

# DESIGN AND EVALUATION OF A CONFIGURATION TOOL FOR VIABLE APPLICATIONS ON DISTRIBUTED LEDGERS

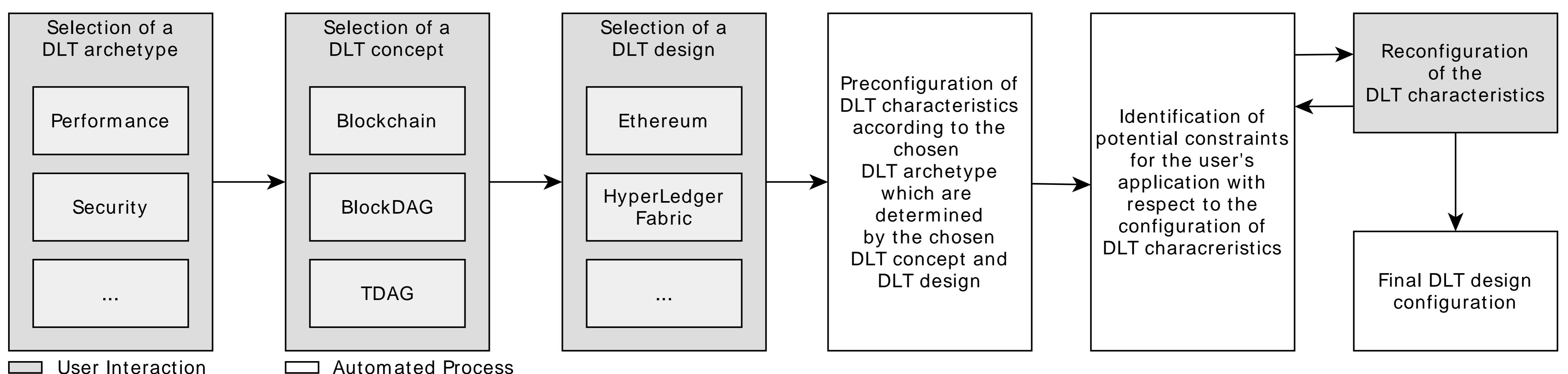
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## Motivation

- Distributed Ledger Technology (DLT) designs have trade-offs between different DLT characteristics which inhibit a “one-size-fits-all” DLT design
- The replacement of an unsuitable distributed ledger is hardly possible after the application was put in operation
- The choice of an appropriately configured DLT design is crucial for viable applications on distributed ledgers

## Research Questions

- Which trade-offs between DLT characteristics cause constraints for applications on DLT?
- Which DLT characteristics are important to configure a DLT design for viable applications?
- How should a DLT configuration tool be designed to allow users to identify an appropriate configuration of a DLT design for viable applications?



## Research Approach Part 1

- 1 Analysis of trade-offs between DLT characteristics and identification of resulting, potential constraints for applications
- 2 Identification of DLT characteristics which are important for practitioners to configure a DLT design for viable applications

### Prototypical DLT Configuration Tool

Choose your archetype based on your requirements

Performance  Security  Flexibility ...

Choose your preferred DLT concept

Blockchain  BlockDAG  TDAG

Choose your preferred DLT design

Bitcoin  Ethereum  HyperLedger Fabric ...

Please customize the preselected configuration according to your needs.

Consensus Mechanism  
 Practical Byzantine Fault Tolerance

Block Size (3 MB)  Block Creation Interval (10 s)

...

**⚠ Your configuration produces 9 possible constraints for your application!**

1. Due to the selected consensus mechanism the distributed ledger is not scalable to a large number of validating nodes.
2. Unidentifiability is not preserved because each node must be verified.
3. ...

## Research Approach Part 2

- 3 Design, prototypical realization and evaluation of a prototypical tool for the configuration of DLT designs that communicates potential constraints for applications
- 4 Derivation of design principles for the configuration of DLT designs and the communication of resulting, potential constraints for applications

## Contributions to Practice

- Support for the configuration of DLT characteristics to meet use case requirements while trading-off potential constraints for the application
- Improvement of DLT design configurations to achieve viable applications on DLT

## Contributions to Research

- Design patterns for the development of DLT configuration tools that communicate potential constraints for applications due to chosen DLT design configurations
- Identification of core issues in the context of DLT