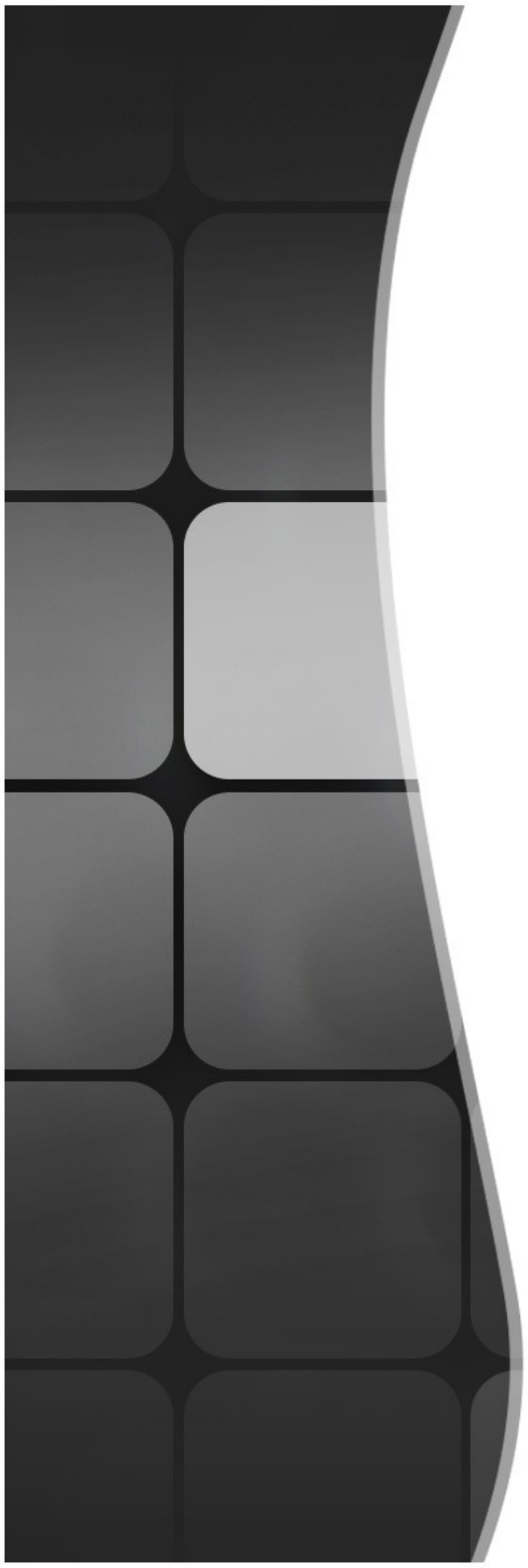


NoSQL

"Not Only SQL"

