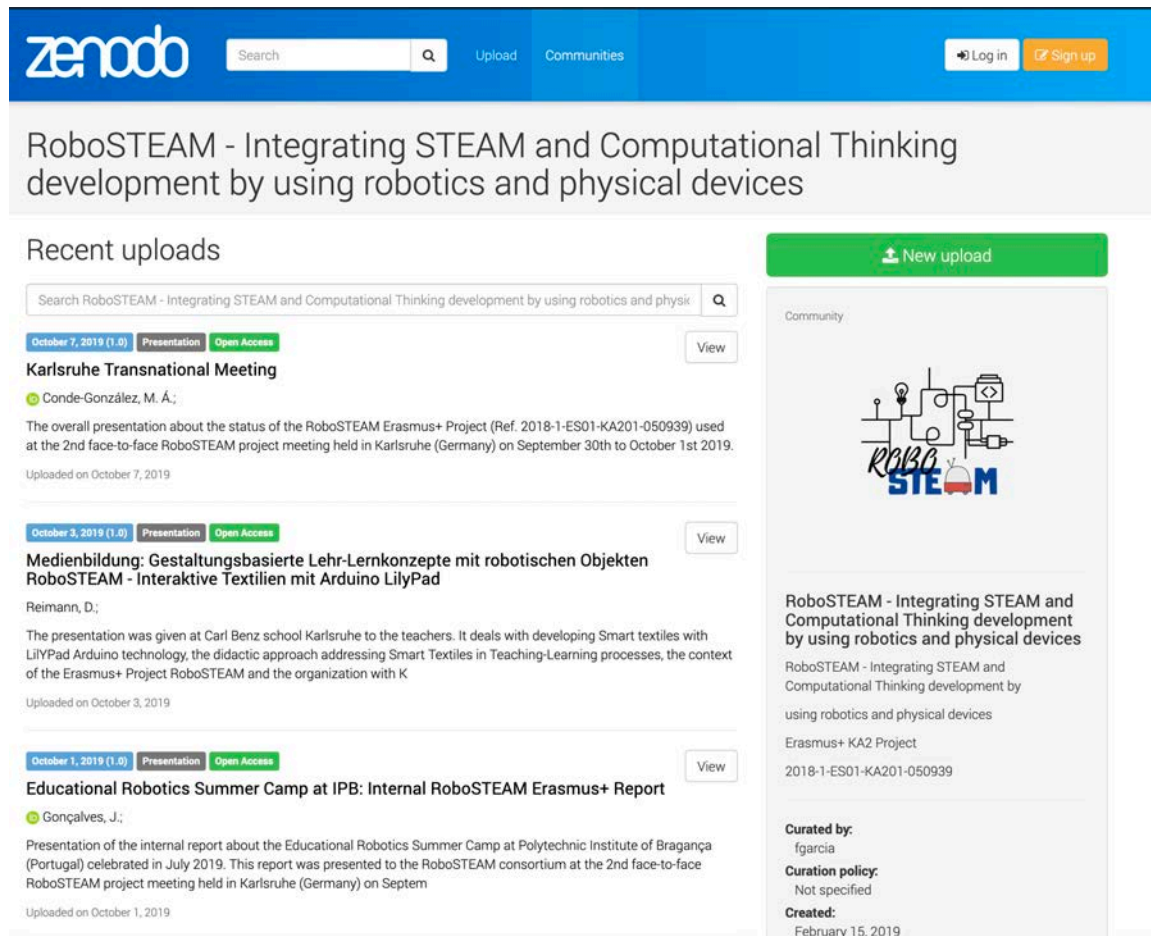


Figure 5. RoboSTEAM community in Zenodo. Source: <https://zenodo.org/communities/robosteam/>

The goal of this community is sharing all the documents and outcomes of the RoboSTEAM project. RoboSTEAM follows the principles of the open knowledge movement and open science policies [9, 10].

Figure 6 shows a RoboSTEAM register in the Zenodo community.

