



Gesellschaft für experimentelle Wirtschaftsforschung e.V.  
German Association for Experimental Economic Research e.V.

## Institutional Review Board Certificate

No. 2pxo1bap

<https://gfew.de/ethik/2pxo1bap>

Date: 01/11/2023

Certificate Expires: 01/10/2025

Status: Approved

Review Level: Expedite

### Details of Experiment:

#### Titel

*Model-based Security Evaluation of Microservice Applications*

#### Authors

*Schneider, Simon; Díaz Ferreyra, Nicolás E.; Simhandl, Georg; Zdun, Uwe; Scandariato, Riccardo*

#### Short description of the experimental study

*Dataflow Diagrams (DFDs) are models representing architectural components of software systems and information flows between them. In previous work, we've developed an approach that automatically extracts such DFDs from source code of microservice applications and enriches them with extensive (security and other) properties.*

*Since DFDs are the starting point for many software security assessment techniques, we want to investigate their impact on the performance of security assessments.*

*For this, we conduct an experiment in which we let master students of a software security course taught by us at TUHH perform tasks related to a software security assessment. The participants will be divided into two groups, one of which will receive the source code of a microservice application, a short textual documentation, and some general information about the microservice architecture. The second group will be provided the same resources plus a DFD of the application. In a second meeting, the groups will be switched and the examined application will be a comparable yet different one, such that each participant will work with and without DFDs once.*

*We will quantitatively measure the participants' performance in solving the tasks and ask them to fill out a questionnaire containing a number of qualitative questions about the provided resources.*

The German Association for Experimental Economic Research (Gesellschaft für experimentelle Wirtschaftsforschung - GfeW) provides this certificate of approval in an expedited review process according the rules and procedures approved by the members of the association on September 19, 2017.

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The approval is based on the agreement of the proposers to abide by the legal requirements of the European Union and by the policies and procedures of the GfeW. Furthermore, the approval is only valid, if (i) the proposers have provided all necessary information completely and truthfully, (ii) no part of the planned experimental project has been conducted before the approval was granted, and (iii) the experimental project is conducted as described.

This approval does not supercede or replace decisions by other statutory bodies. Furthermore, it is not a substitute for certifications or approvals that are required by law, by the statutes of the involved research institutes, or by the codes of conduct that are applicable to the participating researchers, including those from other fields of research.

The expiration date of the approval is noted above. To continue the proposed experimental study beyond that date, a new approval must be requested, even if the experimental protocol remains unchanged.

Please also note that prior to implementing any changes or amendments in the protocol of the proposed experimental study, a new approval must be requested, even if the new experimental study including the changes or amendments to the protocol is expected to be governed by the GfeW's rules for the expedited review process.

A copy of this letter should be kept in the records together with all documents associated with this experimental study.

A handwritten signature in black ink, appearing to read 'J. Lambsdorff'.

Prof. Dr. Johann Graf Lambsdorff  
President of the GfeW

A handwritten signature in black ink, appearing to read 'Björn Frank'.

Prof. Dr. Björn Frank  
Vice-President of the GfeW