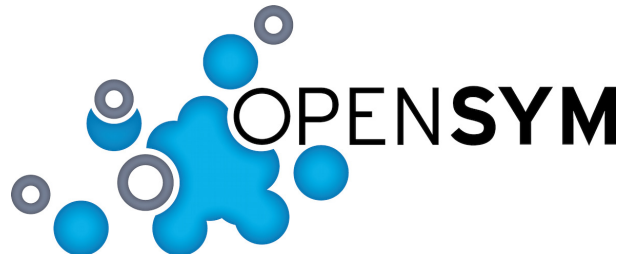


**Proceedings of
the 18th International Symposium on
Open Collaboration**



**September 6–10, 2022
Madrid, Spain**

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Program Co-Chairs	Amel Charleux, University of Montpellier, France Igor Steinmacher, Northern Arizona University, United States of America
Associate Program Co-Chairs	Javier Arroyo, Universidad Complutense de Madrid, Spain Antonio Balderas, Universidad de Cádiz, Spain Gemma Catolino, Jheronimus Academy of Data Science, The Netherlands Alexandre Decan, University of Mons, Belgium Francisco Martín-Rico, Universidad Rey Juan Carlos, Spain Amit Kumar Verma, CoreCLM, USA
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ACM ISBN: 978-1-4503-9846-6

General Chair's Foreword

Welcome to OpenSym 2022, the 18th International Symposium on Open Collaboration which is organised 6th to 10th September. OpenSym 2022 will be held at the beautiful Círculo de Bellas Artes de Madrid (Calle de Alcalá, 42), a cultural center located in the heart of the city's historic center where young Picasso attended as a pupil to his painting classes.

I am very pleased to host the premier conference on open collaboration research and practice and thereby promote stimulating discussions and dissemination of results in many areas of open collaboration, including open source, open data, open science, open education, wikis and related social media, Wikipedia, and IT-driven open innovation research.

Open collaboration is egalitarian (everyone can join, no principled or artificial barriers to participation exist), meritocratic (decisions and status are merit-based rather than imposed) and self-organizing (processes adapt to people rather than people adapt to pre-defined processes)¹.

Many people have contributed greatly to make OpenSym 2022 happen and we owe them a great deal of thanks.

We are very grateful to all the researchers and practitioners that contributed to OpenSym 2022. The two program co-chairs, Amel Charleux and Igor Steinmacher have made considerable contributions in time and effort for the conference program, as well as our Associate Program Co-Chairs (Javier Arroyo, Antonio Balderas, Gemma Cantolino, Alexandre Decan, Francisco Martin Rico and Amit Kumar Verma) and all of the PC members.

Sincere thanks go to Simon Butler for his considerable efforts as proceedings chair, to Antonio J. Romero for having website, to Vahid Etemadi for managing the social media, and to Jesús M. González Barahona for his commitment as organisation chair. A special thanks goes to Dirk Riehle for his support and encouragement! We also want to thank all members of the Program Committee, the external reviewers, and all participants that contributed to OpenSym 2022.

Finally, we are also very grateful for the financial support from the Universidad Rey Juan Carlos, who has contributed with funding from the Vicerrectorado de Extensión Universitaria and from the GsyC/LibreSoft research group, to Programamos.es, and The John Ernest Foundation, our financial sponsor.

Without the aforementioned valuable contributions, OpenSym 2022 would never have happened!

Gregorio Robles
General Chair, OpenSym 2022

¹<https://opensym.org/about-us/definition/>

Program Chairs' Foreword

We welcome you to the 18th International Symposium on Open Collaboration (OpenSym 2022), joint with the 18th International Conference on Open Source Systems (OSS 2022) held in Madrid 6-10 September 2022. OpenSym joined forces with OSS with a shared program, a shared call for papers, and a common program and organization committees. Following this historical situation, we decided to put both conferences under the theme: "Openness in Emergency Situations."

As premier conferences in their fields, OpenSym and OSS provide an excellent forum for reporting the latest developments on open collaboration research and practice, including open source software, open hardware/robotics, open data, open science, wikis, and related social media.

We are pleased to present the proceedings of joint conferences as its published record. We received 20 submissions to OpenSym/OSS 2022, which were carefully reviewed, and we ended up including 7 full research papers (35% acceptance rate), 1 New Ideas and Emerging Results paper, and 4 extended abstracts to the program. All of the submitted papers went through a rigorous 2-round double-anonymous peer-reviewing process (extended abstracts were reviewed, followed by the complete version review). Each paper was reviewed by at least three members of the Program Committee. The papers cover different topics related to Open Collaboration, and we noticed a focus on some specific topics: open data, open hardware and robotics. We hope that you find the OpenSym 2022 proceedings useful for your professional and academic activities and that you enjoyed the conference. Finally, we would like to thank all the people who have contributed, including the authors, the sponsors, the reviewers, the volunteers, and the chairs.

The conference program represents the efforts of many people. We want to express our gratitude to the members of the Program Committee and the external reviewers for their hard work in reviewing the submissions. The General Chair, Gregorio Robles, guided us and gave us all the support throughout the process. We also acknowledge the fantastic work that Simon Butler, our Proceedings Chair, did in managing the conference proceedings. We thank all the authors for their contributions and their participation in OpenSym/OSS 2022! We feel honored and privileged to serve as Program Chairs for these conferences and hope that this program will further stimulate exciting research in all areas of open collaboration.

Amel Charleux and Igor Steinmacher
Program Co-Chairs, OpenSym 2022

Organization

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