The screenshot shows a Zenodo record page for a presentation. The title is "Medienbildung: Gestaltungsbasierte Lehr-Lernkonzepte mit robotischen Objekten RoboSTEAM - Interaktive Textilien mit Arduino LilyPad" by Daniela Reimann. The page includes a preview of the presentation slides, a file list for a PDF document, and various metadata fields such as DOI, keywords, and communities. The footer of the Zenodo page lists navigation links and funding information.

Figure 6. RoboSTEAM register in Zenodo community. Source: <https://zenodo.org/record/3471784#.XbhoBUVKils>

The information about the community could be edited by the admin of this community at <https://zenodo.org/communities/robosteam/edit/> (see Figure 7).

The screenshot shows the 'Edit community' interface on Zenodo. It is divided into two main sections: 'Community URLs' and 'Information'.

Community URLs:

- Collection URL:** <https://zenodo.org/communities/robosteam/>
Above address links directly to your community collection.
- Upload URL:** <https://zenodo.org/deposit/new?c=robosteam>
Above address will automatically ensure people who use it will have their record added to your community collection.
- Curation URL:** <https://zenodo.org/communities/robosteam/curate/>
Above address links to your private curation URL. You will find all uploads pending your curation.
- Harvesting URL:** [Zenodohttps://zenodo.org/oai2d?verb=ListRecords&set=user-robosteam&metadataPrefix=oai_dc](https://zenodo.org/oai2d?verb=ListRecords&set=user-robosteam&metadataPrefix=oai_dc)
Above address links to a OAI-PMH feed, which can be used by other digital repositories to harvest this community.

Information:

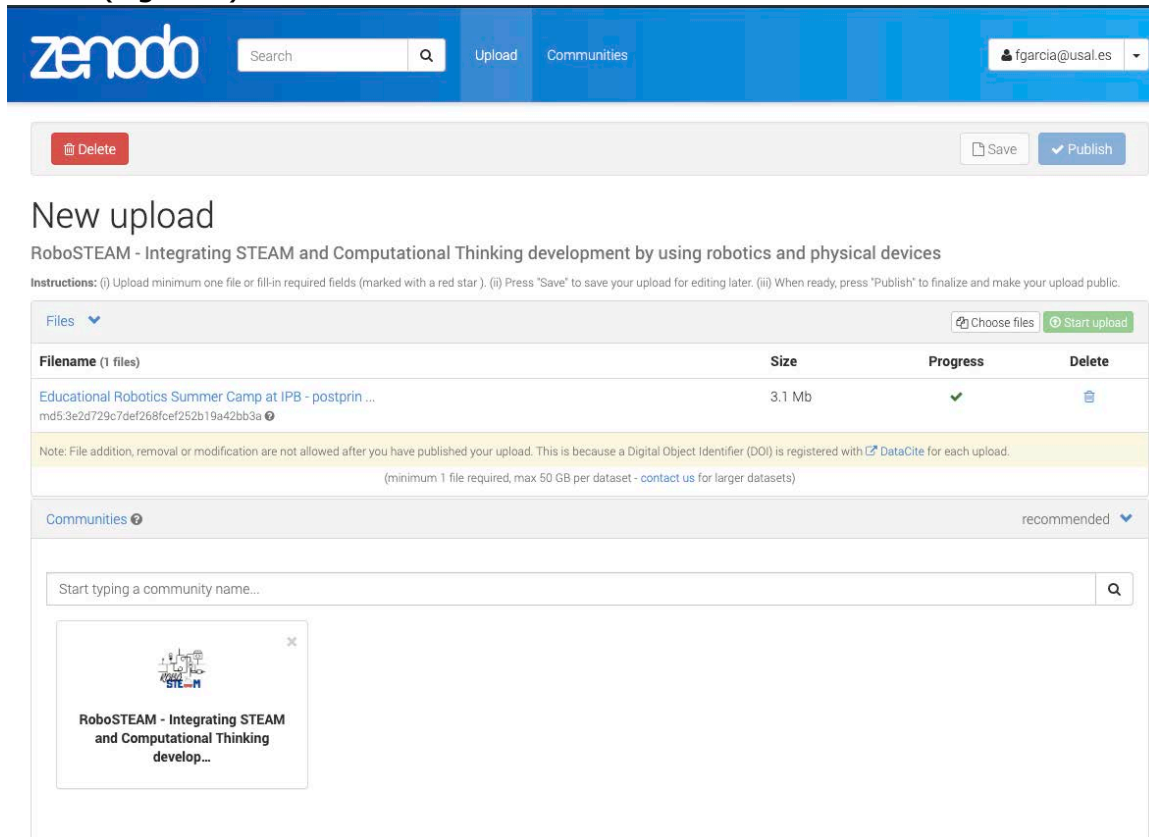
- Identifier:** robosteam
The identifier cannot be changed after creation of the community.
- Title:** RoboSTEAM - Integrating STEAM and Computational Thinking development by usi
Required.
- Description:** A rich text editor containing the text: "RoboSTEAM - Integrating STEAM and Computational Thinking development by using robotics and physical devices", "Erasmus+ KA2 Project", and "2018-1-ES01-KA201-050939". Below the editor, it notes: "Optional. A short description of the community collection, which will be displayed on the index page of the community."
- Curation Policy:** A rich text editor with a toolbar including options for 'Estilo' and 'Formato'.

