MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

Database Systems – Introduction –

Karine Reis Ferreira

karine@dpi.inpe.br

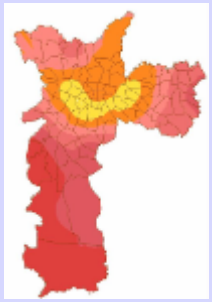
Aula da disciplina Computação Aplicada II – Sistemas de Banco de Dados (CAP 236) – 2014

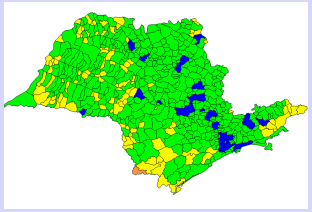
Computação Aplicada II – CAP 236

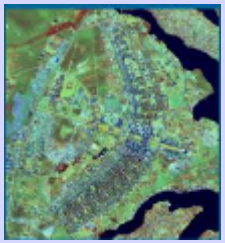
- Tópico: Sistemas de Banco de Dados
- Segunda-feira – 13:30 as 15:30
- Ementa:
  - Sistemas de Banco de Dados Relacionais
  - Sistemas de Banco de Dados Objeto-Relacionais
    - Sistemas de Banco de Dados Espaciais
  - Bancos de Dados NoSQL
    - Triplestore

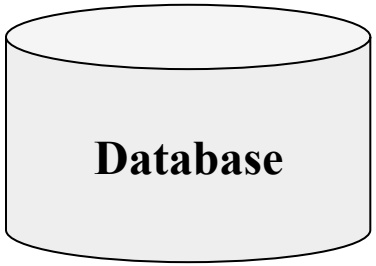
Database

Database:
Organized data sets of a specific domain.









