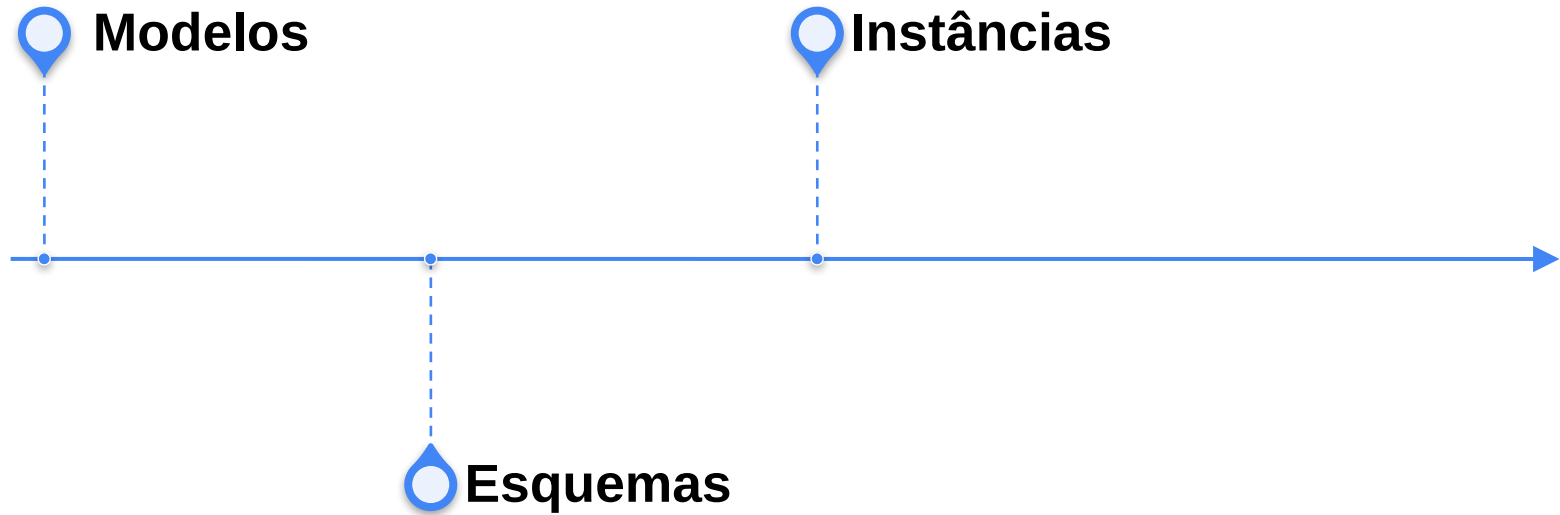


Etapa 8

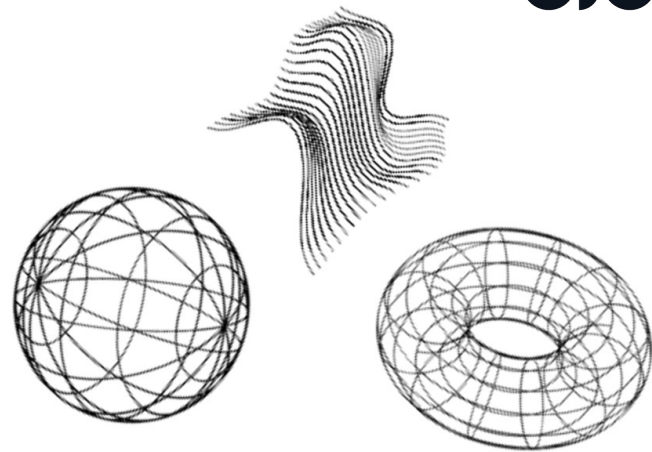
Arquitetura: Modelos, Esquemas e Instâncias

// Introdução à Banco de dados

Conversa



Modelo

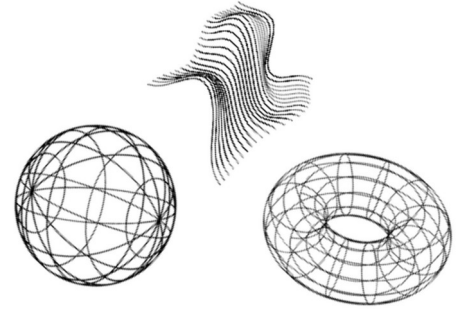
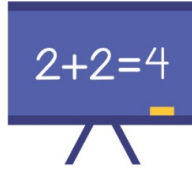
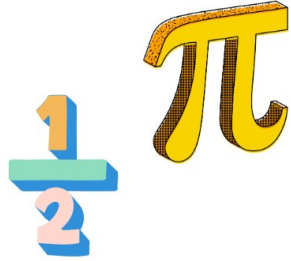


Abstração



essencial

Modelo



Data model

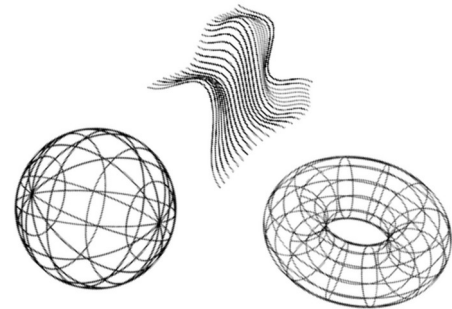
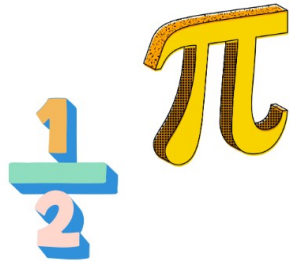


Abstração



essencial

Modelo



Operações

Data model

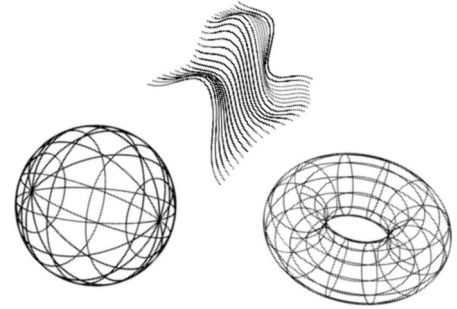
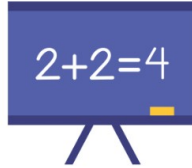
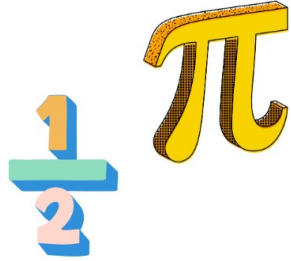