Figure 7. RoboSTEAM community metadata. Source: <https://zenodo.org/communities/robosteam/edit/>

The upload of a new item in the community may be done by every person, but the uploads must be confirmed by the admin of the community. To do that, the user might access to the upload form through the “New Upload” button in the community page (see Figure 6) or directly throughout the URL <https://zenodo.org/deposit/new?c=robosteam>.

Figure 8 shows an empty upload form and figure 9- an example of a new resource that will be uploaded, specifically a post-print of this conference paper [11], following this procedure:

- 1) Drag and drop the pdf file containing the post-print version of the paper (Figure 9).



The screenshot shows the Zenodo upload interface. At the top, there is a navigation bar with the Zenodo logo, a search bar, and buttons for 'Upload' and 'Communities'. The user's email 'fgarcia@usal.es' is displayed in the top right. Below the navigation bar, there are buttons for 'Delete', 'Save', and 'Publish'. The main content area is titled 'New upload' and shows the title 'RoboSTEAM - Integrating STEAM and Computational Thinking development by using robotics and physical devices'. Below the title, there are instructions for uploading files. A table shows the upload progress for a file named 'Educational Robotics Summer Camp at IPB - postprin ...' with a size of 3.1 Mb and a progress indicator of a green checkmark. Below the table, there is a note about Digital Object Identifier (DOI) registration with DataCite. At the bottom, there is a section for 'Communities' with a search bar and a dropdown menu set to 'recommended'. A search result for 'RoboSTEAM - Integrating STEAM and Computational Thinking develop...' is shown.

Figure 9. Uploading the pdf file

- 2) Select the type of the document, a conference paper in this case (Figure 10).

Figure 10. Selecting the document type

3) Fill the basic metadata of the source (Figure 11).

Figure 11. Introducing the document metadata

4) Choose the licence (Figure 12).

Figure 12. Choosing the license

5) Save (Figure 13).

Figure 13. Saving the changes

6) Publish the document (Figure 14).

Figure 14. The published resource in RoboSTEAM community open accessible

3.4. Community in an institutional repository

Besides the Zenodo community, a community in the GRIAL research institutional repository (<https://repositorio.grial.eu>) has also been set up. This redundancy helps to disseminate the RoboSTEAM production to every place due to this repository is harvested by Google Scholar.

This community is accessible throughout the URL <https://repositorio.grial.eu/handle/grial/1519> (see Figure 15).

