Distributed Systems Group
Delft University of Technology
Mekelweg 4, 2628CD Delft, the Netherlands

1-page Annual Report 2017

http://www.ds.ewi.tudelft.nl

Today, distributed systems are the rule rather than the exception—it is almost impossible to point at any two computers in the world that are not connected in some way. Virtually all application areas, from health care to entertainment, and from industrial automation to traffic management, rely on distributed systems. Responding to challenges in this field, our mission is to model, design, implement, and analyze distributed systems and algorithms.

This is a brief annual report of the Distributed Systems (DS) Group of Delft University of Technology for the year 2017. It is meant to present the main changes and achievements of the DS group to other groups in the faculty, to our previous master's and PhD students, to our research partners, and to anyone who might be interested in a collaboration.

CURRENT STAFF
Dick Epema, full professor (chair)
Jesse Donkervliet, teacher
Stefan Hugtenburg, teacher
Johan Pouwelse, associate professor
Jan Rellermeyer, assistant professor
Otto Visser, education innovator
Alexandru Iosup, full professor at VU Amsterdam and associate professor at TU Delft
Ana Lucia Varbanescu, assistant professor (guest, UvA)
Nicola Zannone, associate professor (guest, TU/e)

CHANGES IN STAFF IN 2017
- Jan Rellermeyer joined as assistant professor, with as research topic the design and optimization of middleware for distributed data processing
- Jesse Donkervliet and Stefan Hugtenburg joined as teachers for the BSc Computer Science curriculum
- Quinten Stokkink joined as a PhD student and Sandip Pandey as a developer in blockchain technology

PHD DEFENSES IN 2017
- Bogdan Ghiţ, *Optimizing the Performance of Data Analytics Frameworks* (Dick Epema, promotor)

AWARDS IN 2017
- Jan Rellermeyer received the Test of Time Award at the ACM/IFIP/Usenix Middleware 2017 Conference

HIGHLIGHTS IN 2017
- The Board of the University provided funding for the Delft Blockchain Lab (DBL), which is led by the DS Group, for increasing the role and visibility of TU Delft in the research in blockchain technology

MAIN INDUSTRY COLLABORATION IN 2017
- ABN-AMRO, ING, Port of Rotterdam, Solvinity, Oracle, Intel, SPEC, LDBC

SELECTED TEACHING ACHIEVEMENTS IN 2017
- Johan Pouwelse and Zeki Erkin (Section Cyber Security) taught for the first time the MSc course *Blockchain Engineering* with 130 enrollments
- DBL introduced the *Delft Blockchain Certificate* for MSc students who complete the courses *Blockchain Engineering*, *Distributed Algorithms*, and *Security and Cryptography* (with the Section Cyber Security)

SELECTED RESEARCH ACHIEVEMENTS IN 2017

Big-Data Processing:
- Design and experimental evaluation of distributed heterogeneous graph-processing systems

Scheduling:
- Design and analysis of checkpoint policies in data processing frameworks
- Evaluation of auto-scaling algorithms for workflows in clouds

Cooperative Systems:
- Large increase in research efforts in blockchain technology
- Further development of the Trustchain as an alternative to the original blockchain
- Development of a roadmap for the next decade of research in blockchain technology

MAIN PUBLICATIONS IN 2017
- L. Cheng et al., "A Coflow-based Co-optimization Framework for High-performance Data Analytics, *ICCP*
- B. Ghit et al., "Better Safe than Sorry: Grappling with Failures of In-Memory Data Analytics Frameworks," *HPDC*
- Y. Guo et al., "Modeling, Analysis, and Experimental Comparison of Streaming Graph Partitioning Policies," *CCGrid*
- A. Ilyushkin et al., "An Experimental Performance Evaluation of Autoscaling Policies for Complex Workflows," *ICPE*
- J.A. Pouwelse et al., "Laws for Creating Trust in the Blockchain Age," *European Property Law Journal*