

# Lightweight Session Programming in Scala (Artifact)\*

Alceste Scalas<sup>†1</sup> and Nobuko Yoshida<sup>2</sup>

- 1 Dept. of Computing, Imperial College London, UK  
alceste.scalas@imperial.ac.uk
- 2 Dept. of Computing, Imperial College London, UK  
n.yoshida@imperial.ac.uk

---

## Abstract

In the paper “*Lightweight Session Programming in Scala*”, we introduce a “lightweight” integration of session types in the Scala programming language, based on (1) a formal type-level encoding, and (2) a library implementation of linear I/O channels,

called `lchannels`, providing a convenient API for session-based programming, and supporting both *local* and *distributed* communication. This artifact is the source code of `lchannels`, with all the examples and benchmarks discussed in the paper.

**1998 ACM Subject Classification** D.1.3 Concurrent Programming; D.3.1 Formal Definitions and Theory; F.3.3 Studies of Program Constructs — Type structure

**Keywords and phrases** session types, Scala, concurrency

**Digital Object Identifier** 10.4230/DARTS.2.1.11

**Related Article** Alceste Scalas and Nobuko Yoshida, “Lightweight Session Programming in Scala”, in Proceedings of the 30th European Conference on Object-Oriented Programming (ECOOP 2016), LIPIcs, Vol. 56, pp. 21:1–21:25, 2016.

<http://dx.doi.org/10.4230/LIPIcs.ECOOP.2016.21>

**Related Conference** 30th European Conference on Object-Oriented Programming (ECOOP 2016), July 18–22, 2016, Rome, Italy

## 1 Scope

This artifact allows to repeat all examples and benchmarks presented in the companion paper. Moreover, it can be used to implement new applications — but in this case, using the latest version of `lchannels` is recommended (see Section 3).

## 2 Content

The artifact package includes:

1. the `lchannels` source code, including the examples and benchmarks discussed in the companion paper;
2. detailed instructions (provided as an `index.html` file) for building `lchannels`, running the examples and benchmarks, and navigate their source code;
3. a VirtualBox disk image containing a lightweight GNU/Linux distribution fully configured for testing our artifact. The file `Xubuntu_14.04.3-32bit.7z` contains Xubuntu 14.04 LTS, with all the dependencies and configurations described in the `index.html` file above.

---

\* This work was supported in part by: EPSRC EP/K011715/1, EP/K034413/1 and EP/L00058X/1, and EU project FP7-612985 *UpScale*.

† Core artifact developer.



## 11:2 Lightweight Session Programming in Scala (Artifact)

- username: `osboxes`
- password: `osboxes.org`

After logging in, inside the directory `~osboxes/artifact/`, you will find the contents described in items 1 and 2 above.

### 3 Getting the artifact

The artifact endorsed by the Artifact Evaluation Committee is available free of charge on the Dagstuhl Research Online Publication Server (DROPS). The latest version of `lchannels` is available at <http://alcestes.github.io/lchannels/>.

### 4 Tested platforms

The artifact has been tested on Ubuntu 14.04/15.10, Debian Sid (March 2015) and Mac OS X 10.10/10.11. In general, it should work on any platform running Java 8.

### 5 License

BSD 2-clause license (<https://opensource.org/licenses/BSD-2-Clause>).

### 6 MD5 sum of the artifact

`f54ac784723bf884d204046c1ec332c2`

### 7 Size of the artifact

894 MB

**Acknowledgements.** Thanks to Julien Lange and Nicholas Ng for their precious feedback during artifact testing, and to the anonymous artifact reviewers for their detailed remarks and useful suggestions. Any remaining issues are our own.