Abstração



essencial

Modelo



Operações

Data model



Classificação

Abstração

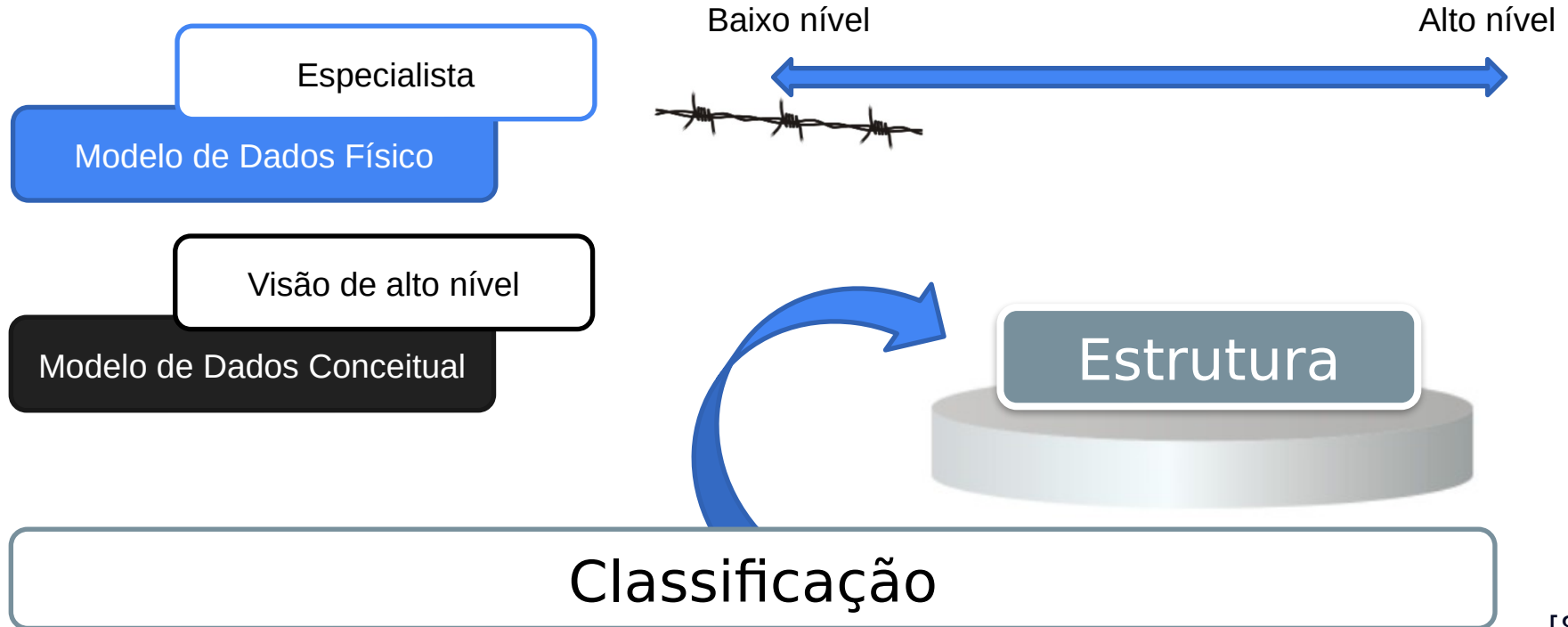


essencial

Modelo



Modelo



Modelo



Especialista

Modelo de Dados Físico

Visão de alto nível

Modelo de Dados Conceitual

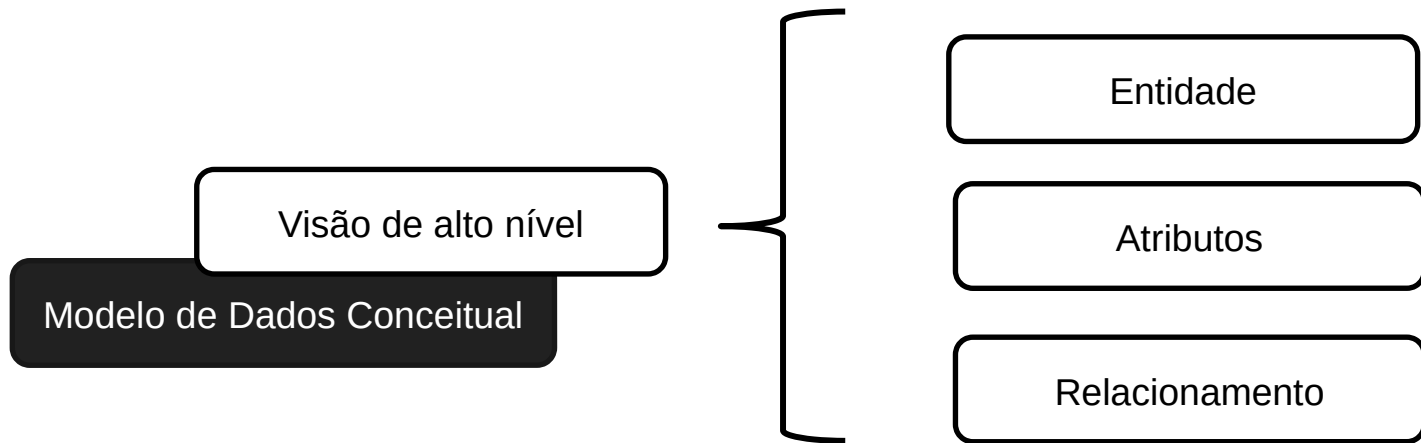
Representacional

Modelo de Dados de
implementação

Estrutura

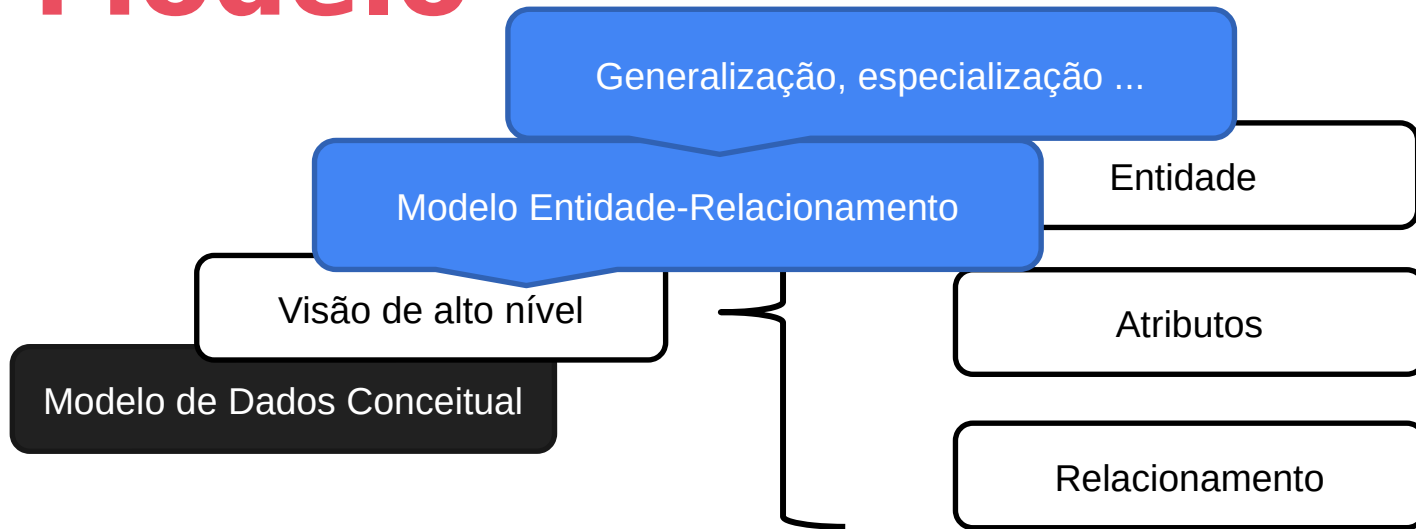
Classificação

Modelo



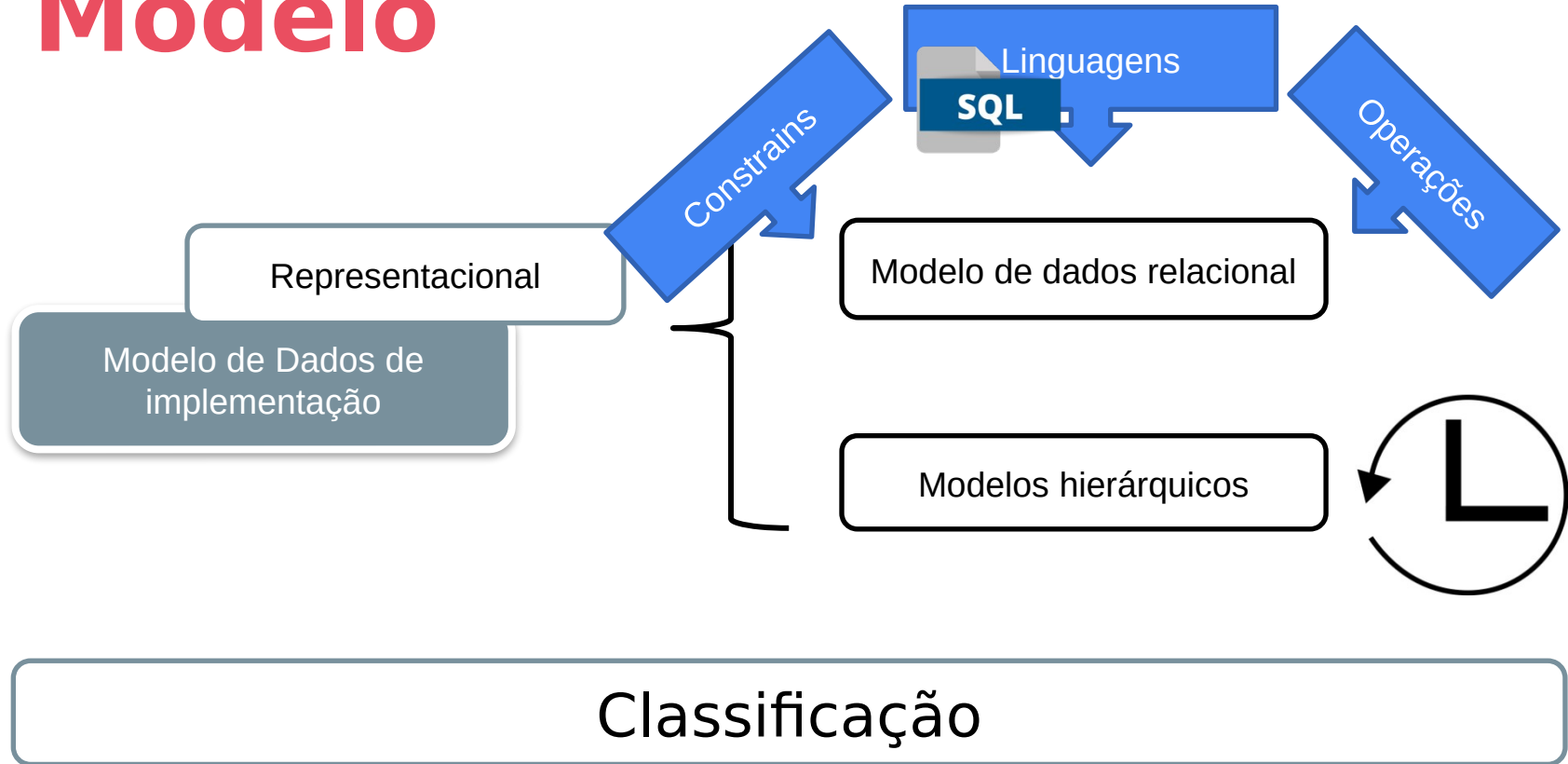
Classificação

Modelo

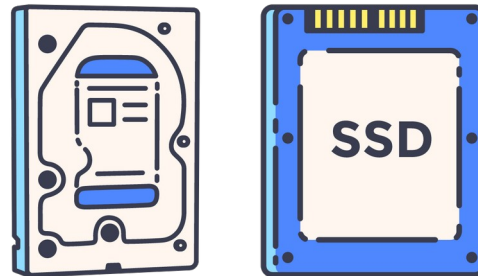


Classificação

Modelo

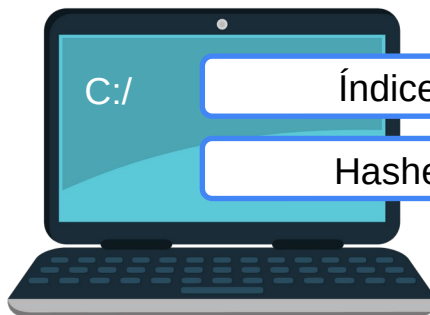


Modelo



Especialista

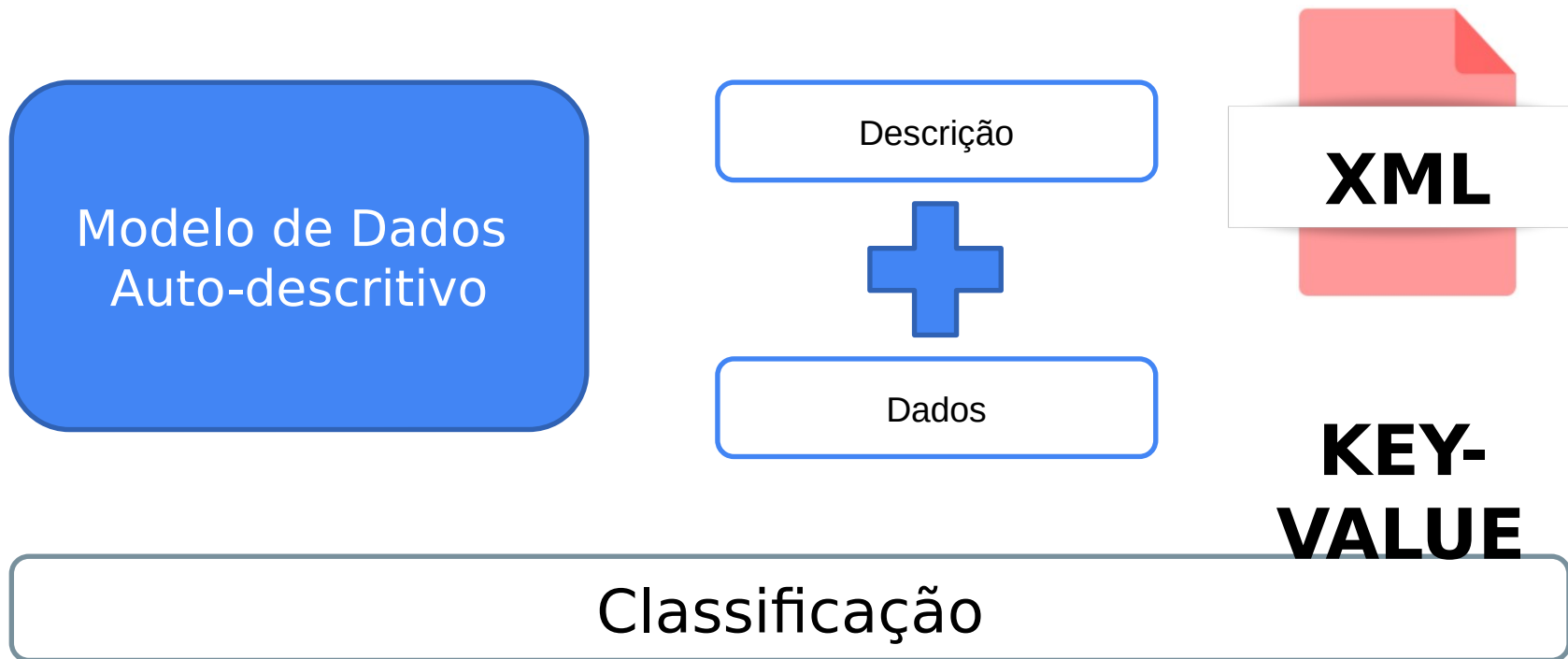
Modelo de Dados Físico



.CSV

Classificação

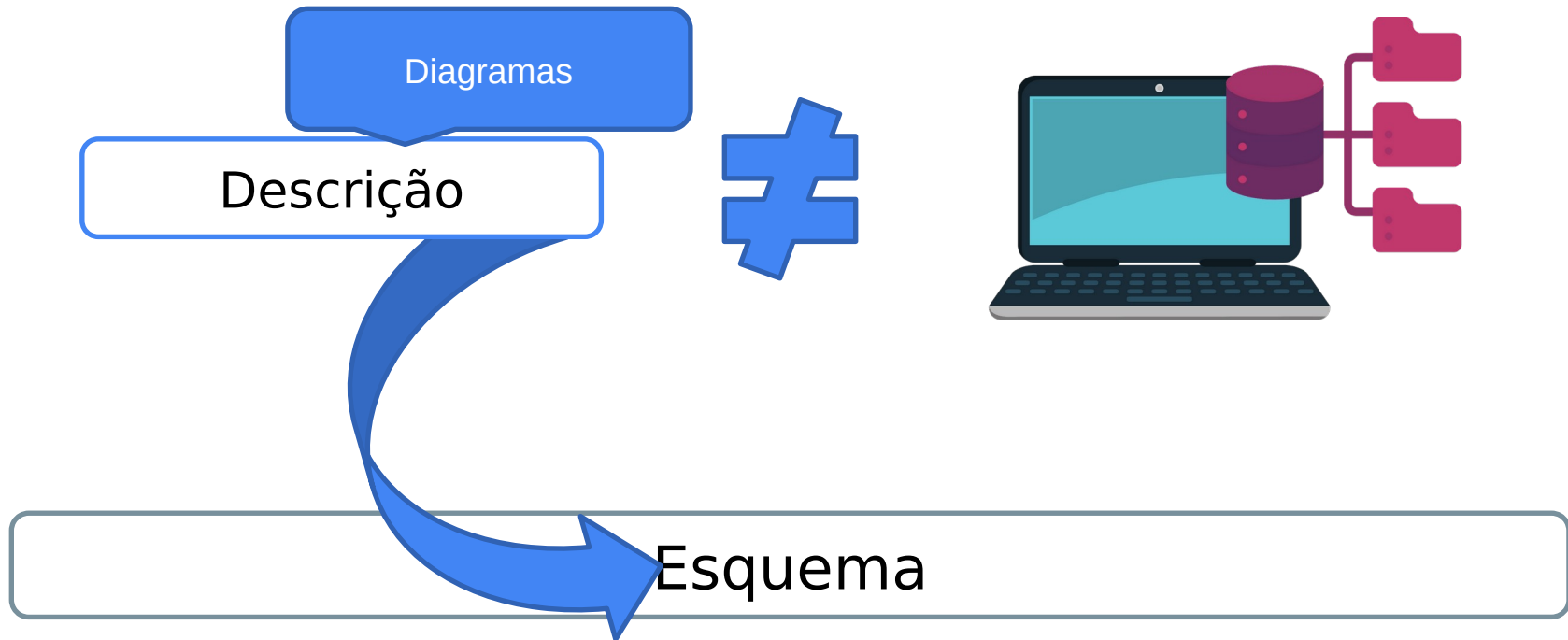
Modelo



Esquemas, Instâncias e Estados do BD



Esquema



Esquema

Diagramas

Descrição

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------

Esquema

Esquema

Diagramas

Descrição

Construct

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------

Esquema

Esquema

Diagramas

Descrição

~~Tipos de dados &
Itens~~

Construct

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

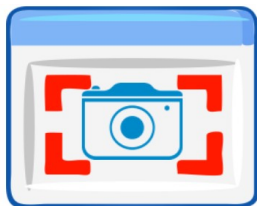
Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------

Esquema

Snapshot



Dados mudam

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

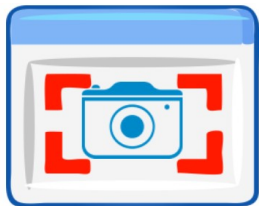
GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------

Instância | Ocorrência

Esquema

Snapshot



Dados mudam

Instância | Ocorrência

Esquema

Insert, Delete

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

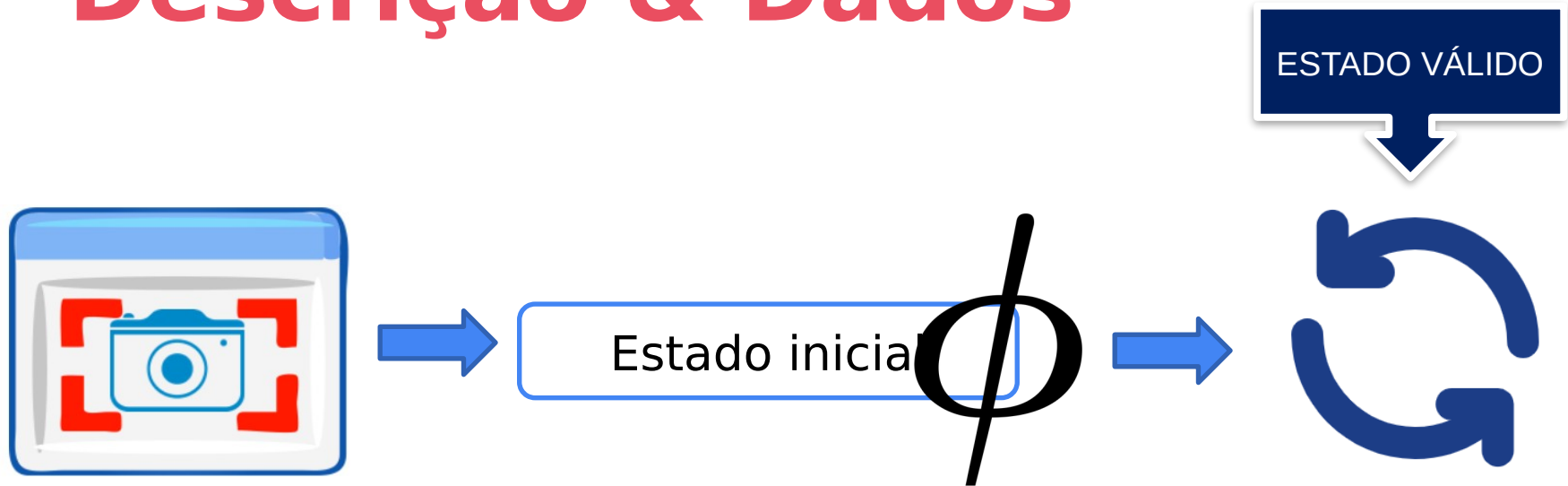
GRADE_REPORT

Student_number	Section_identifier
----------------	--------------------

Mudança de estado

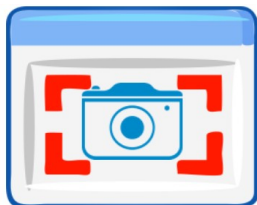
Update

Descrição & Dados



Esquema

Snapshot



Dados mudam

Mudança =
evolução

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

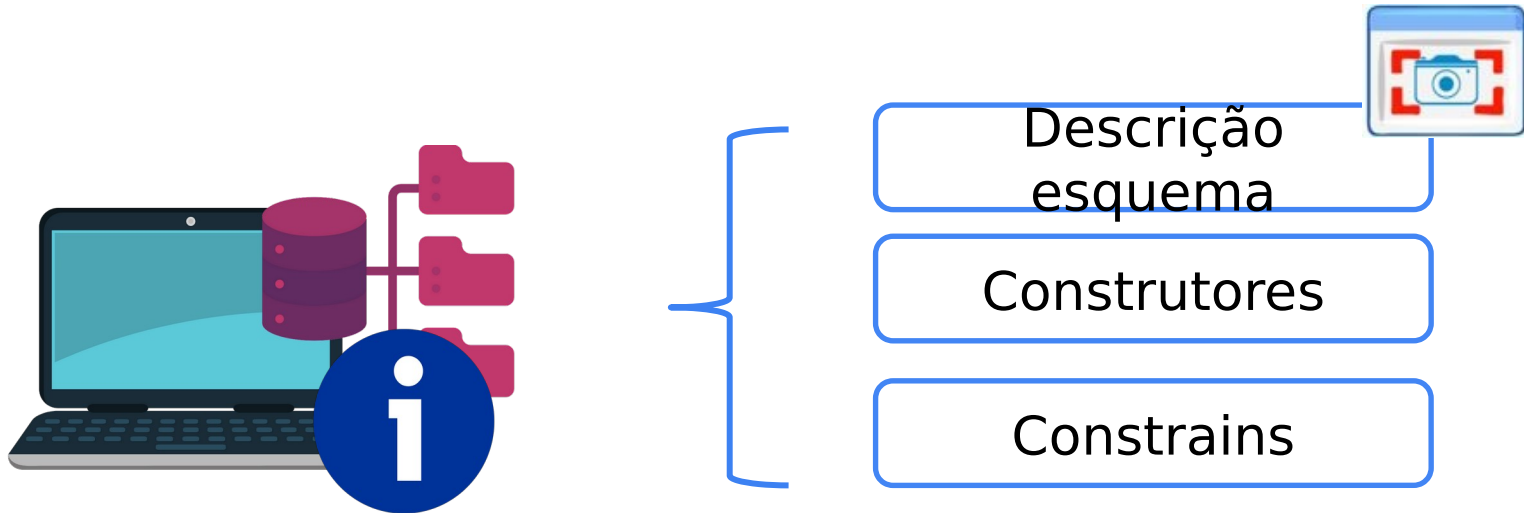
GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------