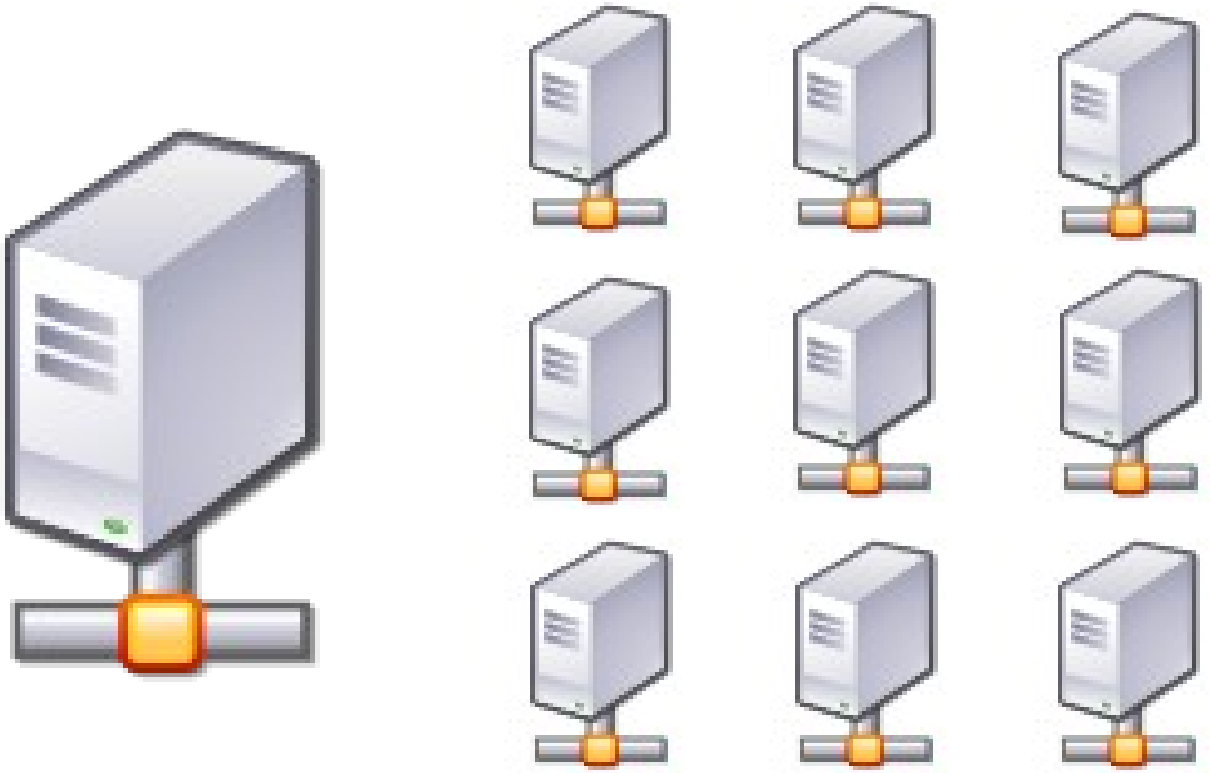
Agenda

- Merkmale von NoSQL Systemen
- NoSQL System Typen
- Begriffe aus der NoSQL Welt
  - BASE, CAP, MapReduce
- Beispiele von NoSQL Systemen
  - Mit API und Live Demos
- Fazit
- Fragen

Merkmale

- Schema frei
- Horizontal skalierbar
- Eventually consistent
- Nicht relational
- Verteilt
- Simple API

Vertikale vs. Horizentale Skalierung



Typen

- Document Store
- Wide Column Store
- Key Value / Tuple Store
- Graph Databases
- Object Databases
- XML Databases

ACID vs. BASE

- Atomicity
  - Alles oder nichts
- Consistency
  - Integrität
- Isolation
  - Kapselung von Transaktionen
- Durability
  - Persistenz aller Änderungen

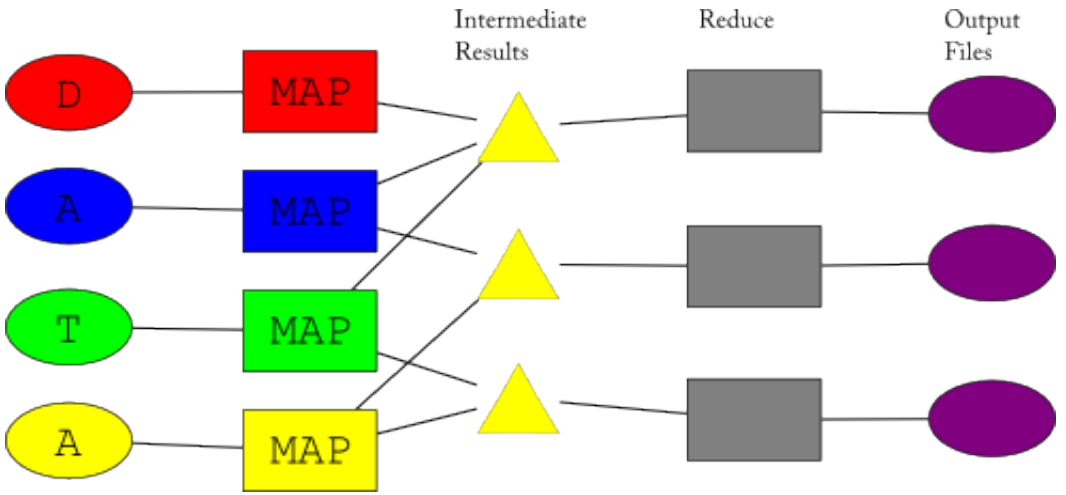
- Basically Available
- Soft-state
- Eventual consistency
  - Zeitfenster mit Inkonsistenz