The screenshot shows the GRIAL repository interface. At the top, there is a navigation bar with 'Home', 'Browse', and 'Help' links, along with a search box and a 'Sign in to' button. The main header identifies the 'GRIAL repository' as a 'Research Group in InterAction and eLearning of the University of Salamanca'. A circular logo with 'GRIAL' is visible on the right. The central banner features the text 'ROBOSTEAM - Integrating steam and computational thinking development by using robotics and physical devices' and includes the RoboSTEAM logo. Below this, a 'Recent Submissions' section is partially visible. The 'Discover' section provides filters for 'Author', 'Subject', and 'Date issued'. The 'Author' filter lists names like Conde-González, M. Á. and RoboSTEAM Consortium. The 'Subject' filter includes 'Computational Thinking', 'Erasmus+', 'EU', 'RoboSTEAM', 'Robots', 'STEAM', 'Arduino LilyPad', 'Dissemination strategy', 'management', and 'Quality'. The 'Date issued' filter is set to '2019'. At the bottom, 'Collections in this community' are listed: 'RoboSTEAM presentations', 'RoboSTEAM publications', and 'RoboSTEAM reports and outcomes'.

Figure 15. RoboSTEAM community in GRIAL repository. Source: <https://repositorio.grial.eu/handle/grial/1519>

This collection has been split in different collections to organize better the project outcomes and documents, for example, Figure 16 shows the Presentations Collection.

Repositorio de GRIAL / ROBOSTEAM - Integrating steam and computational thinking development by using robotics and physical devices

RoboSTEAM presentations

Collection home page

Browse

Issue Date Author Title Subject

Subscribe to this collection to receive daily e-mail notification of new additions

Collection's Items (Sorted by Submit Date in Descending order): 1 to 16 of 16

Issue Date	Title	Author(s)
30-Sep-2019	Karlsruhe Transnational Meeting	Conde-González, M. Á.
3-Oct-2019	Medienbildung: Gestaltungs-basierte Lehr-Lernkonzepte mit robotischen Objekten RoboSTEAM - Interaktive Textilien mit Arduino LilyPad	Reimann, D.
1-Oct-2019	Educational Robotics Summer Camp at IPB: Internal RoboSTEAM Erasmus+ Report	Gonçalves, J.
11-Sep-2019	August RoboSTEAM Project Videoconference meeting - September 11th, 2019	Fernández Llamas, C.; Conde-González, M. Á.; Rodríguez-Sedano, F. J.
21-Jul-2019	RoboSTEAM Quality Assurance Plan	RoboSTEAM Consortium
17-Jul-2019	RoboSTEAM School Meeting	Conde-González, M. Á.
16-Feb-2019	RoboSTEAM Project Management Handbook	RoboSTEAM Consortium
1-Jul-2019	RoboSTEAM Project May Videoconference - July 1, 2019	Fernández Llamas, C.; Conde-González, M. Á.; Rodríguez-Sedano, F. J.
31-May-2019	RoboSTEAM Project May Videoconference - May 31, 2019	Fernández Llamas, C.; Conde-González, M. Á.; Rodríguez-Sedano, F. J.
3-May-2019	RoboSTEAM Project May Videoconference - May 3, 2019	Fernández Llamas, C.; Conde-González, M. Á.; Rodríguez-Sedano, F. J.
28-Mar-2019	Follow-up videoconference. RoboSTEAM Project - March 22, 2019	RoboSTEAM Consortium
16-Feb-2019	RoboSTEAM - Dissemination strategy	RoboSTEAM Consortium
15-Feb-2019	RoboSTEAM Project	RoboSTEAM Consortium
16-Feb-2019	RoboSTEAM Management Issues	RoboSTEAM Consortium
15-Feb-2019	03 RoboSTEAM Environment - First overview and discussions	García-Peñalva, F. J.
16-Feb-2019	ROBOSTEAM A2. Quality Assurance	García-Peñalva, F. J.

Collection's Items (Sorted by Submit Date in Descending order): 1 to 16 of 16

Discover

Author

- Conde-González, M. Á. (8)
- RoboSTEAM Consortium (8)
- Fernández Llamas, C. (4)
- Rodríguez-Sedano, F. J. (4)
- García-Peñalva, F. J. (2)
- Gonçalves, J. (1)
- Reimann, D. (1)

Subject

- Computational Thinking (15)
- Erasmus+ (15)
- EU (15)
- RoboSTEAM (15)
- Robots (15)
- STEAM (15)
- Arduino LilyPad (1)
- Dissemination strategy (1)
- management (1)
- Quality (1)

Date issued

- 2019 (16)

Figure 16. RoboSTEAM Presentations Collection in GRIAL repository. Source: <https://repositorio.grial.eu/handle/grial/1520>

5. Acknowledgements

This document has been developed within ROBOSTEAM Erasmus+ KA201 Project with reference 2018-1-ES01-KA201-050939.