Instância | Ocorrência

Esquema

Meta dados

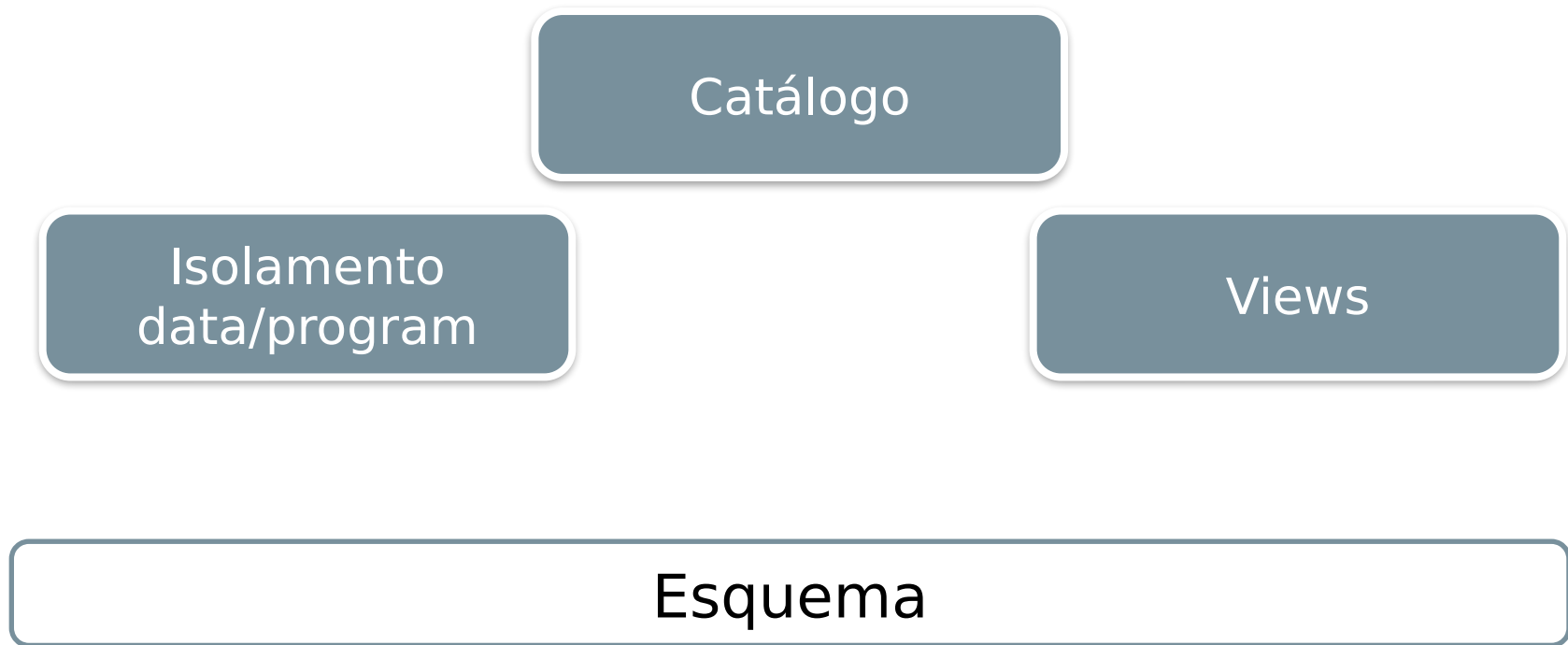


Esquema

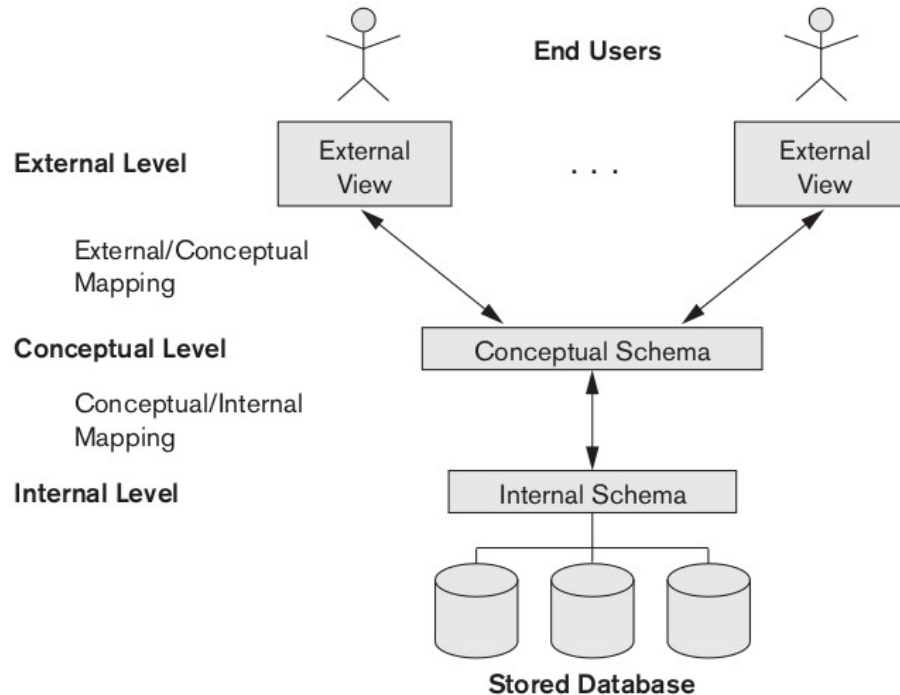
Three-Schema Architecture



Three-Schema



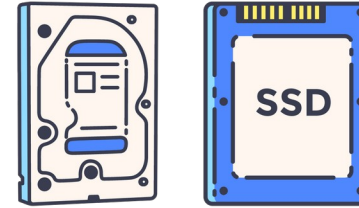
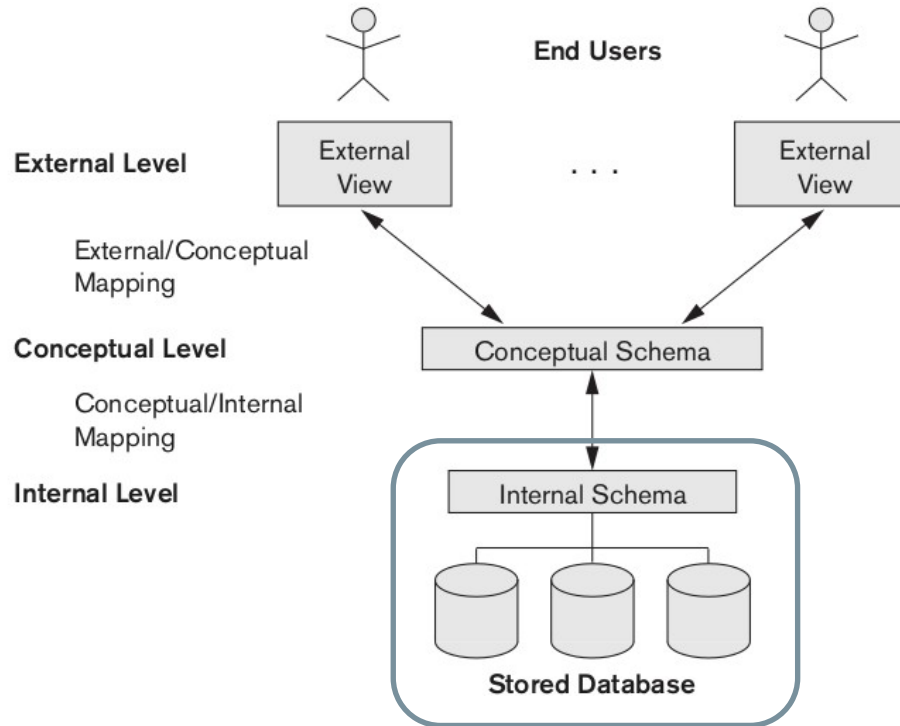
Arquitetura