CAP Theorem

- C – Consistency
- A – Availability
- P – Partition Tolerance
- You can only have 2 at a time
- **Make your choice!**

Map Reduce

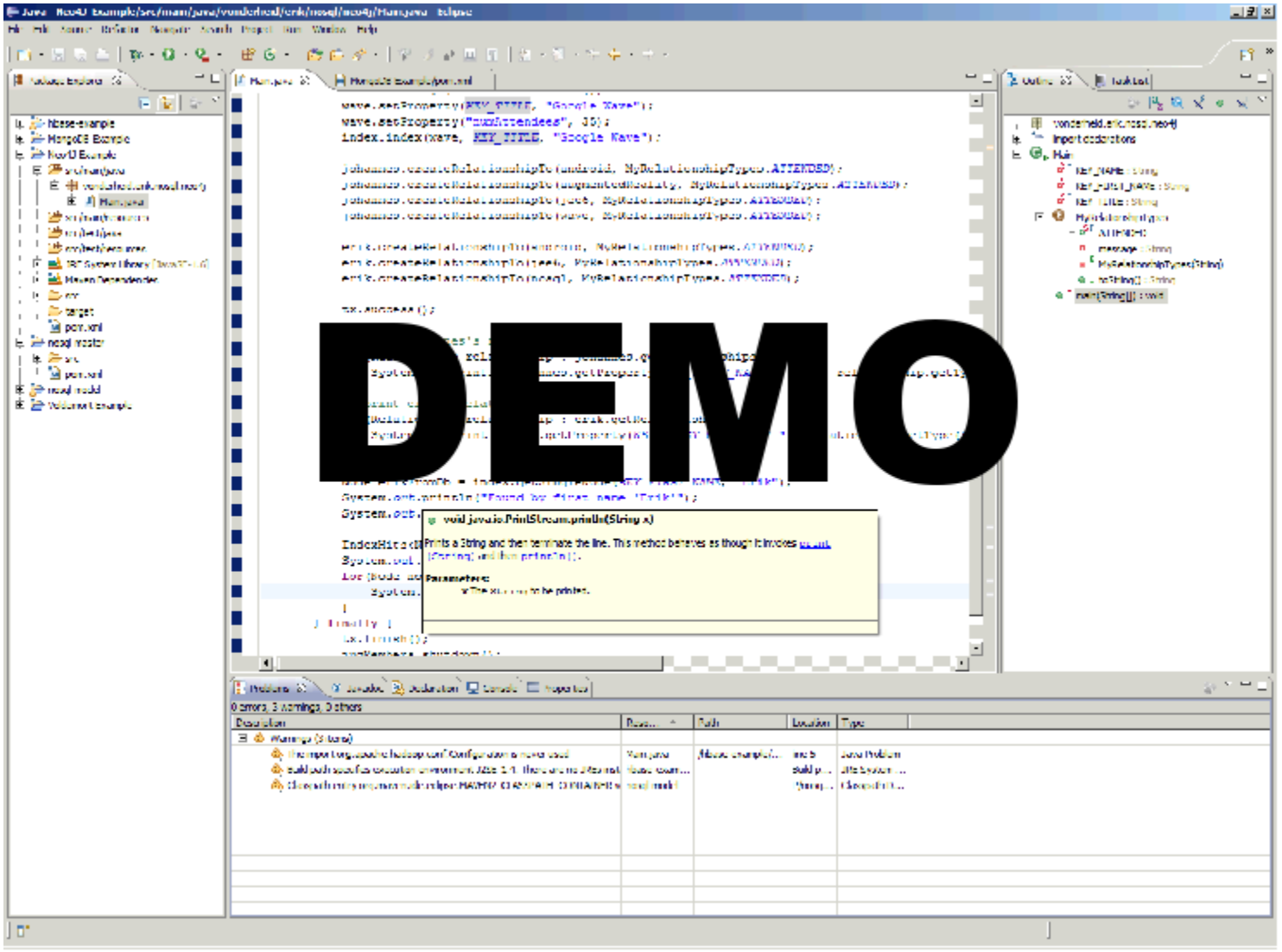
- Map the list of key-value pairs from one domain to another
- Group them by key
- Reduce to another list of key-value pairs



