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## CS-Colloquium

# Distributed Ledger Technology, Blockchain & Crypto Currencies – An Opportunity for Inter- and Trans-Disciplinary Research

mit Mag. Dipl.-Ing. Dr. Edgar R. Weippl,

Privatdozent (SBA Research, Österreich)

**Wann?** 1. Juli, ab 09:00 Uhr  
**Wo?** Hörsaal 2 (HS2), Fakultät für Informatik  
Währinger Straße 29  
1090 Wien

### Abstract

With the increase of interconnectivity and ubiquitous data access, new services have emerged. Distributed Ledger Technologies and their underlying principles can be used to reach agreement or consensus upon a distributed state in a highly distributed environment. They have many different aspects and can therefore be viewed from various angles, including the financial and economic, legal, political, and sociological perspective, as well as considering technical and socio-technical points of view.

In the presentation I will show three properties that are important in our research: (1) theoretical foundations, (2) understanding real world phenomena, and (3) impact. For instance, proof-of-work (PoW) as used in Bitcoin is not only relevant to achieving consensus but also serves as a source of randomness used leader selection. Moreover, understanding economic incentives and malicious behavior (aka incentive attacks) to undermine consensus in public blockchains is important to create a stable blockchain environment upon which new services can be built.

## Bio

Edgar R. Weippl is Research Director of SBA Research, Head of the Christian Doppler Laboratory for Security and Quality Improvement in Production Systems at TU Wien, and Key Researcher for one area in the Austrian Blockchain Center (ABC). He also teaches and supports research at UAS St. Pölten. Edgar focuses on (1) fundamental and applied research on blockchain and distributed ledger technologies and (2) security of production systems engineering.

He is on the editorial board of Elsevier's Computers & Security journal (COSE), was PC chair of ESORICS 2015, general chair of ACM CCS 2016 and PC Chair of SACMAT 2017.

After graduating with a Ph.D. from the Vienna University of Technology, Edgar worked for two years in a research startup. He spent one year teaching as an assistant professor at Beloit College, WI. From 2002 to 2004, while with the software vendor ISIS Papyrus, he worked as a consultant for an HMO in New York, NY and Albany, NY, and for the financial industry in Frankfurt, Germany. In 2004 he joined the Vienna University of Technology and together with A Min Tjoa and Markus Klemen founded the research center SBA Research.