Aplicações de
Usuário

Físico BD

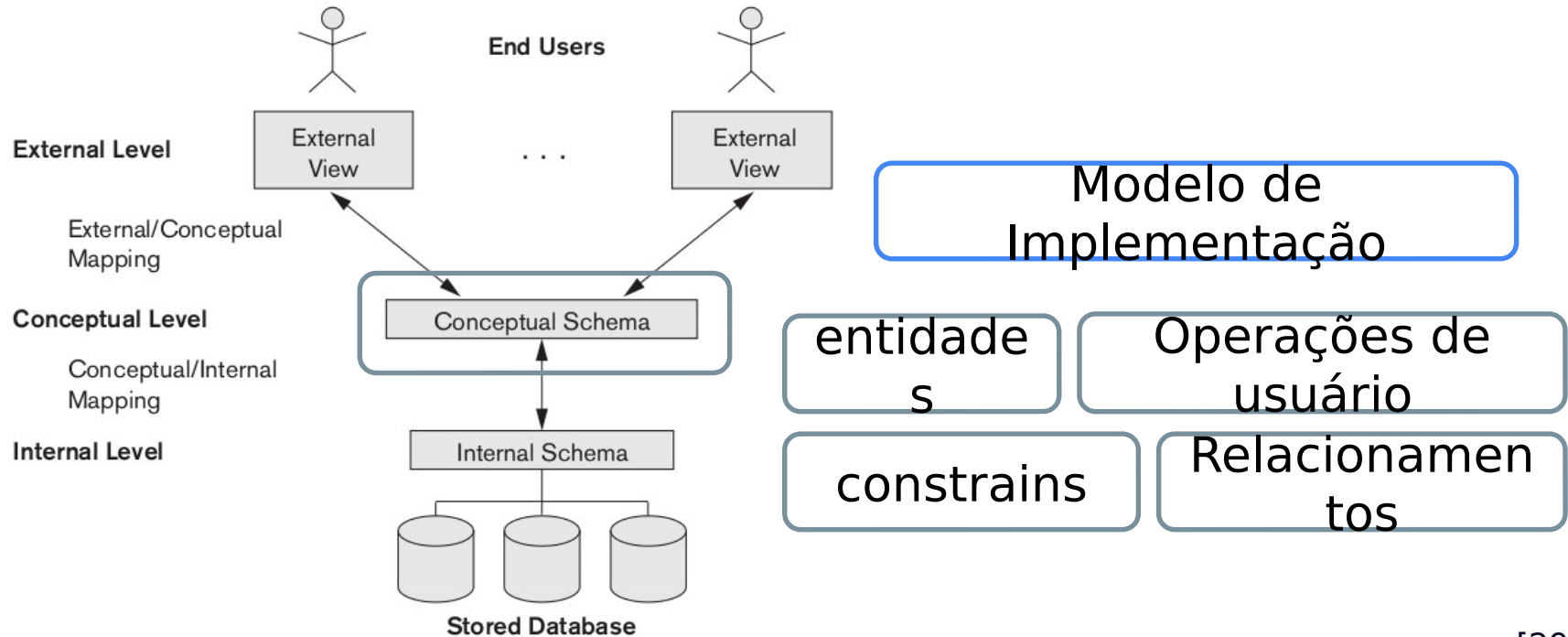
Arquitetura



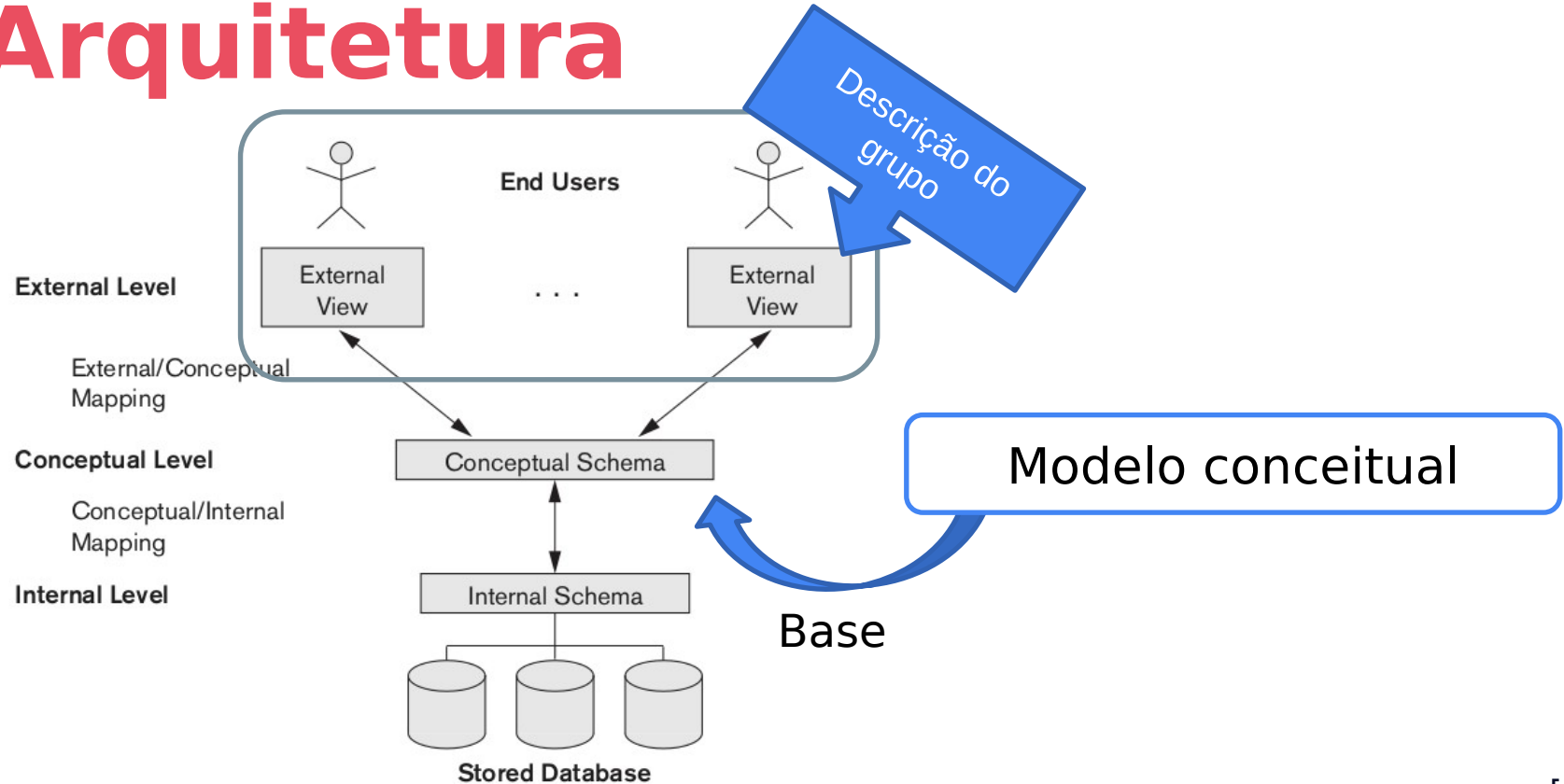
Modelo de dados
físico



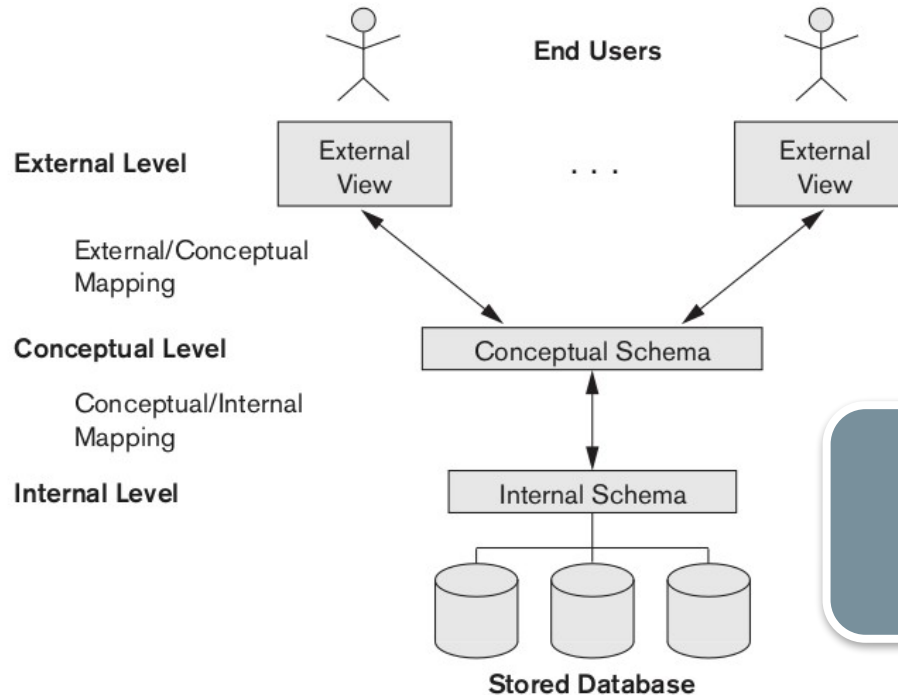
Arquitetura



Arquitetura



Arquitetura



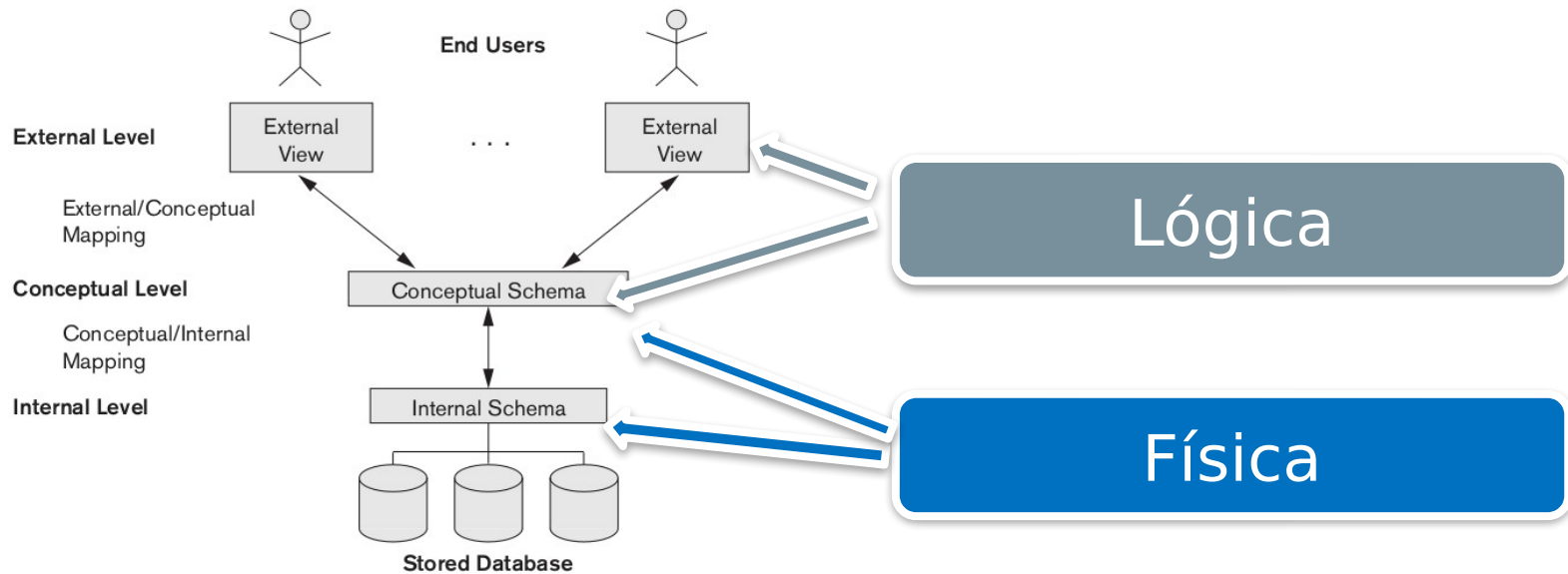
Explicitamente

NOT

Completamente

Desenvolvimento e
Design do sistema

Independência de dados

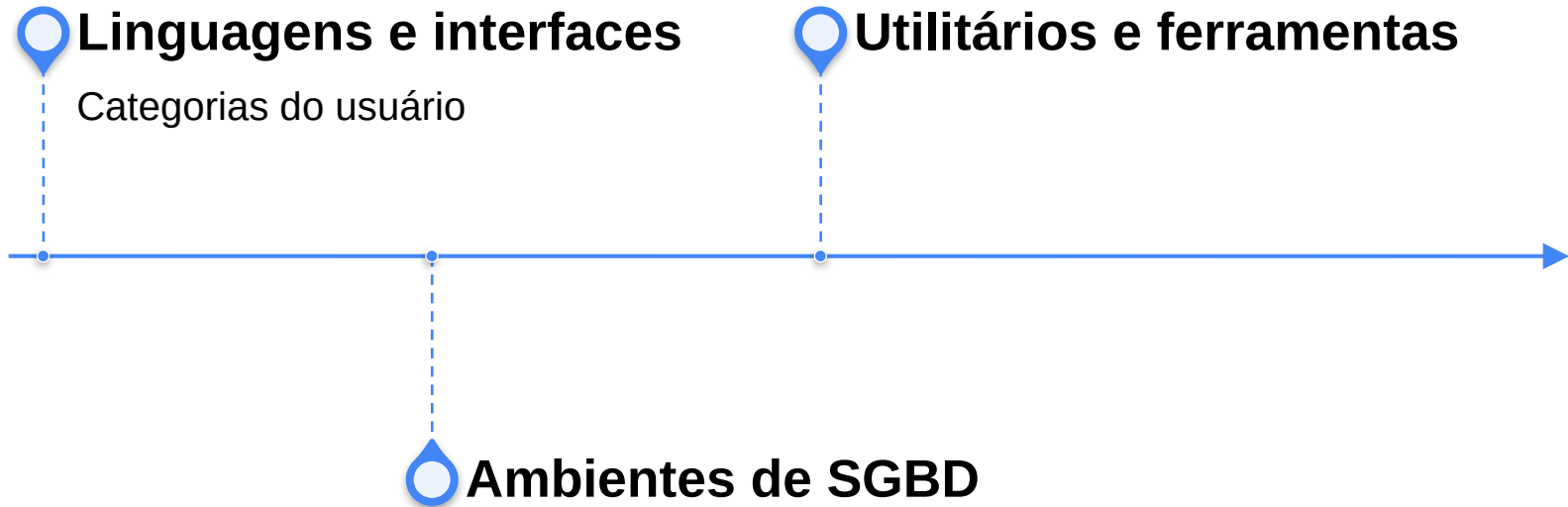


Etapa 9

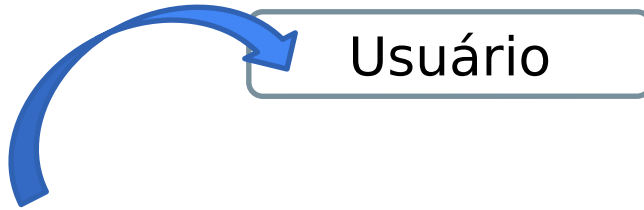
Arquitetura: Linguagem, Interface e Ambiente de SGBDs

// Introdução à Banco de dados

Conversa



Linguagens



Linguagens e interfaces

DDL – Data Definition Language

Linguagens

STUDENT

Name	Student_number	Class	Major
------	----------------	-------	-------

COURSE

Course_name	Course_number	Credit_hours	Department
-------------	---------------	--------------	------------

PREREQUISITE

Course_number	Prerequisite_number
---------------	---------------------

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
--------------------	---------------	----------	------	------------

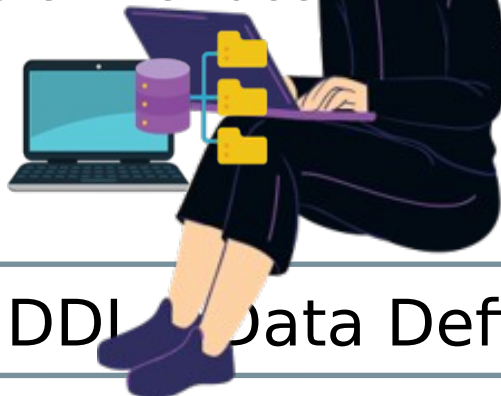
GRADE_REPORT

Student_number	Section_identifier	Grade
----------------	--------------------	-------



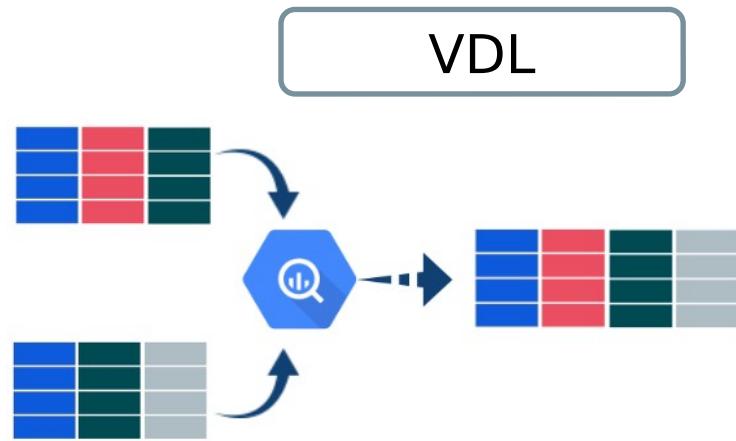
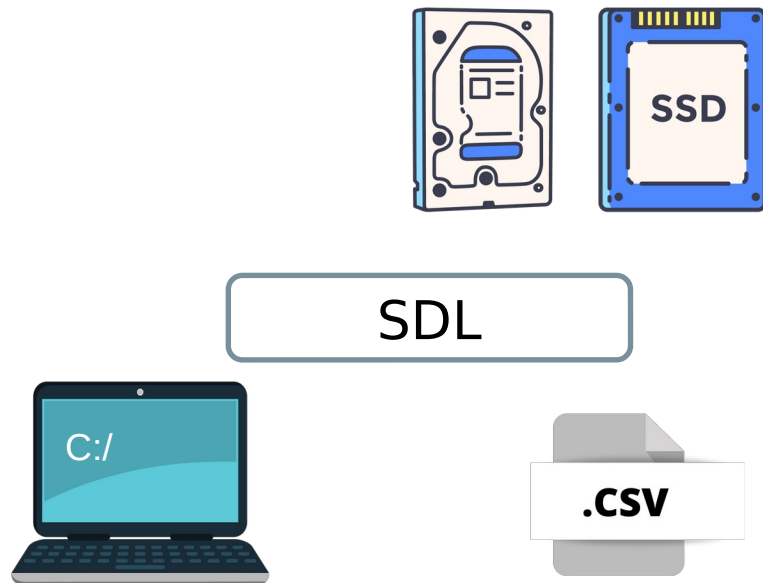
Usuário

