

## NoSQL Database Systems in Business Information Systems

- Bachelor thesis  
 Master thesis

### Context

NoSQL database systems, such as document-oriented DBMS like MongoDB or column-oriented DBMS like Cassandra are being used in an increasing number of projects. They sacrifice some of the standards and consistency assertions traditional relational DMBS provide in exchange for higher performance, flexibility and scalability.

Most core business processes in the industry or financial domain still rely on Business Information Systems with relational DBMS. They ensure safe and stable storage of core business data such as bank accounts, insurance contracts, production orders etc. Their design and decade-long maintenance is well understood. Performance, however, is often a critical issue for those systems; both in batch processing of large data volumes and in peak-load online processing. Therefore the question arises whether NoSQL DBMS could be used as an alternative even in such core BIS.

### Goals

The goals of this thesis are to

- gather and systematically document the relevant classes of NoSQL DBMS, their benefits and restrictions or drawbacks (mainly through literature research)
- gather and systematically document types of core BIS, their data access patterns and requirements towards a DBMS (through literature research and interviews of Itestra experts)
- implement a NoSQL prototype for one business object / use case of a real BIS and execute some performance tests or other experiments such as schema evolution on it
- provide a conclusion on whether resp. where the usage of NoSQL DMBS in core BIS may be beneficial as well as advice on pitfalls, considerations etc.

### Company profile

This project is offered in cooperation with itestra GmbH ([www.itestra.de](http://www.itestra.de)). itestra GmbH is an independent, innovative software solution provider and consultancy. Its services include business process analysis, development of core software systems as well as renovation, optimization and migration and strategic consulting.

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