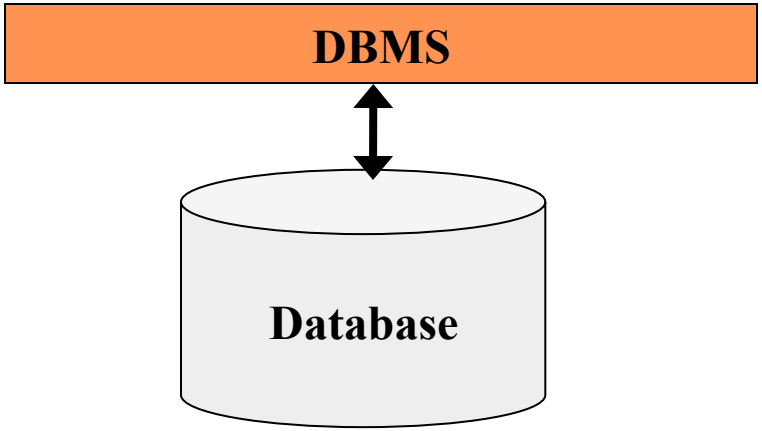
DBMS – Database Management Systems

SGBD – Sistemas Gerenciadores de Bancos de Dados

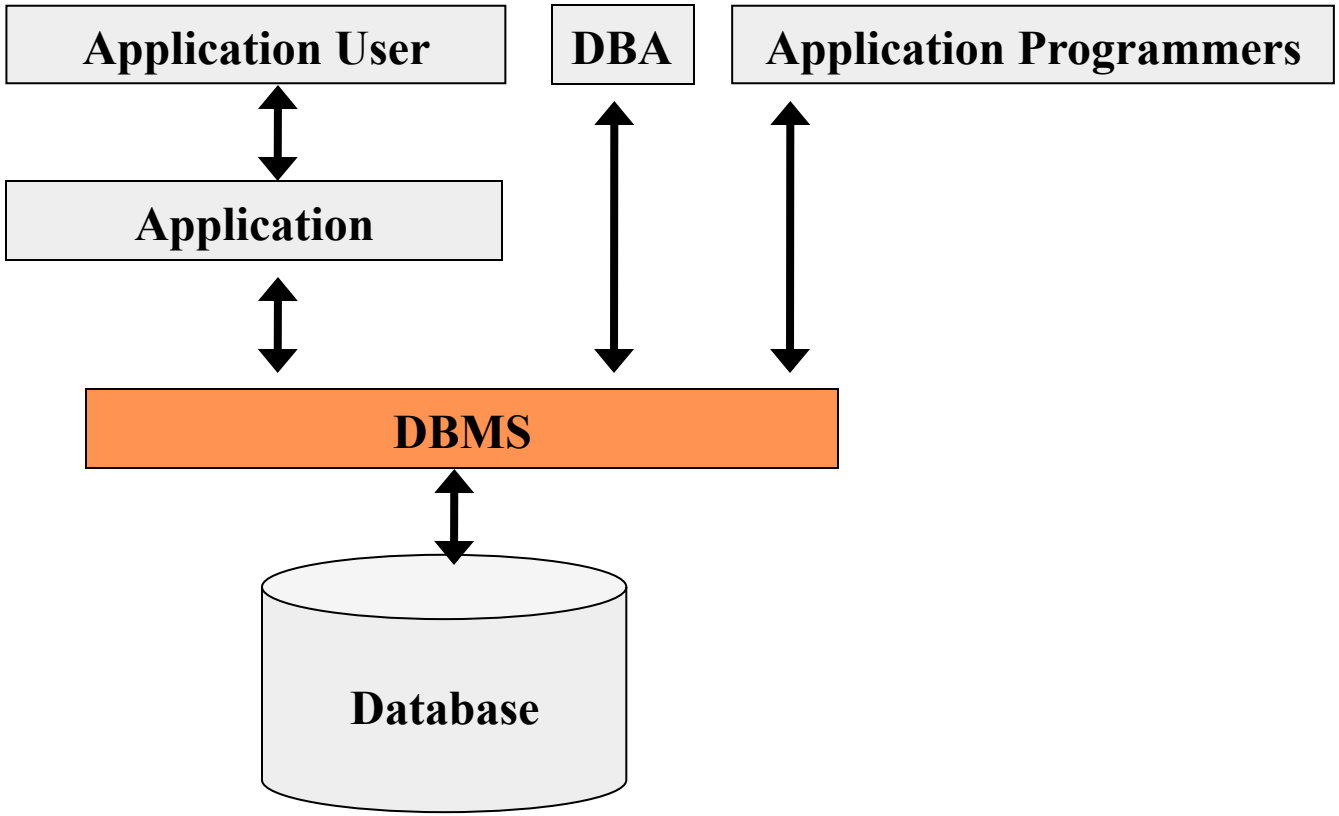
DBMS:
Collection of software tools to create, manage and deal with databases.

Interface between users and databases.

Examples: MySQL, Oracle, PostgreSQL, ...