Linguagens e interface



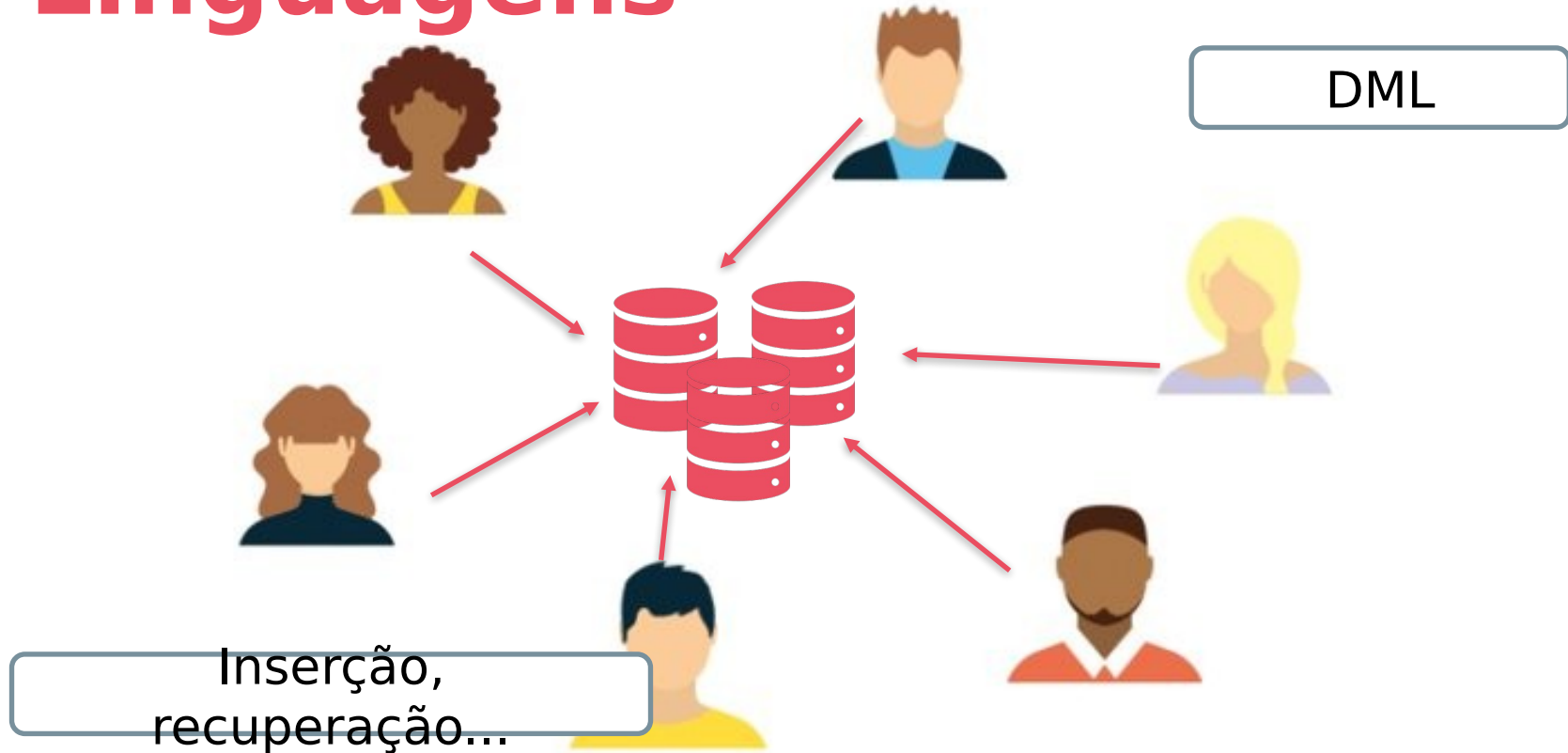
DDL Data Definition Language

Linguagens

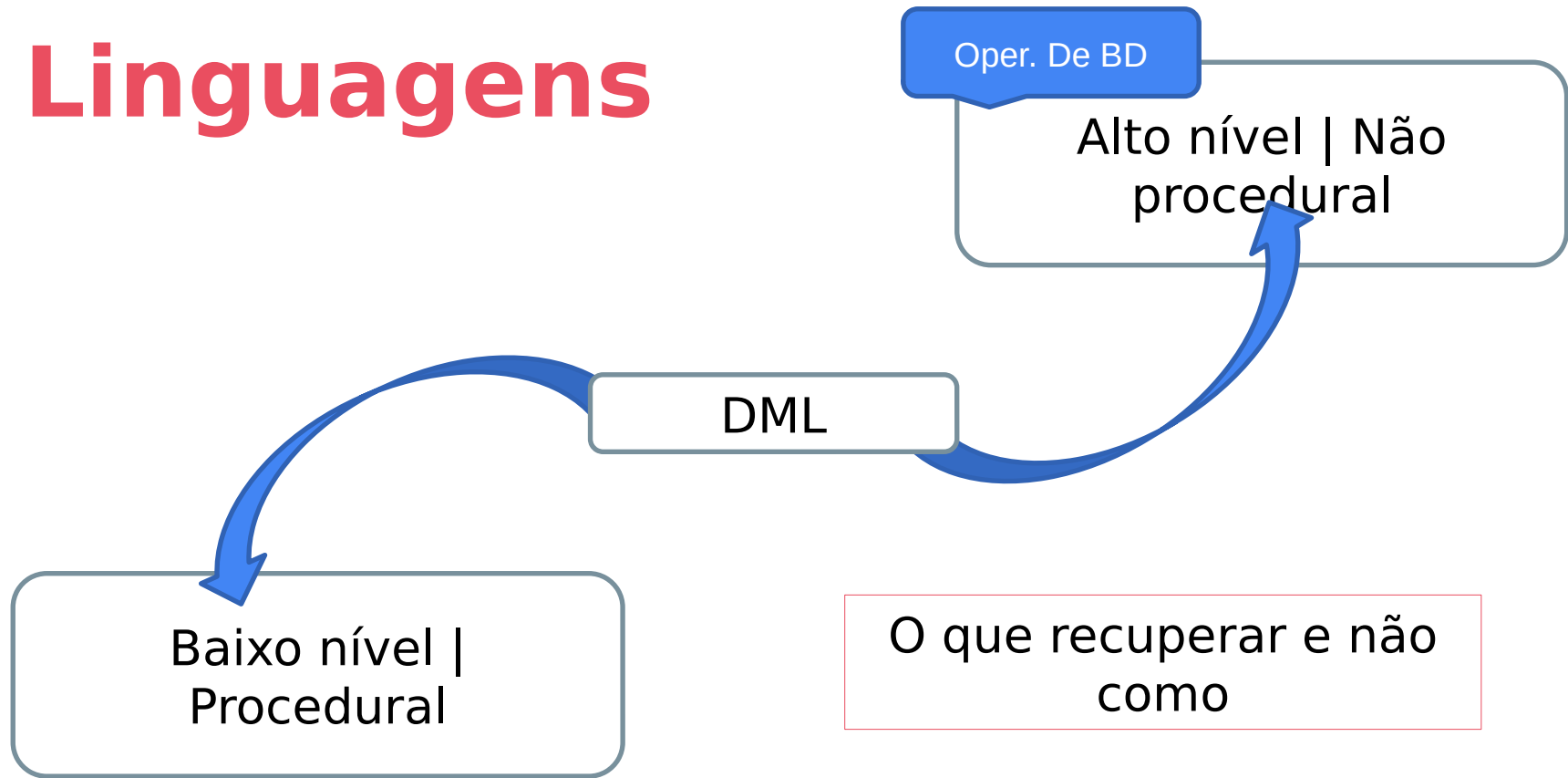


Separação explícita

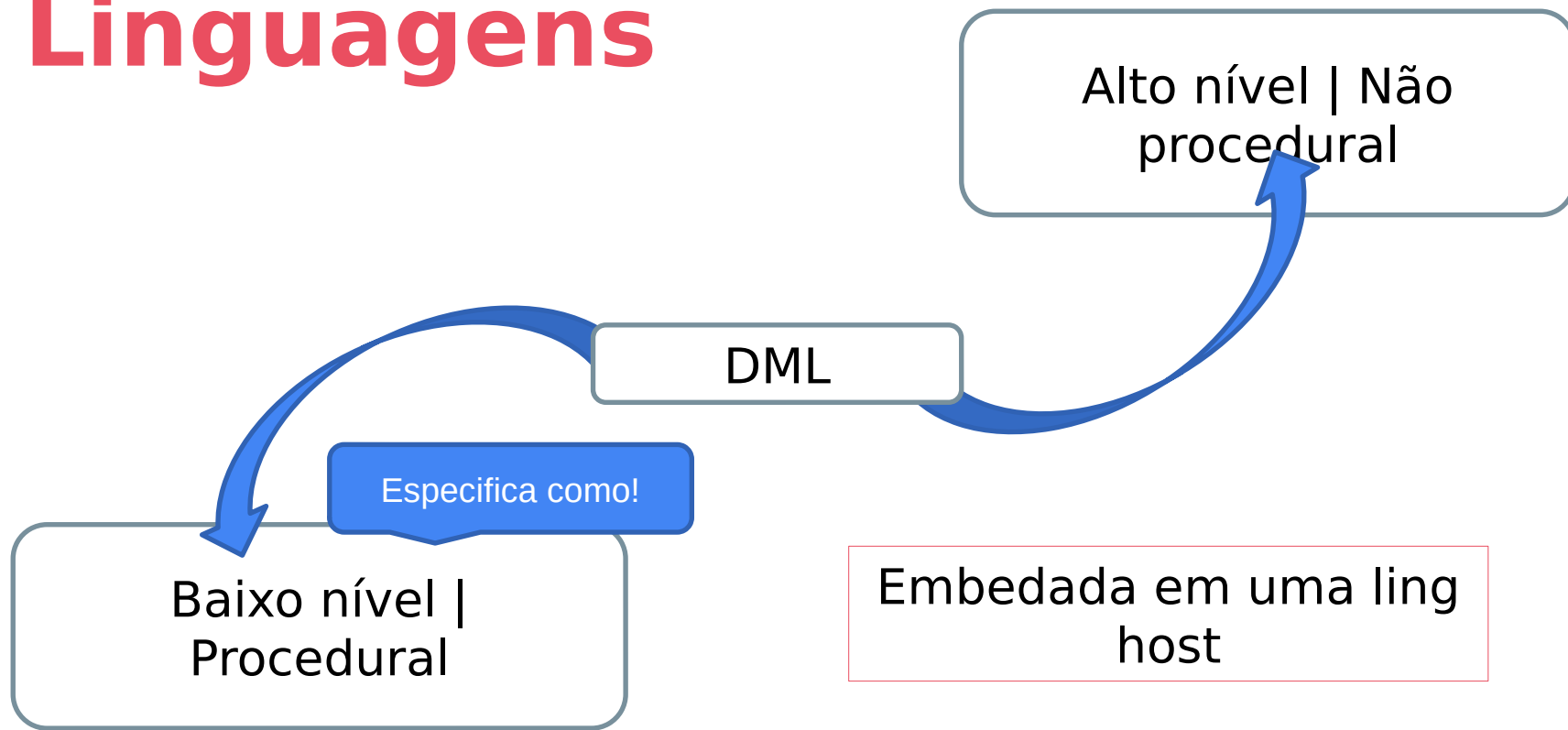
Linguagens



Linguagens



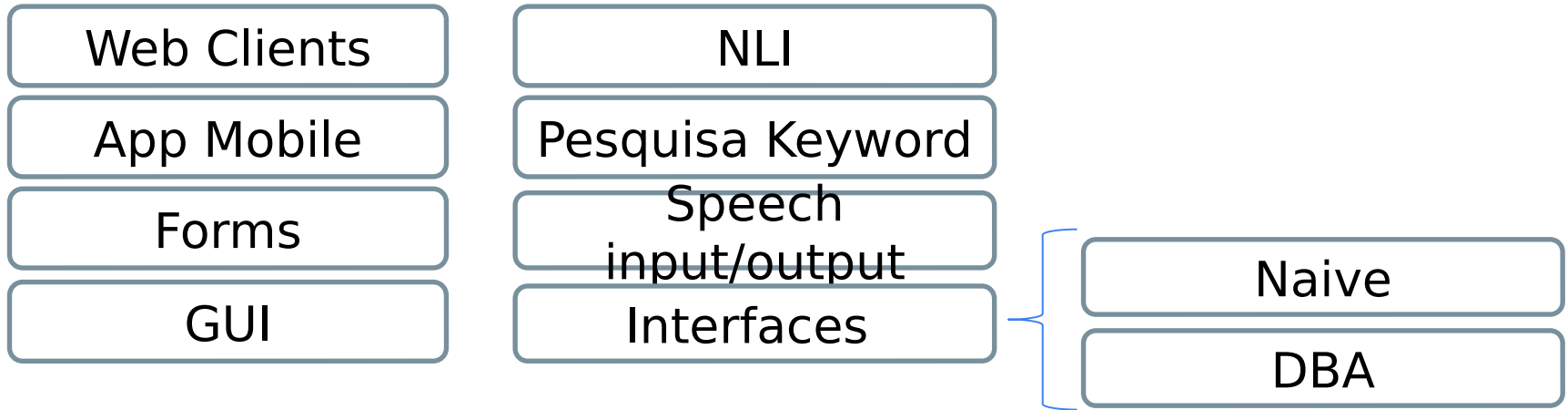
Linguagens



Interfaces



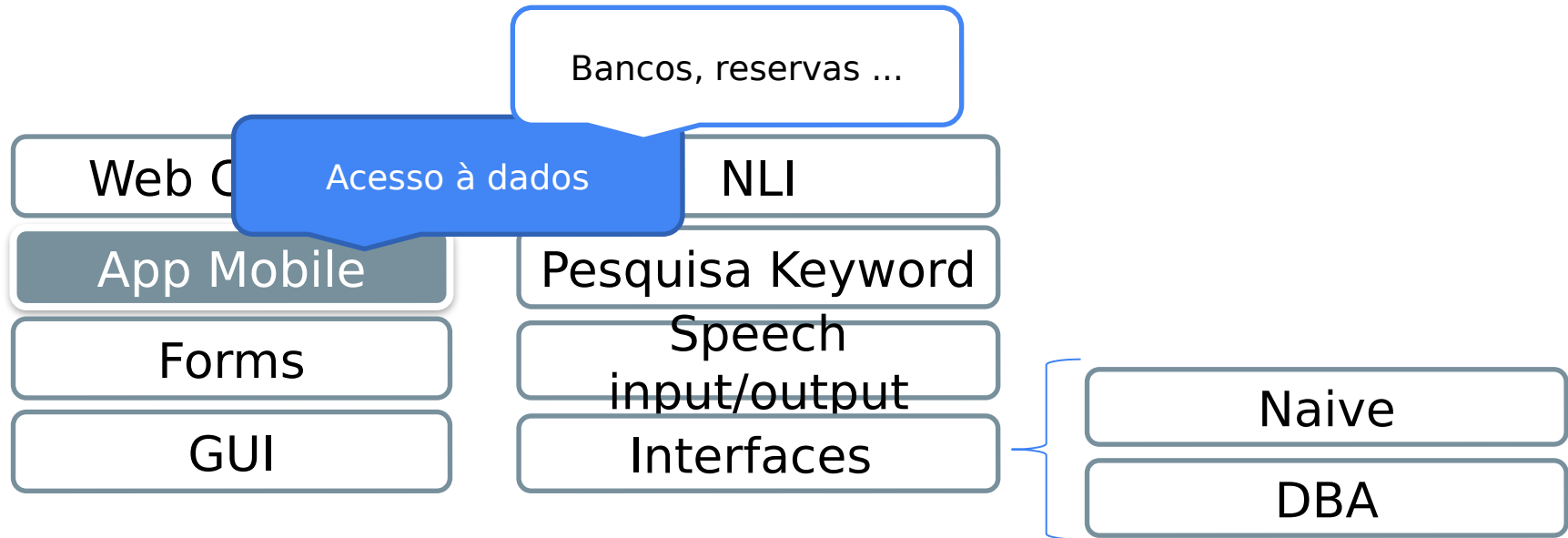
Interfaces



Interface

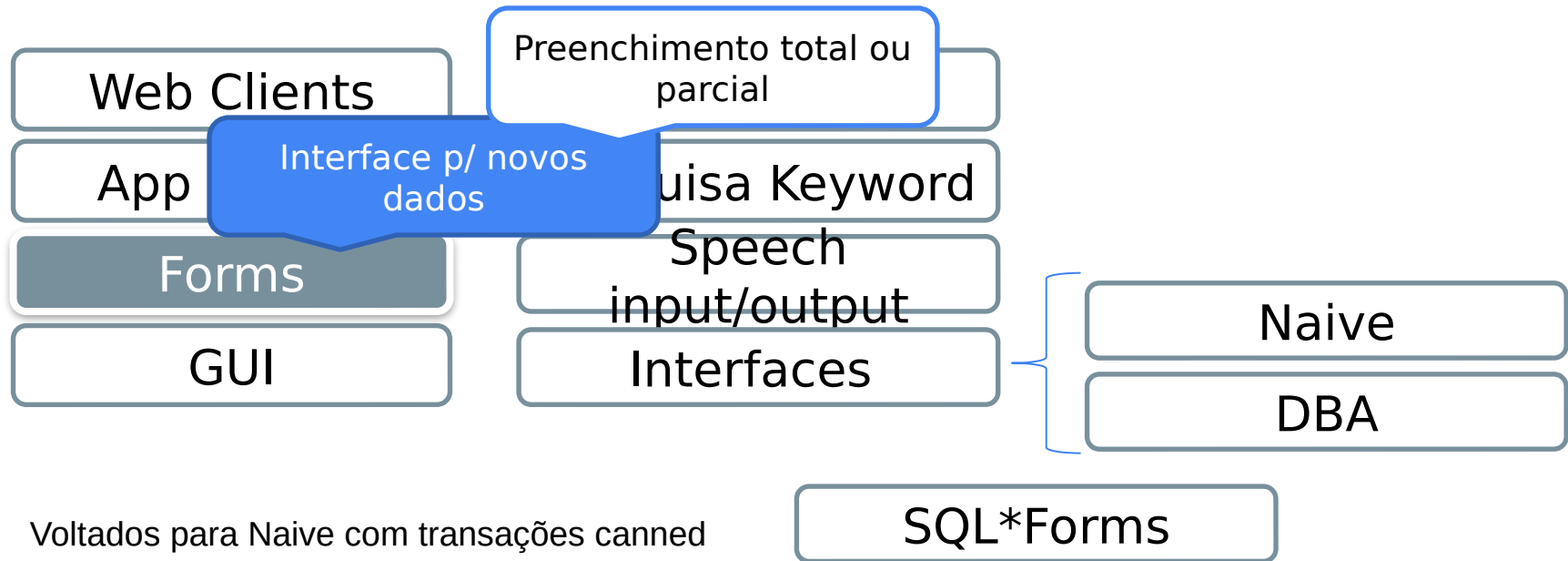


Interfaces

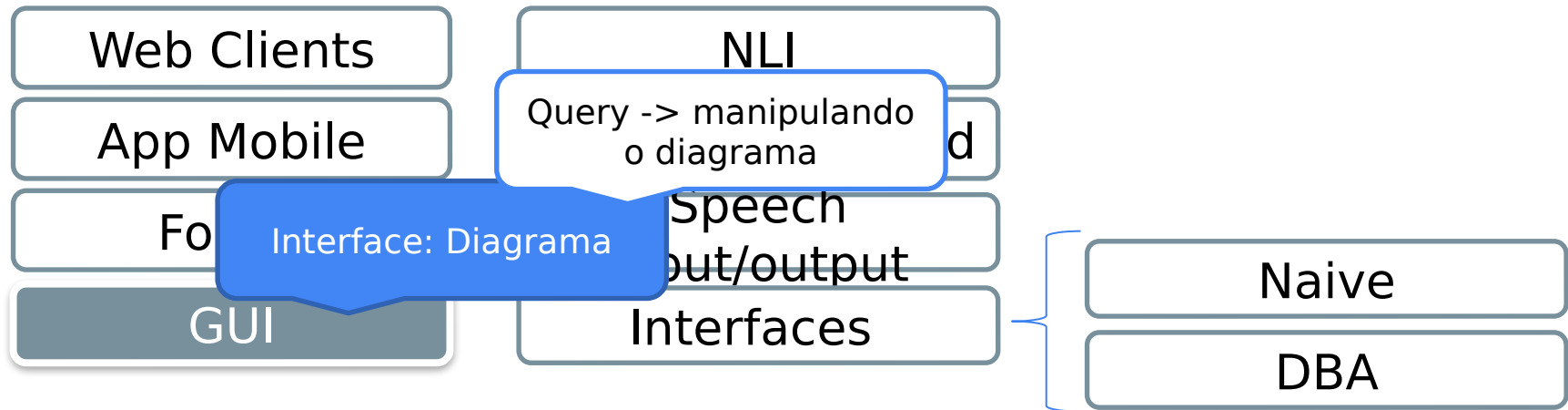


Menu limitado pelo app

Interfaces

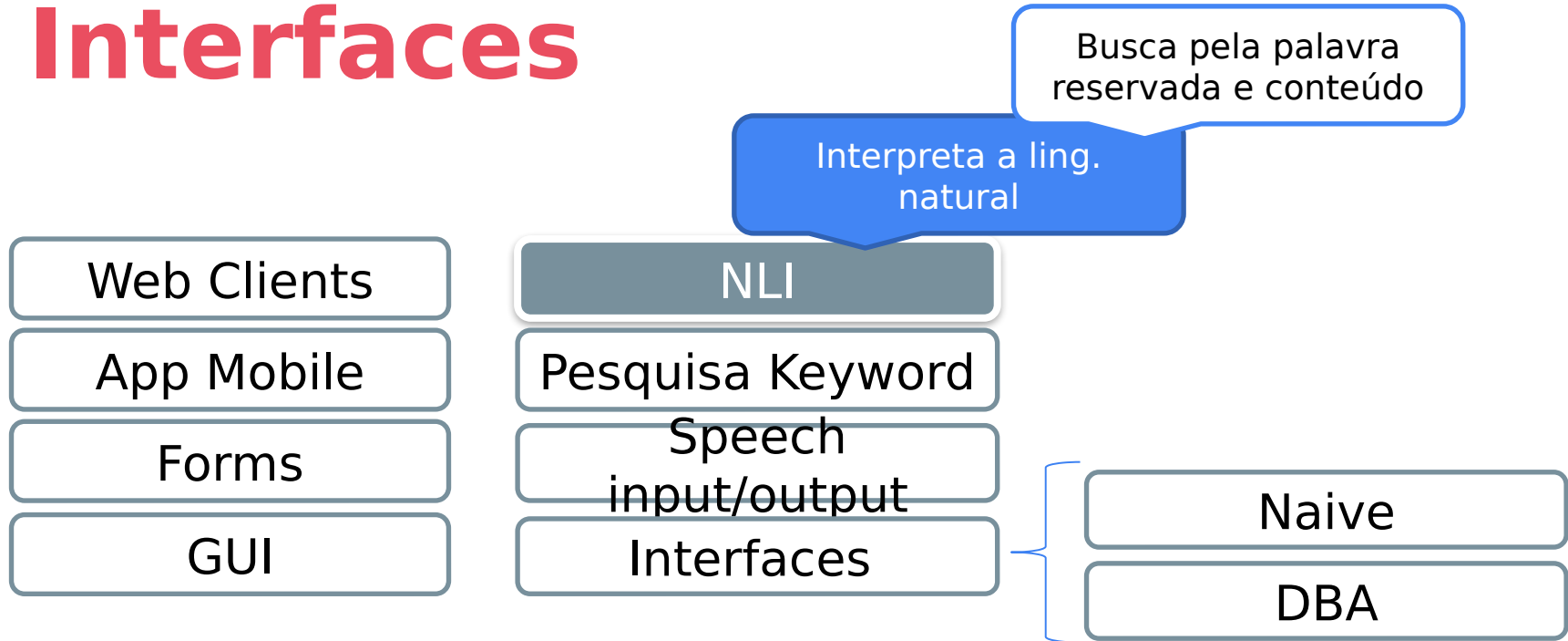


Interfaces

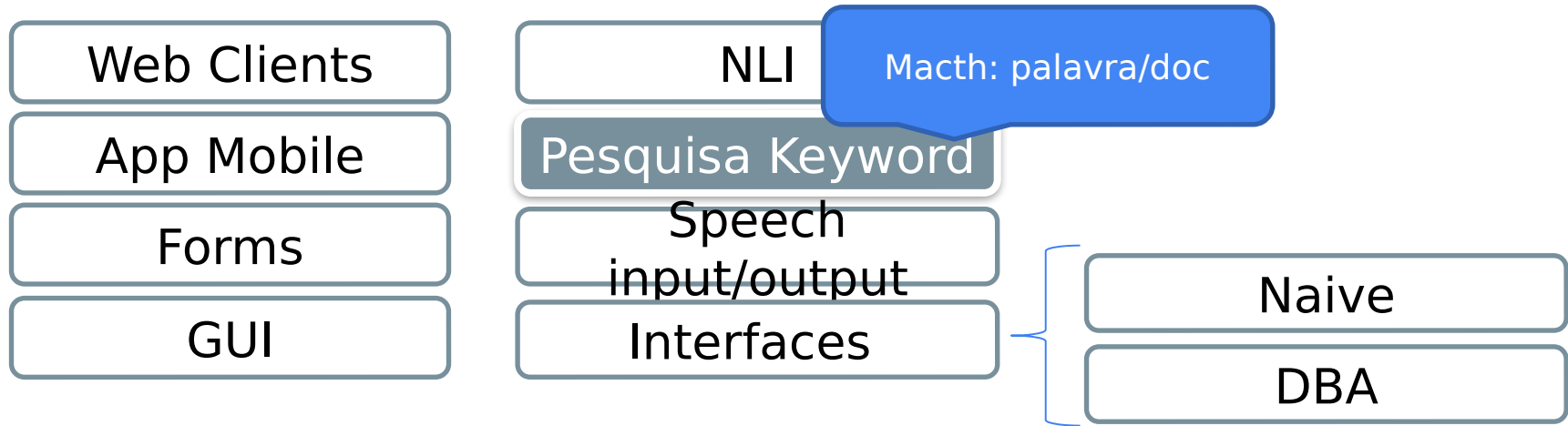


Menus & Forms

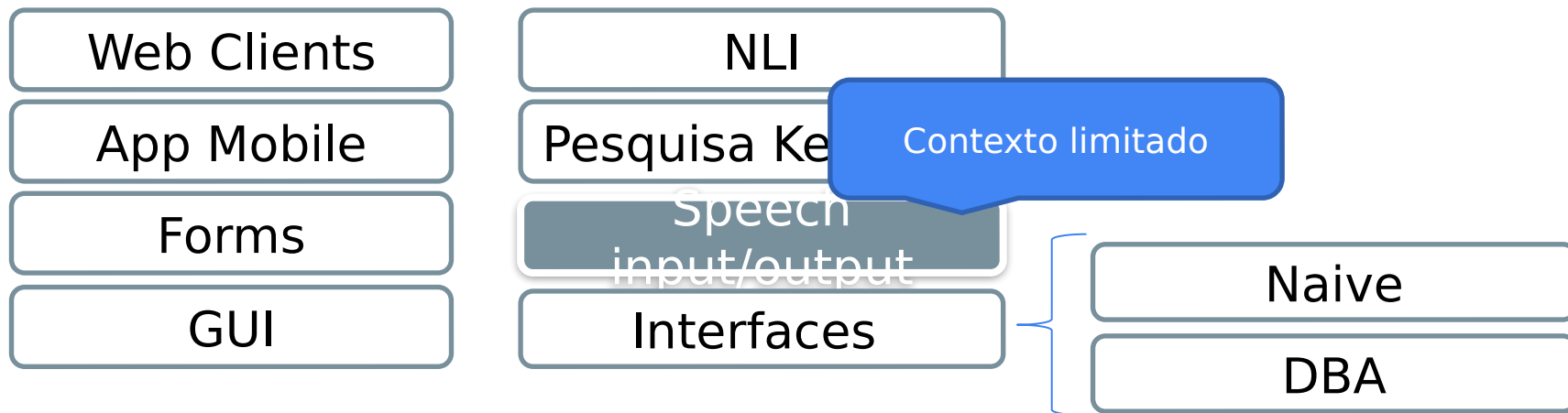
Interfaces



Interfaces