HBase

- Unterprojekt von Apache Hadoop
- Aktuelle Version: 0.20.6
- Typ: Wide Column Store
  - „HBase uses a data model very similar to that of Bigtable. Users store data rows in labelled tables. A data row has a sortable key and an arbitrary number of columns. The table is stored sparsely, so that rows in the same table can have crazily-varying columns, if the user likes. „ - Hbase Wiki
- Geschrieben in Java
- http://hbase.apache.org/

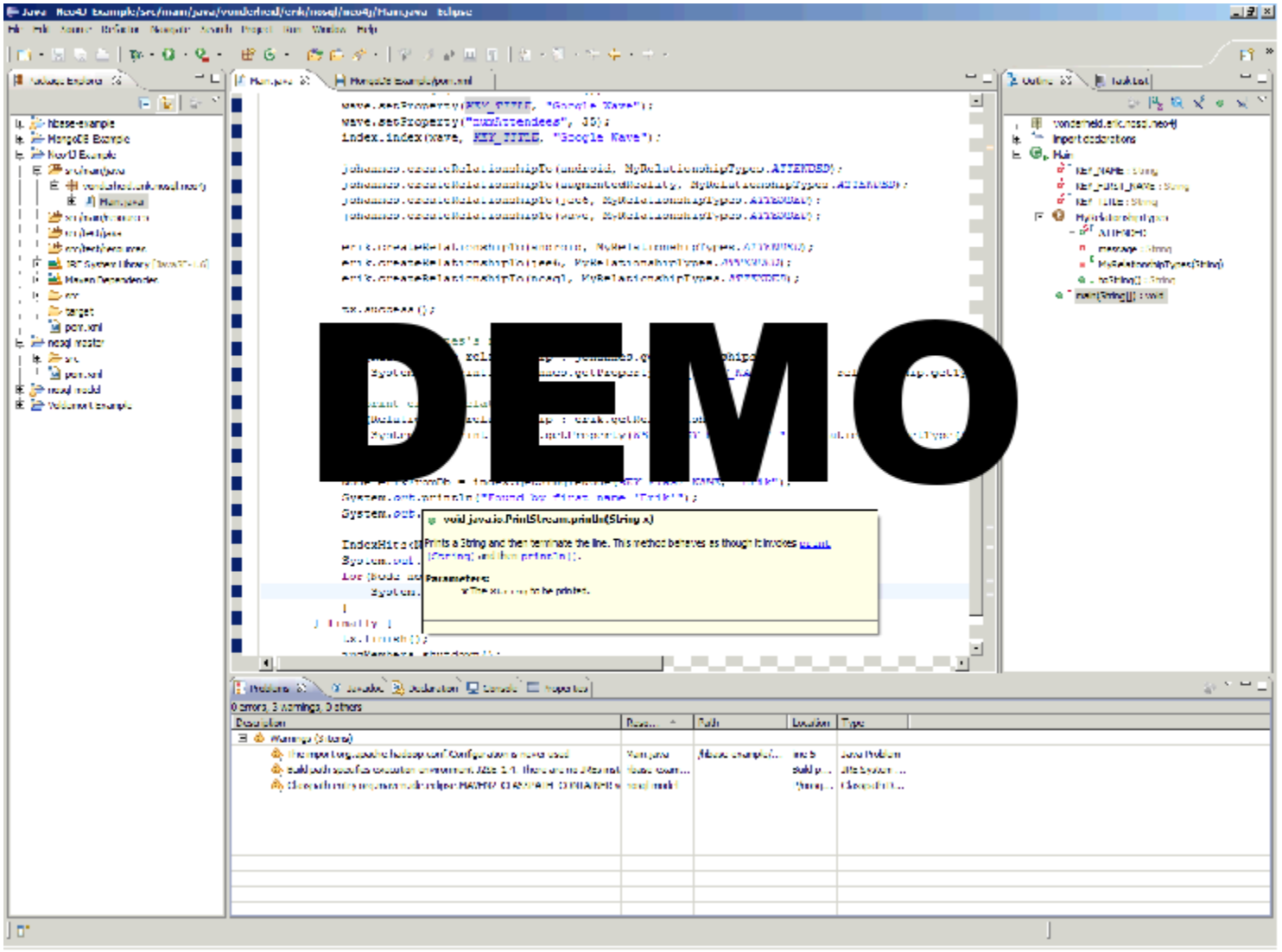
HBase API



neo4j

- Typ: Graphendatenbank
- Aktuelle Version: 1.0
- Lizenz: Apache 2.0
- Geschrieben in Java
- http://neo4j.org/

