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 Ghit, 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, Solvinty, 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
- 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