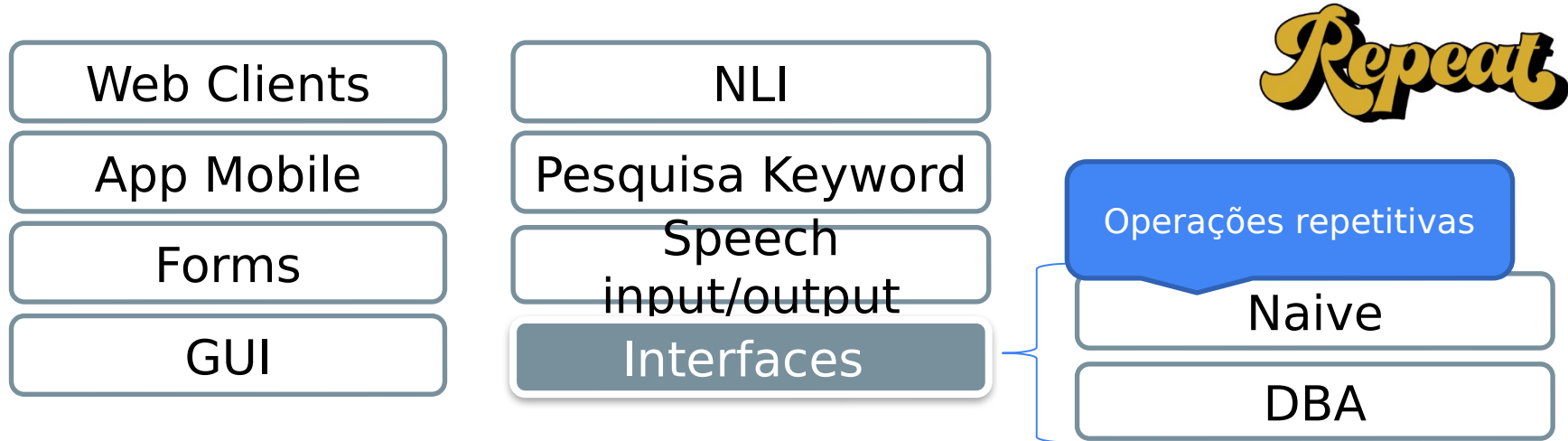


Interfaces



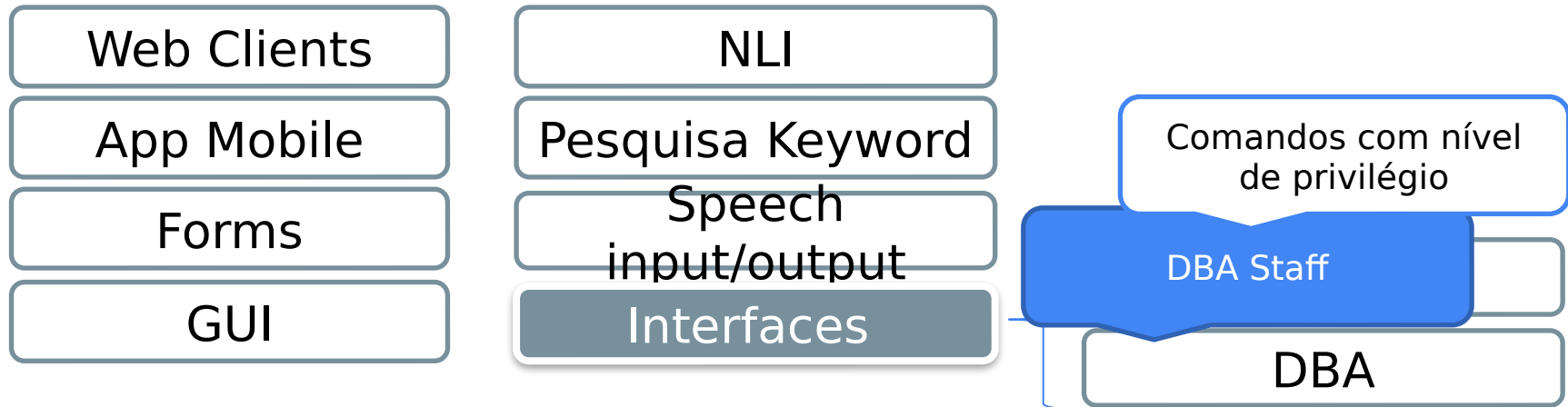
Speech como input e resposta

Interfaces



Transações de rotina e repetitivas - saldo do banco

Interfaces



Ambiente



Componentes



Software



Modularizado

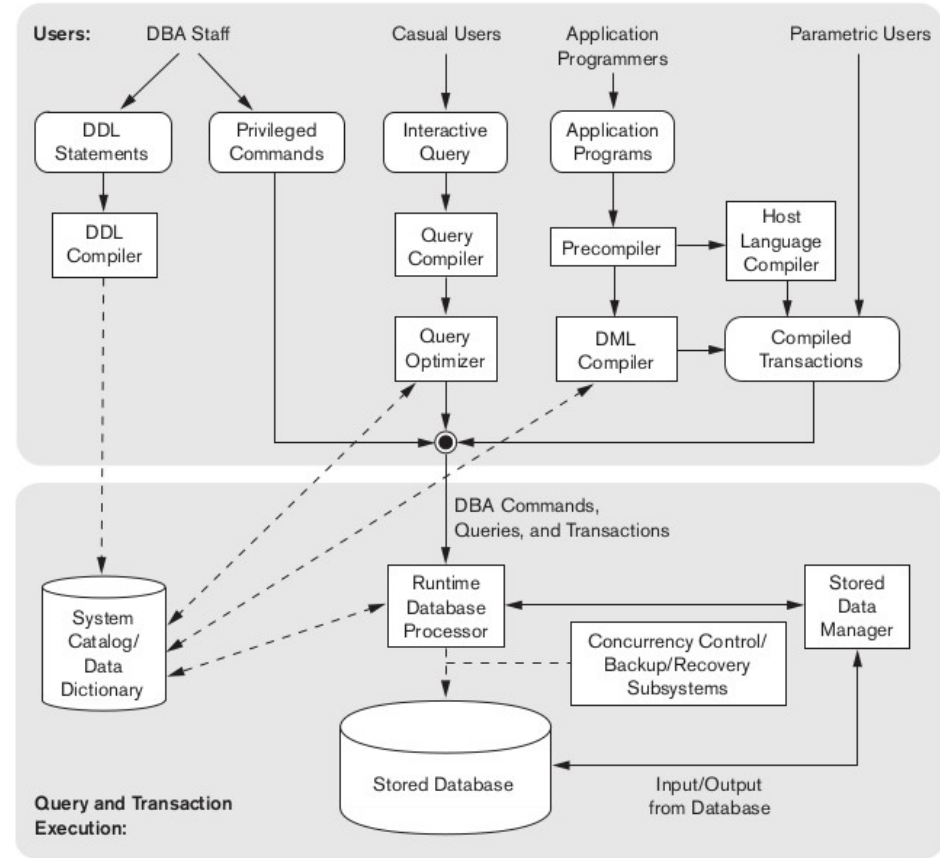


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

Ambiente de BD

Módulos internos

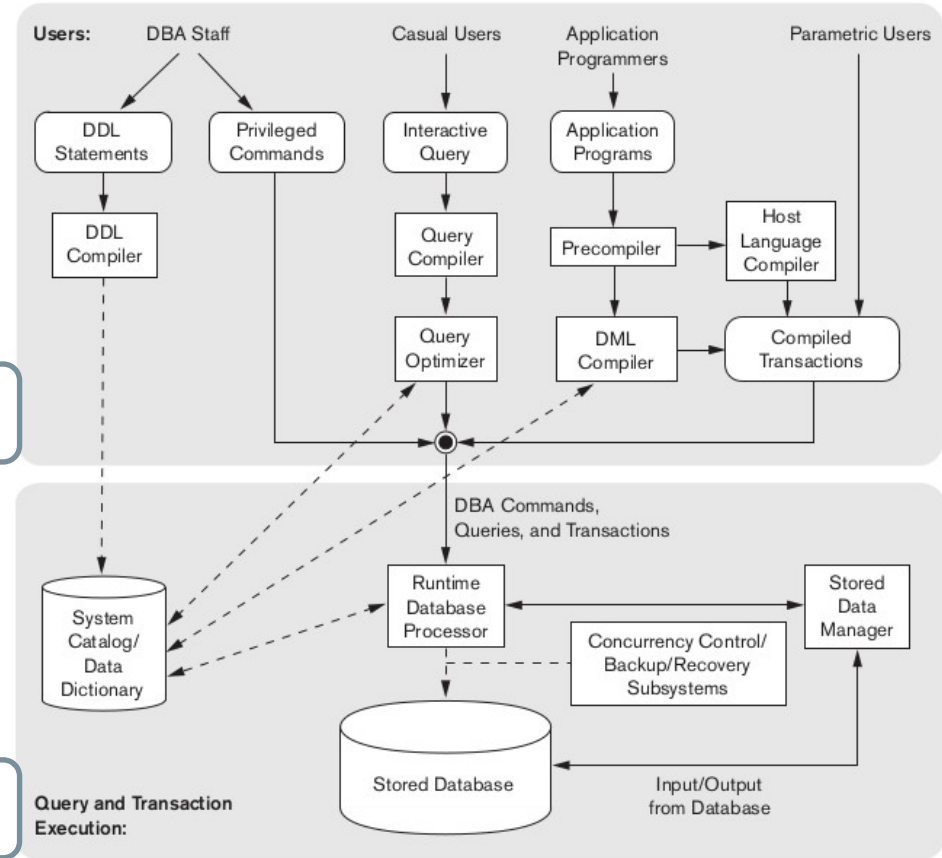


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

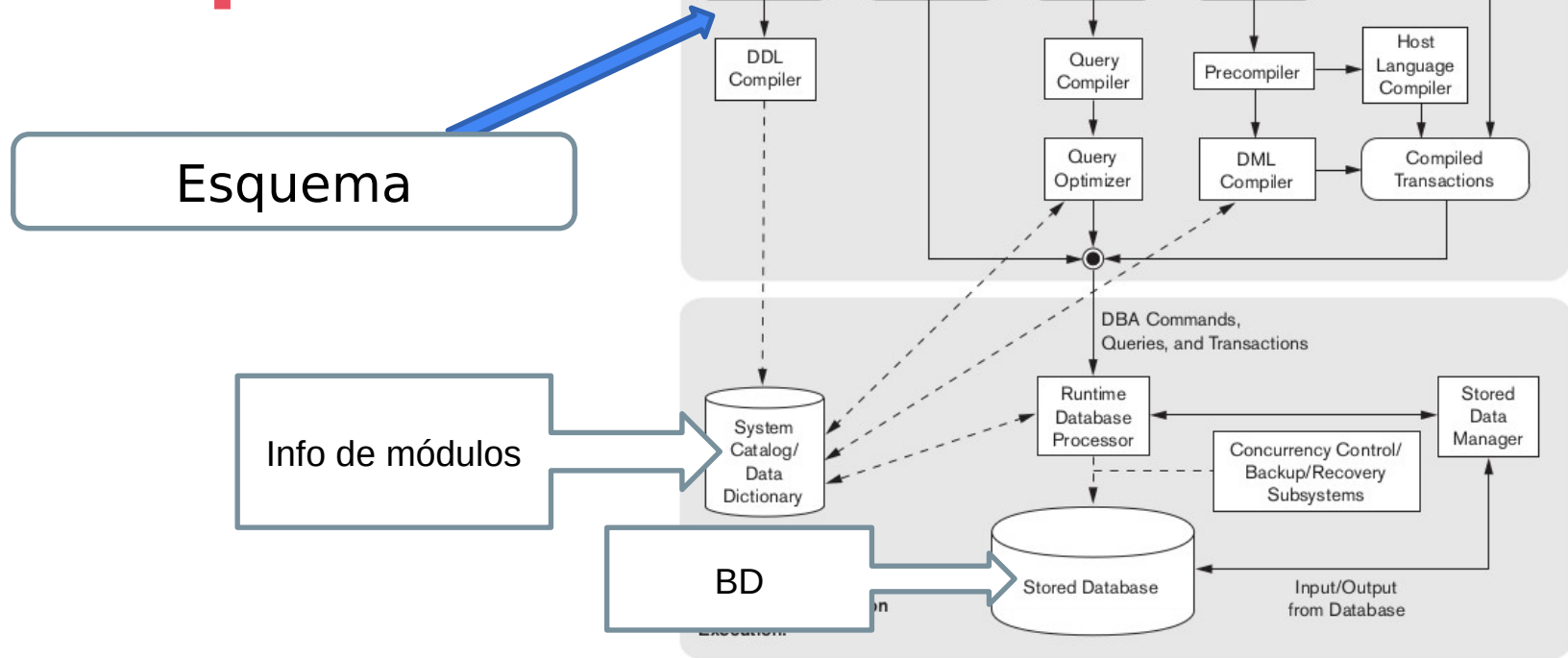


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

Acesso ocasional

Ex: Reordenação de operações

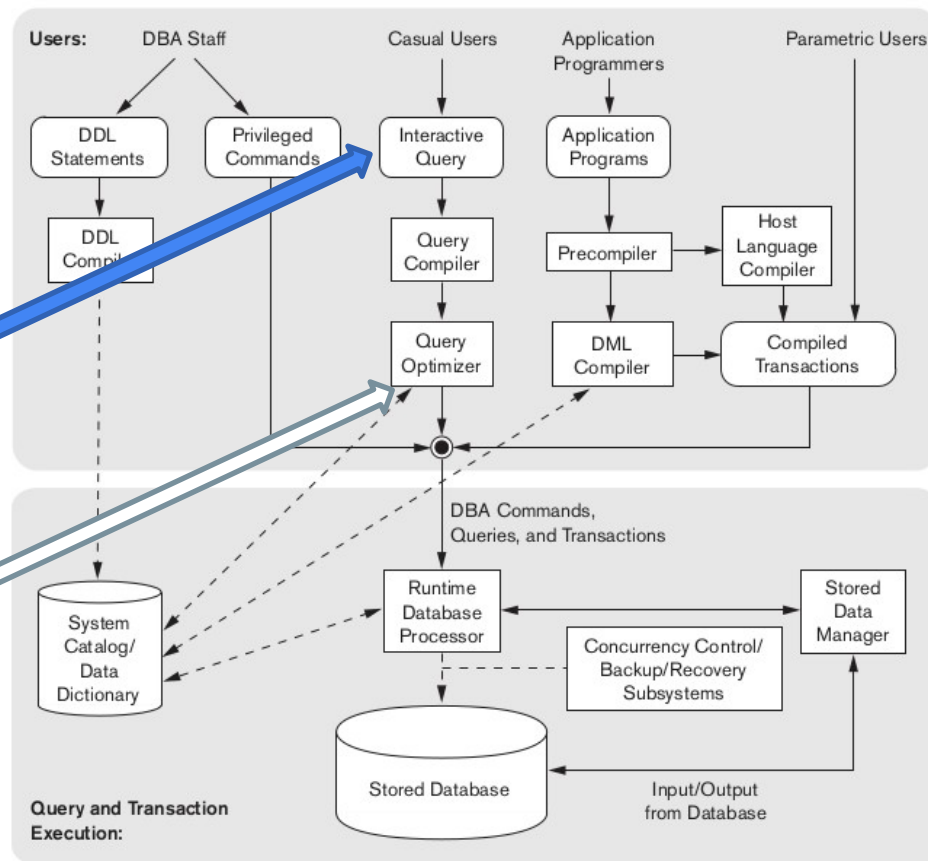