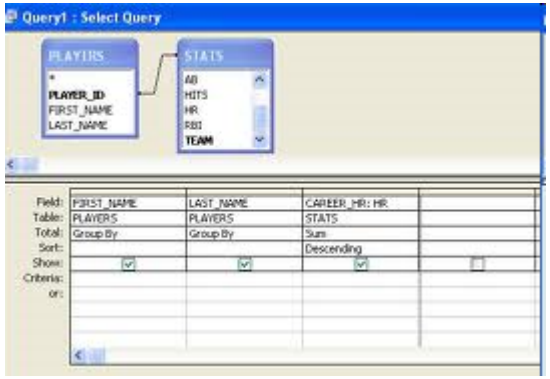


Database System

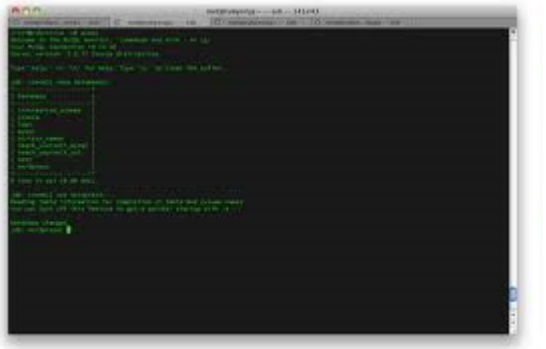


Database System

GUI



Prompt



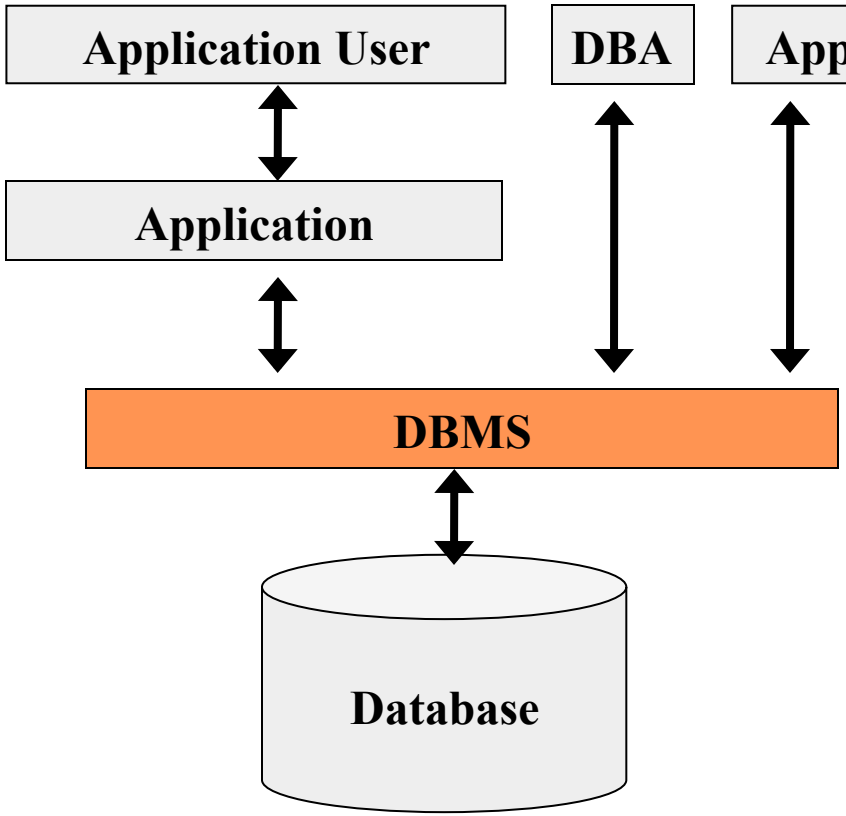
API

```
int main()
{
…
}
```

SGBD

Banco de Dados

Database System

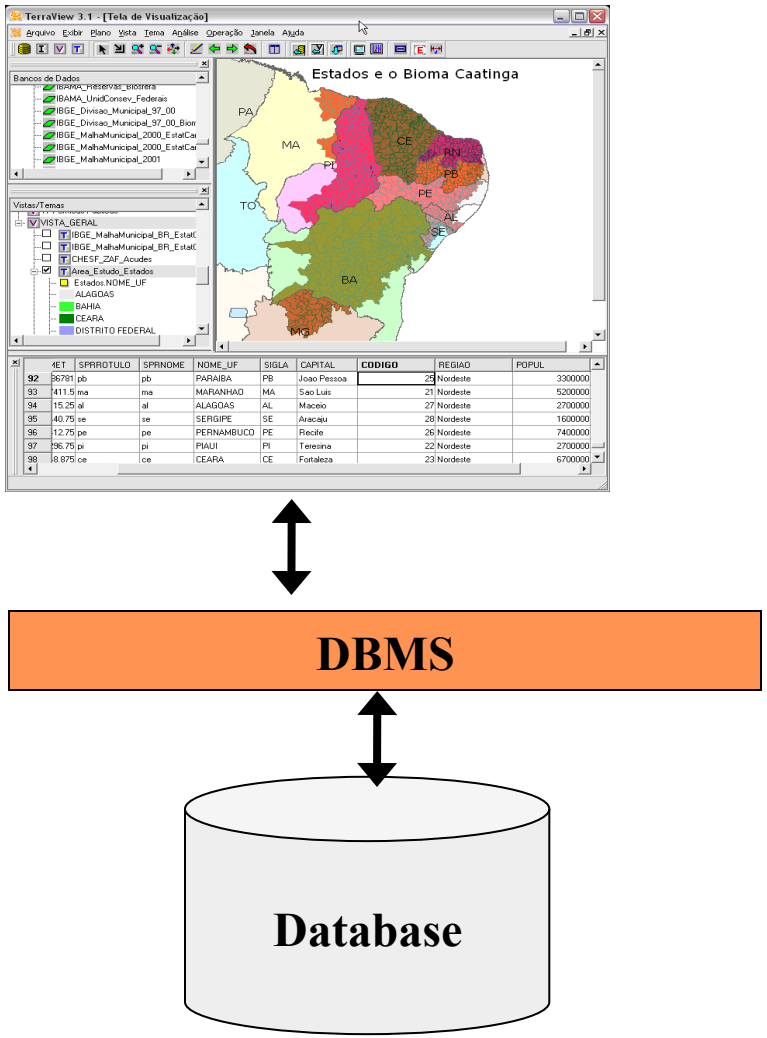


Database System:

Database
+
DBMS
+
Applications

Example

TerraView



Geographical Information System (GIS):

Computational systems able to store, process and deal with geographical data. (Worboys and Duckham, 2004)

Classification

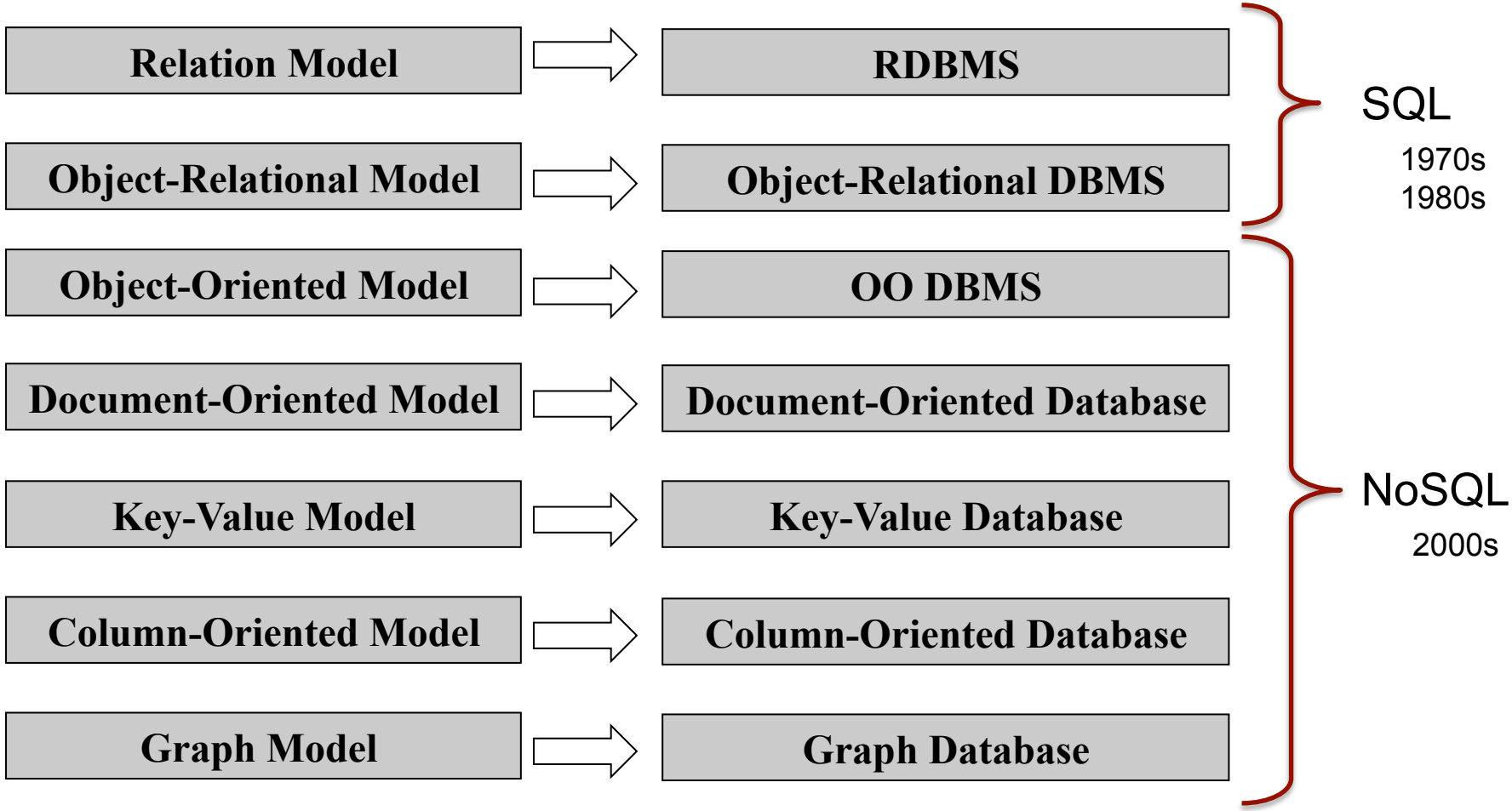
Databases and DBMSs can be categorized according to:

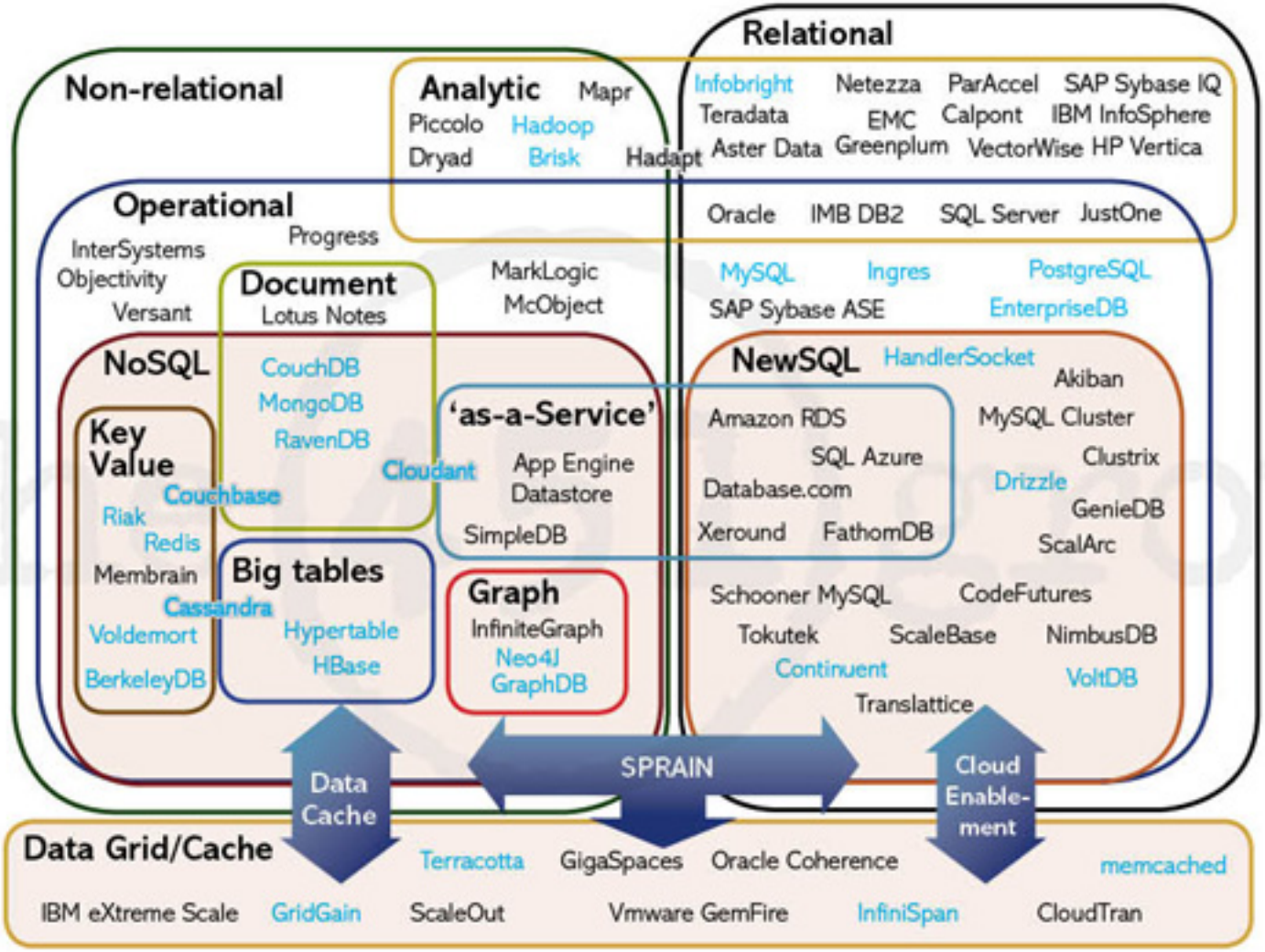
- the **database model**(s) that they support (such as relational or XML);
- the type(s) of **computer they run** on (from a server cluster to a mobile phone);
- the **query language**(s) used to access the database (such as SQL or Xquery); and
- their **internal engineering**, which affects performance, scalability, resilience, and security.