This project has been funded with support from the European Commission. This communication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

4. References

- [1] F. J. García-Peñalvo, "Technological ecosystems," *IEEE Revista Iberoamericana de Tecnologías del Aprendizaje (IEEE RITA)*, vol. 11, no. 1, pp. 31-32, 2016. doi: 10.1109/RITA.2016.2518458.
- [2] F. J. García-Peñalvo and A. García-Holgado Eds., "Open Source Solutions for Knowledge Management and Technological Ecosystems," *Advances in Knowledge Acquisition, Transfer, and Management (AKATM)*. Hershey PA, USA: IGI Global, 2017. doi: 10.4018/978-1-5225-0905-9.
- [3] F. J. García-Peñalvo *et al.*, "Learning services-based technological ecosystems," in *Proceedings of the Third International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'15) (Porto, Portugal, October 7-9, 2015)*, G. R. Alves and M. C. Felgueiras, Eds. pp. 467-472, New York, USA: ACM, 2015. doi: 10.1145/2808580.2808650.
- [4] F. J. García-Peñalvo, "Ecosistemas tecnológicos universitarios," in *UNIVERSITIC 2017. Análisis de las TIC en las Universidades Españolas*, J. Gómez, Ed. pp. 164-170, Madrid, España: Crue Universidades Españolas, 2018.
- [5] F. J. García-Peñalvo *et al.*, "Enhancing Education for the Knowledge Society Era with Learning Ecosystems," in *Open Source Solutions for Knowledge Management and Technological Ecosystems*, F. J. García-Peñalvo and A. García-Holgado, Eds. *Advances in Knowledge Acquisition, Transfer, and Management (AKATM)*, pp. 1-24, Hershey PA, USA: IGI Global, 2017. doi: 10.4018/978-1-5225-0905-9.ch001.
- [6] M. Á. Conde *et al.*, "RoboSTEAM - A Challenge Based Learning Approach for integrating STEAM and develop Computational Thinking," in *Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality - TEEM*, León, Spain, 2019: ACM
- [7] RoboSTEAM Consortium, "RoboSTEAM Project," presented in RoboSTEAM Erasmus+ project Kick-Off, Bragança, Portugal, February 15-16, 2019, 2019. Available from: <https://goo.gl/Ni43mK>. doi: 10.5281/zenodo.2575066.

- [8] F. J. García-Peñalvo, "O3 RoboSTEAM Environment – First overview and discussions," presented in RoboSTEAM Erasmus+ project Kick-Off, Bragança, Portugal, February 15-16, 2019, 2019. Available from: <https://goo.gl/hro7tc>. doi: 10.5281/zenodo.2571497.
- [9] M. S. Ramírez-Montoya, F. J. García-Peñalvo and R. McGreal, "Shared Science and Knowledge. Open Access, Technology and Education," *Comunicar*, vol. 26, no. 54, pp. 1-5, 2018.
- [10] F. J. García-Peñalvo, C. García de Figuerola and J. A. Merlo-Vega, "Open knowledge: Challenges and facts," *Online Information Review*, vol. 34, no. 4, pp. 520-539, 2010. doi: 10.1108/14684521011072963.
- [11] J. Gonçalves *et al.*, "Educational Robotics Summer Camp at IPB: A Challenge based learning case study," in *TEEM'19 Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (Leon, Spain, October 16th-18th, 2019)*, M. Á. Conde-González, F. J. Rodríguez-Sedano, C. Fernández-Llamas and F. J. García-Peñalvo, Eds. pp. 36-43, New York, NY, USA: ACM, 2019. doi: 10.1145/3362789.3362910.