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

Acesso ocasional

Ex: Reordenação de operações, eliminar redundâncias



.EXE

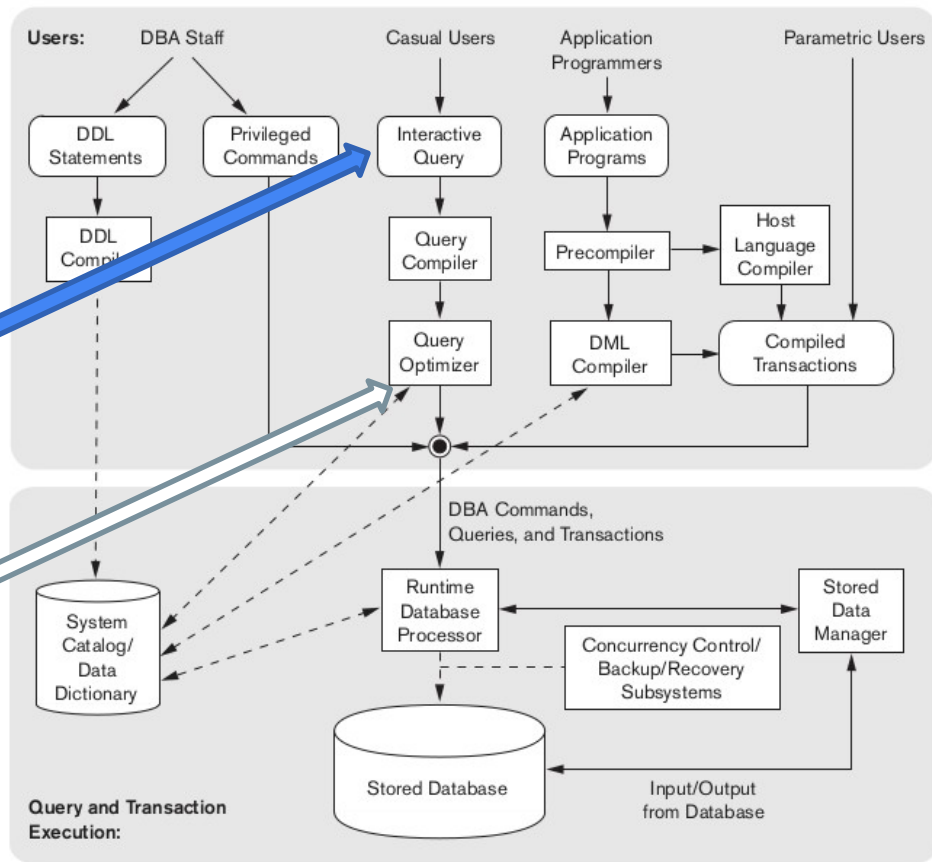


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes



Linguagens de
prog.

Extraí DML

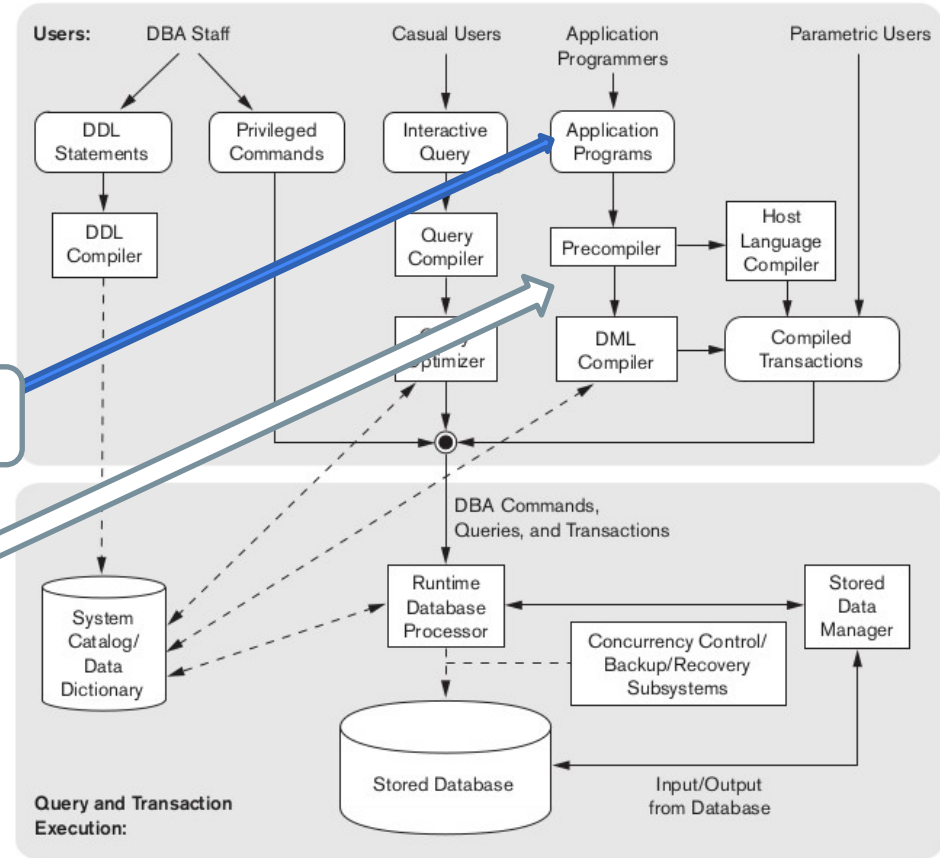


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

Canned Transaction

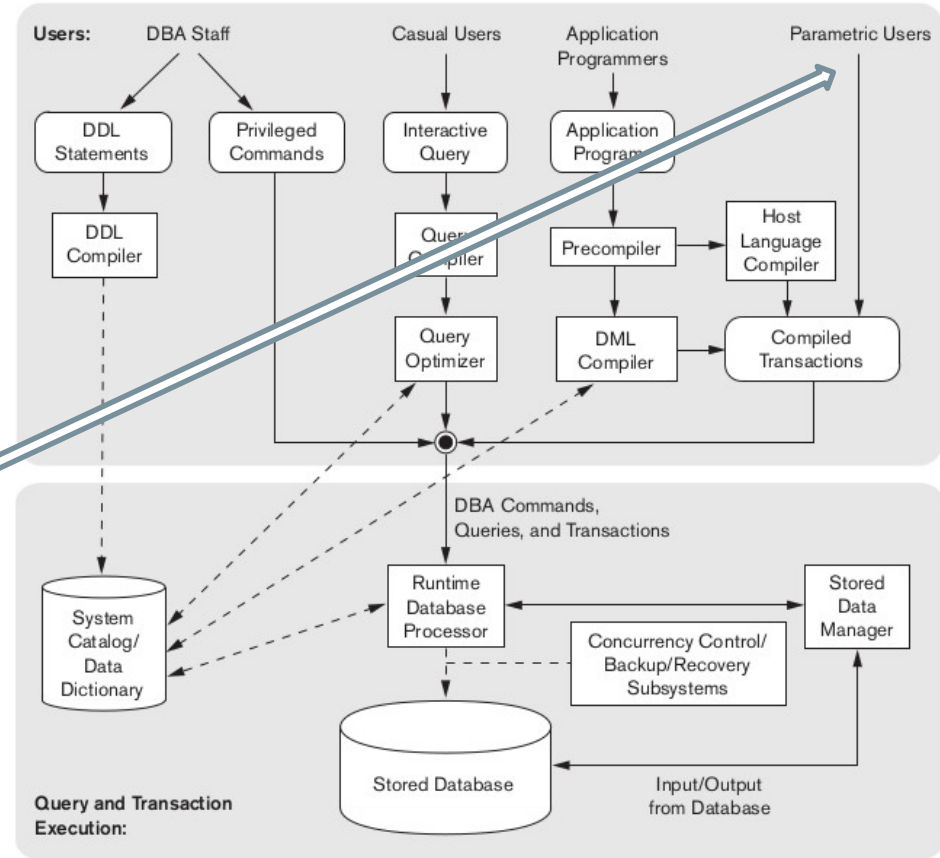


Figure 2.3

Component modules of a DBMS and their interactions.

Composantes

Privileged
commands,
Query plans,
Canned
transactions ...

Infos de hd/ram

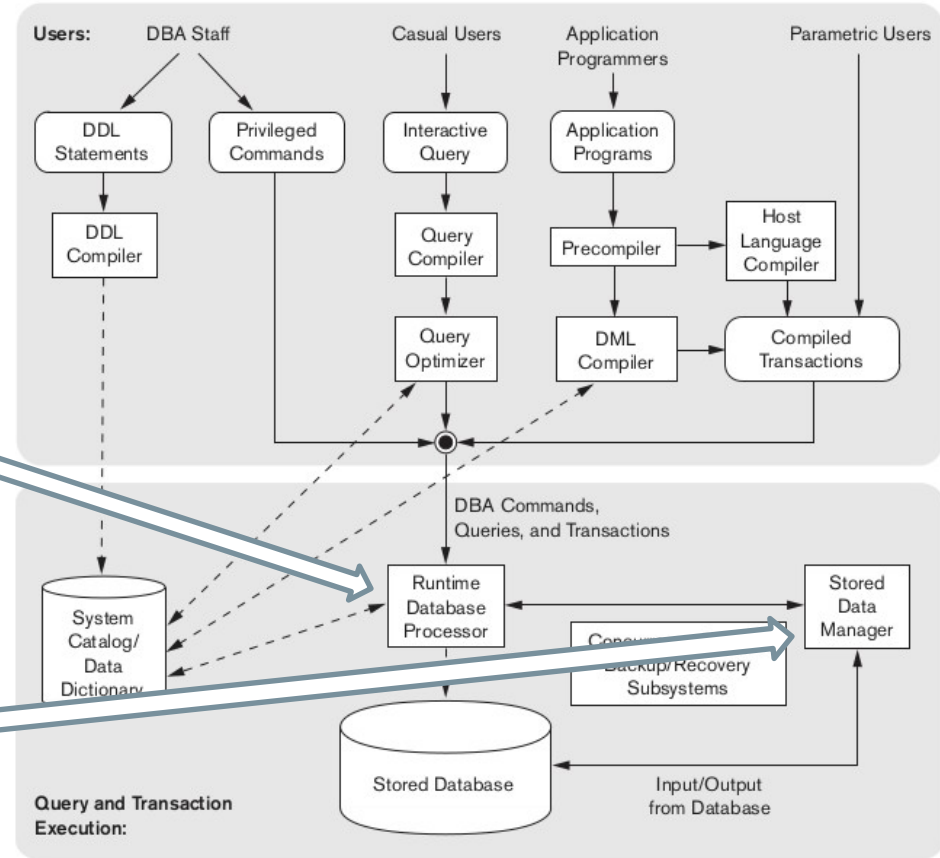


Figure 2.3

Component modules of a DBMS and their interactions.