Database model

- How data is represented and organized in a database

Database Models and DBMS




Relational
Non-relational
Analytic
Mapr
Piccolo
Hadoop
Dryad
Brisk
Hadapt
Infobright
Netezza
ParAccel
SAP Sybase IQ
Teradata
EMC
Calpont
IBM InfoSphere
Aster Data
Greenplum
VectorWise
HP Vertica
Operational
Oracle
IMB DB2
SQL Server
JustOne
Progress
InterSystems
Objectivity
Versant
Document
Lotus Notes
MarkLogic
McObject
MySQL
Ingres
PostgreSQL
SAP Sybase ASE
EnterpriseDB
NoSQL
CouchDB
MongoDB
RavenDB
Cloudant
'as-a-Service'
App Engine
Datastore
SimpleDB
NewSQL
HandlerSocket
Akiban
Amazon RDS
MySQL Cluster
SQL Azure
Clustrix
Database.com
Drizzle
GenieDB
Xeround
FathomDB
ScalArc
Key Value
Couchbase
Riak
Redis
Membrain
Cassandra
Voldemort
BerkeleyDB
Big tables
Hypertable
HBase
Graph
InfiniteGraph
Neo4J
GraphDB
Schooner MySQL
CodeFutures
Tokutek
ScaleBase
NimbusDB
Continuent
VoltDB
Translattice
Data Cache
SPRAIN
Cloud Enable-ment
Data Grid/Cache
Terracotta
GigaSpaces
Oracle Coherence
memcached
IBM eXtreme Scale
GridGain
ScaleOut
Vmware GemFire
InfiniSpan
CloudTran