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Aims and Scope
The Dagstuhl Artifacts Series (DARTS) publishes evaluated research data and artifacts in all areas of computer science. An artifact can be any kind of content related to computer science research, e.g., experimental data, source code, virtual machines containing a complete setup, test suites, or tools.

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Preface

The goal of the *Artifact Evaluation* (AE) track is to foster the reproducibility of results by providing authors the possibility to submit an artifact for accepted papers. Artifacts include, but are not limited to, software, data sets, and proofs. An *Artifact Evaluation Committee* (AEC) reviews these artifacts and decides upon their acceptance. The accepted artifacts are archived in the *Dagstuhl Artifacts Series* (DARTS) published on the *Dagstuhl Research Online Publication Server* (DROPS). Each artifact is assigned a *Digital Object Identifier* (DOI) that can be used in future citations.

This year, the committee evaluated 19 artifacts from the 20 papers accepted at the conference's research track. This corresponds to a record participation rate of 95%. 15 of those artifacts were accepted (a 79% acceptance rate). In total, 75% of the regular research papers published at ECOOP 2021 have successfully passed the AE process, indicated by an artifact-evaluation badge on the paper. The improvement from last year continues: from 2017 to 2020, respectively 59%, 38%, 50%, and 70% of the research papers were accompanied by accepted artifacts.

The AE process for 2021 was a continuation of the AE process of previous ECOOP editions. In particular, the process was still based on the artifact evaluation guidelines by Shriram Krishnamurthi, Matthias Hauswirth, Steve Blackburn, and Jan Vitek published on the Artifact Evaluation site. The guidelines for artifacts that contain mechanized proofs, developed by the ECOOP 2018 AEC, were also reused to help both reviewers and authors in creating and reviewing such artifacts.

We would like to thank the 22 members of this year's AEC, who donated their valuable time and effort to make the AE process possible. We would also like to thank Michael Wagner for the publication of the artifacts volume, as well as ECOOP 2021's General Chair Anders Møller and the Program Chair Manu Sridharan for helping us coordinate the artifact evaluation with the paper review process. Lastly, we would like to give a special thanks to the chairs of the 2020 AEC, Lisa Nguyen Quang Do and Manuel Rigger, who met with us shortly after the conclusion of ECOOP 2020 to share their lessons learned and materials.

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Artifact Evaluation Process

This year, the artifact evaluation followed a process inspired from previous editions of ECOOP. The Artifact Evaluation Committee (AEC) was formed solely based on self-nominations: a self-nomination form was posted on the conference website and on various mailing lists. After a few weeks, the AE co-chairs went through the self-nominations and selected reviewers based on the SIGPLAN diversity guidelines[1]. The AEC was composed of 22 members, and included a diverse range of junior and senior researchers.

AE Committee members were also asked if they would be willing to be *lightning reviewers*. These members were assigned a smaller load of reviews during the main review phase, but could be called upon to review papers quickly and at the last minute in order to reach consensus. This was useful in order to reach a confident decision for a couple of artifacts.

All authors of papers accepted at ECOOP 2021 were invited to submit an artifact. Each submitted artifact was reviewed by at least two reviewers. The review process consisted of three phases:

- In a "kick-the-tires" phase, reviewers briefly verified the basic integrity of the artifacts to discover any issues that could prevent the evaluation of the artifacts (e.g., a corrupted virtual machine image).
- In case of any issues, reviewers could, as part of a response phase, indicate issues and ask clarifying questions to the authors. During the response phase, authors could respond to the reviewers' feedback and update their artifacts to address any issues that were raised by the reviewers.
- In the main review phase, each reviewer had two weeks to do a comprehensive evaluation of their assigned artifacts. Reviewers were asked to assess the consistency of the artifact with respect to the paper, the artifact's completeness, documentation, and reusability for future research and to decide on an overall grade. The review phase was followed by an online discussion phase, in which artifacts were discussed to converge on either the artifacts' acceptance or rejection. Authors that received an acceptance notification were given two weeks to incorporate reviewers' feedback and submit the camera-ready version of their artifacts.

Three types of artifact *badges* could be awarded to each artifact, in accordance with the *ACM Artifact Review and Badging* policy [2]:

- *Functional*: an artifact is deemed functional when it is documented, consistent, complete, exercisable, and includes appropriate evidence of verification and validation.
- *Reusable*: an artifact is deemed reusable when it is of a quality that significantly exceeds minimal functionality, i.e., it is carefully documented and well-structured to the extent that reuse and repurposing is facilitated.
- *Available*: an artifact is available when it is placed on a publicly accessible archival repository. This is the case for all accepted artifacts, as they are all hosted on the *Dagstuhl Research Online Publication Server* (DROPS).

Table 1 summarizes the process and illustrates the timeline. This timeline was carefully coordinated with ECOOP 2021's General Chair Anders Møller and Program Chair Manu Sridharan. The goal of this coordination was to ensure that (1) authors of research papers had

[1] https://www.sigplan.org/Resources/Policies/Diversity/
[2] https://www.acm.org/publications/policies/artifact-review-and-badging-current

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time to plan for submitting their artifacts after receiving their research paper's acceptance notification, and (2) authors received notification regarding their artifacts prior to the main conference's camera ready deadline so they could cite their artifact in their research paper.

Table 1 Timeline of the AE process.

AE Phase	Date
Research paper notification	01 April
Artifact submission	16 April
Artifact bidding	16–18 April
Kick-the-tires phase	21–25 April
Main review period	26 April – 08 May
Reviews due	09 May
Discussion and lightning reviews	10–12 May
Artifact acceptance notification	12 May
Main conference's camera ready	14 May
Artifact camera ready	24 May

Artifact Evaluation Committee

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