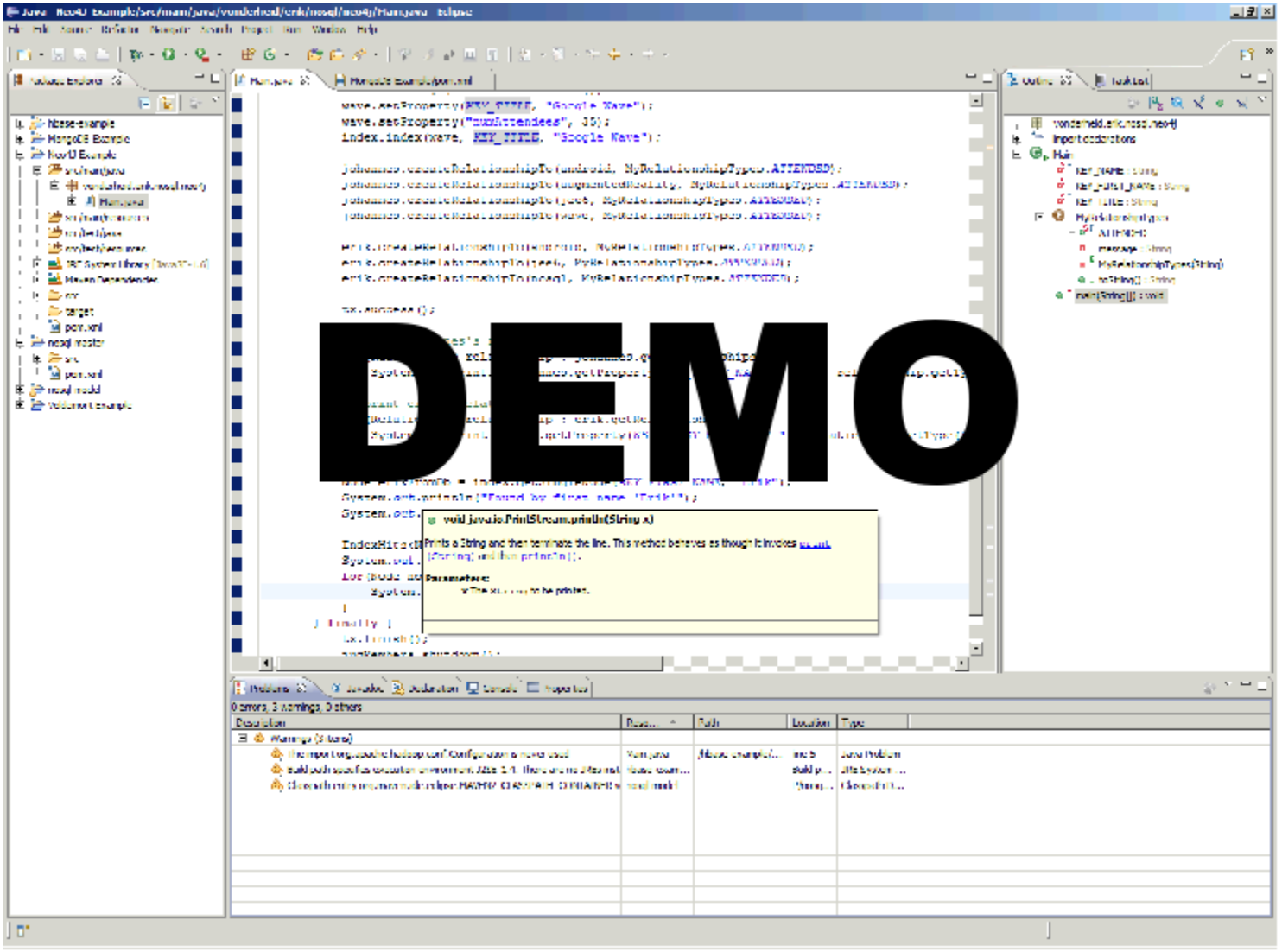
neo4j API



MongoDB

- Typ: Dokumentenorientiert
- Speicherformat: BSON (Binary JSON)
- Aktuelle Version: 1.4.4
- Lizenz: GNU AGPL
- Geschrieben in C
- http://www.mongodb.org/

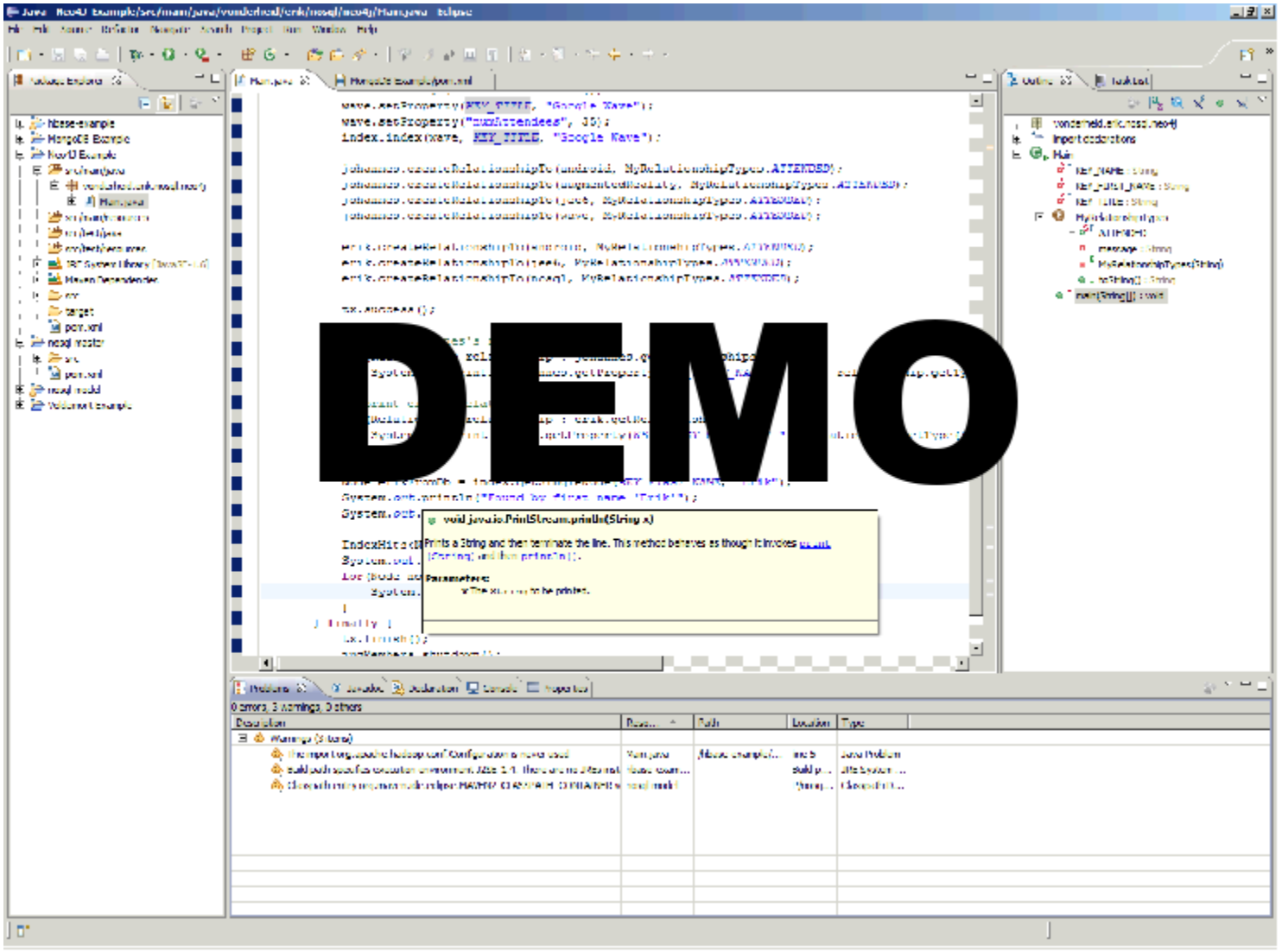
MongoDB API



Voldemort

- Typ: Key Value Store
- Aktuelle Version: 0.81
- Lizenz: Apache License 2.0
- Geschrieben in Java
- http://project-voldemort.com/

Voldemort API



Weitere NoSQL Systeme

- Riak
- CouchDB
- Cassandra
- Redis
- Berkley DB
- ...

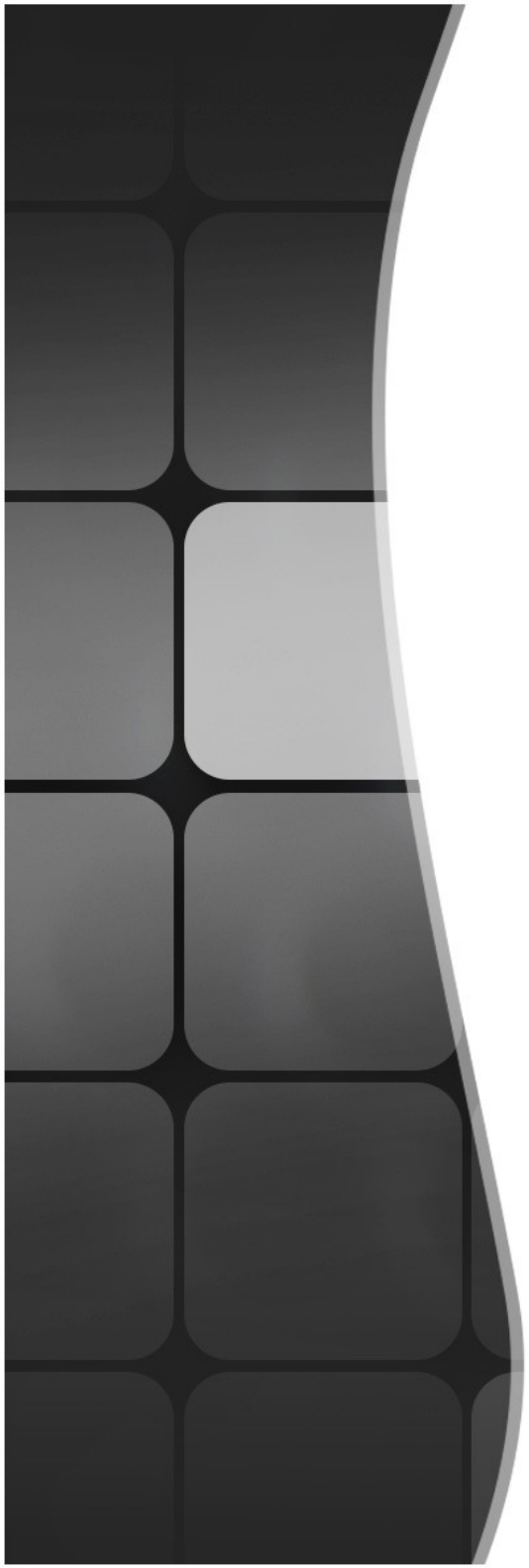
Fazit

- Keine einheitliche API
  - Teilweise Plugins für JPA
- Blick über den Tellerrand
  - Denken jenseits von relationalem Datenmodell
- Das richtige Werkzeug für den richtigen Zweck

Nächste Termine

- 24.08.2010 um 20:00 Uhr:
  - Java Champion Adam Bien "Stop Talking - Start Hacking ...with Java EE 6"

- 06.10.2010 um 18:30 Uhr:
  - Developer Evangelist Jochen Hiller "Android-Apps selbst schreiben: Techniken, Tools und Tipps"



Fragen?