Componentes

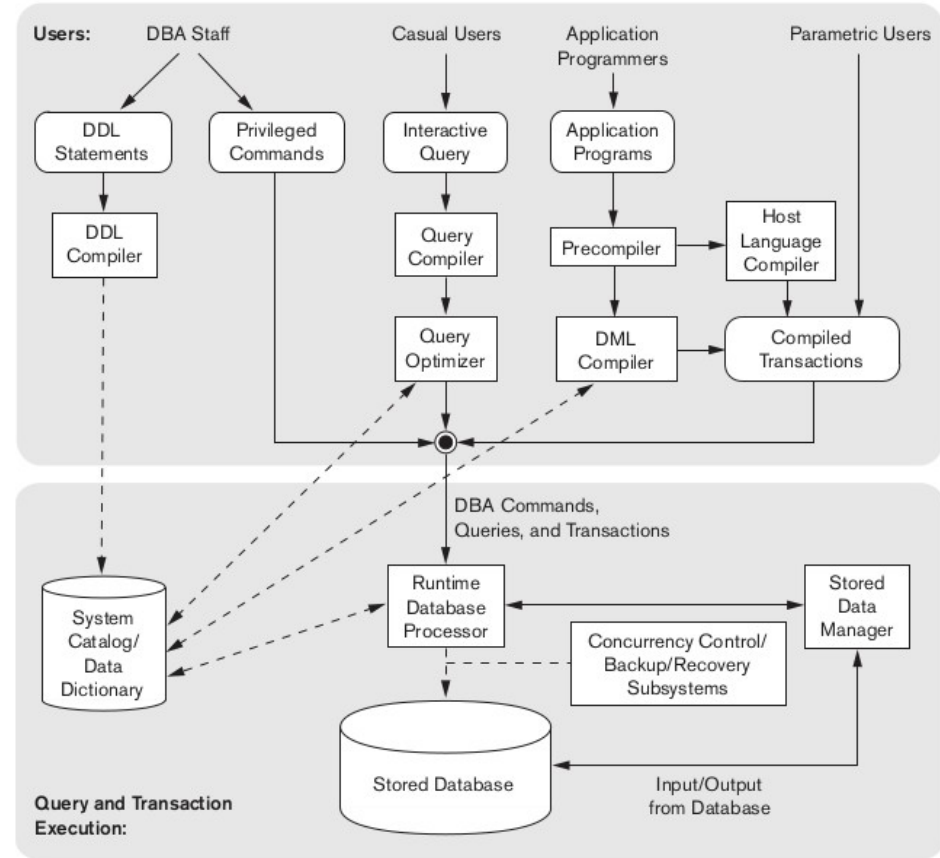
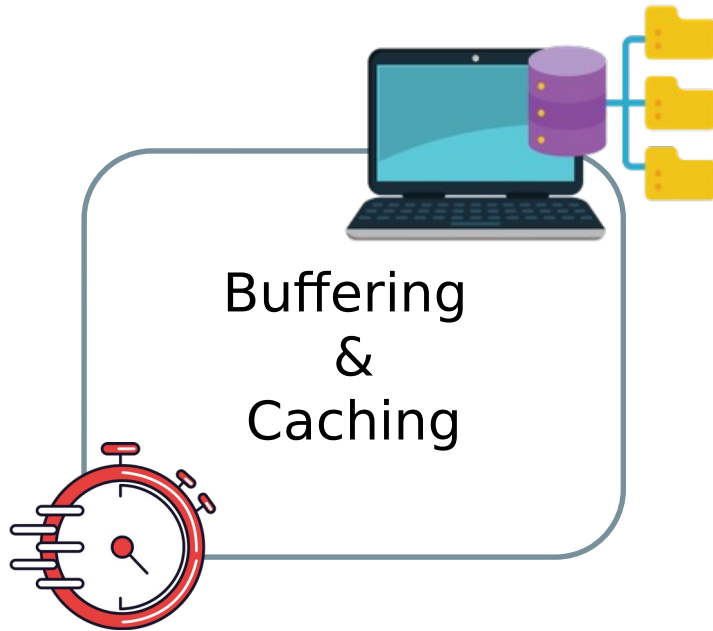
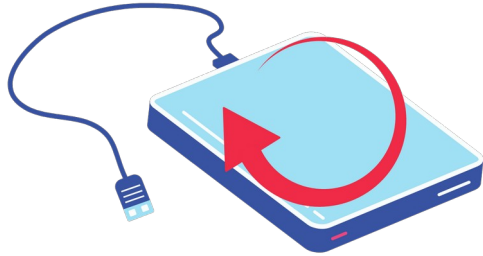


Figure 2.3

Component modules of a DBMS and their interactions.

Utilities - Gerenciamento



Monitoramento

Reorganização do storage

Backup

Loading

Reformatar os dados



Utilities - Gerenciamento

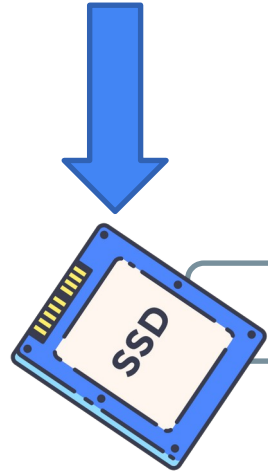


Monitoramento

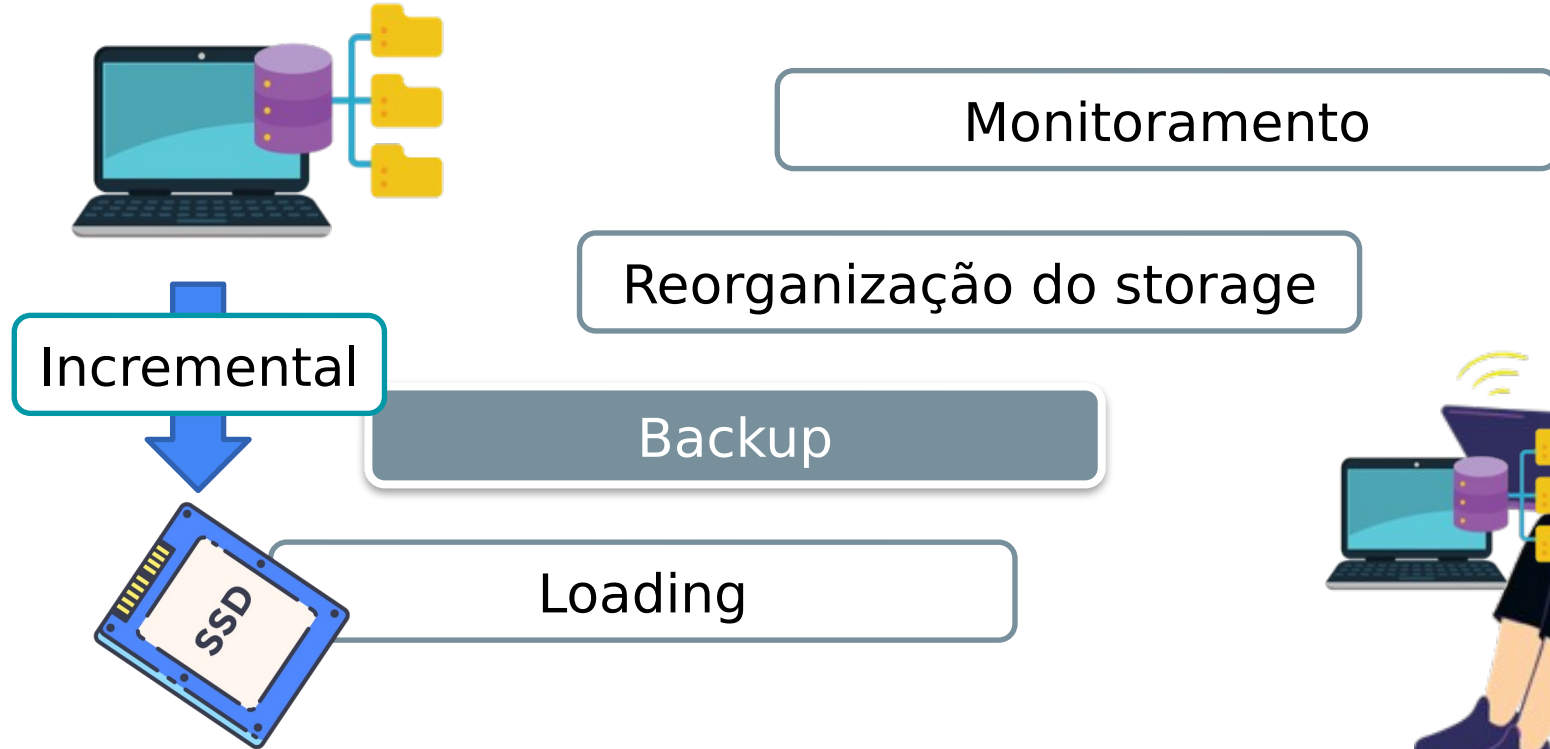
Reorganização do storage

Backup

Loading



Utilities - Gerenciamento



Utilities - Gerenciamento



Monitoramento

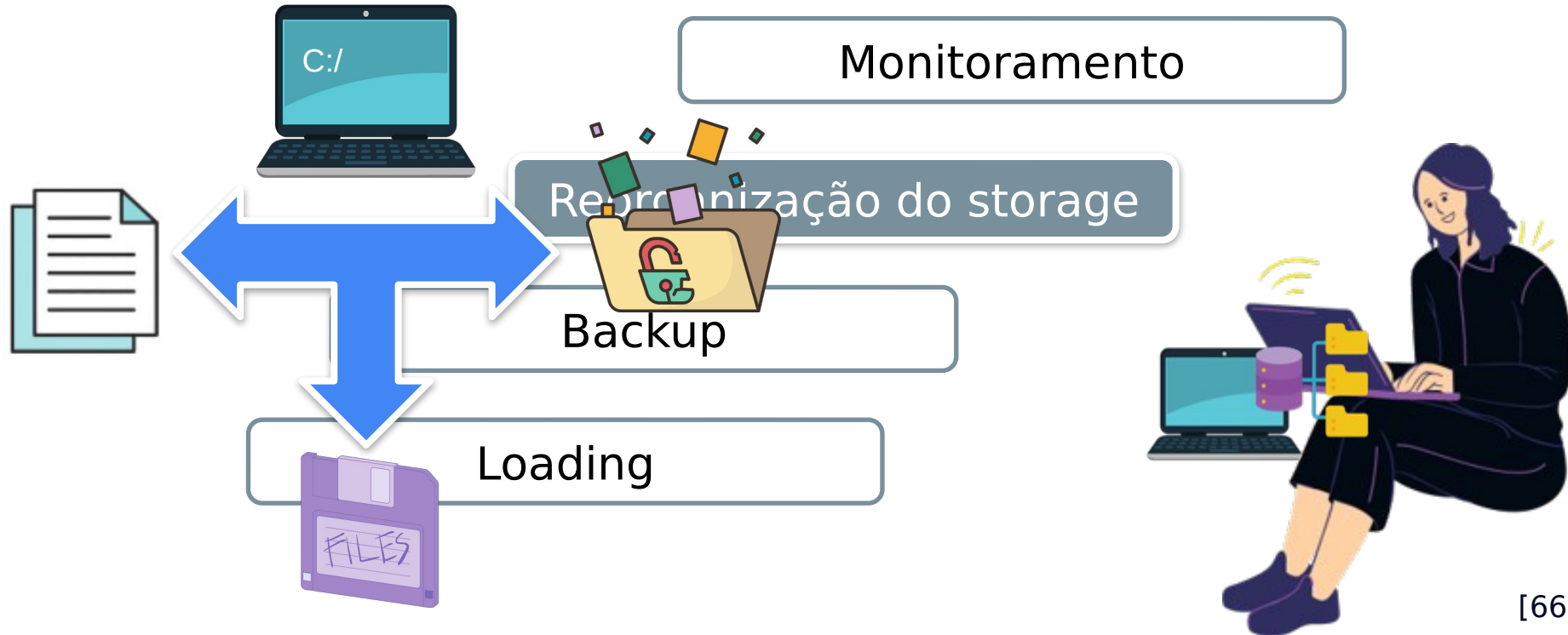
Reorganização do storage

Backup

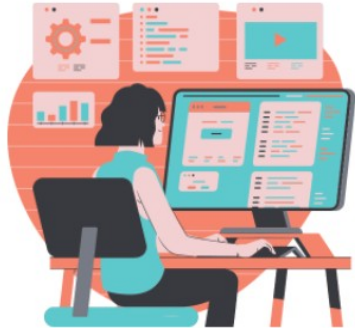
Loading



Utilities - Gerenciamento



Utilities - Gerenciament



Monitoramento

Reorganização do storage

Backup

Loading



Estatísticas do BD

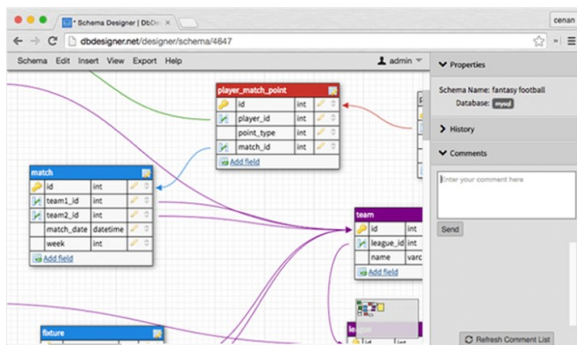


Decisões

Ferramentas e aplicações

Data dictionary
system

Armazena informações de
decisão de design, padrões
de utilização, descrição de
aplicações



Terminal,
workstations,
PCs

Software de
comunicação

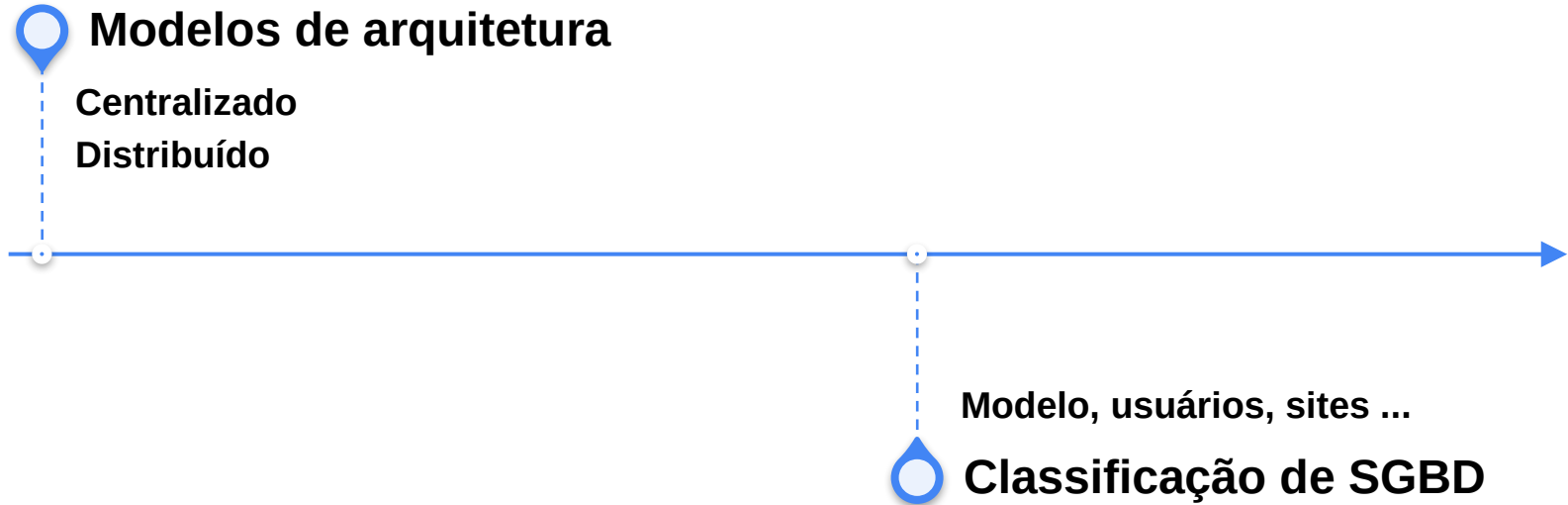


Etapa 10

Arquitetura: Modelo Cliente-servidor e Classificação de SGBDs

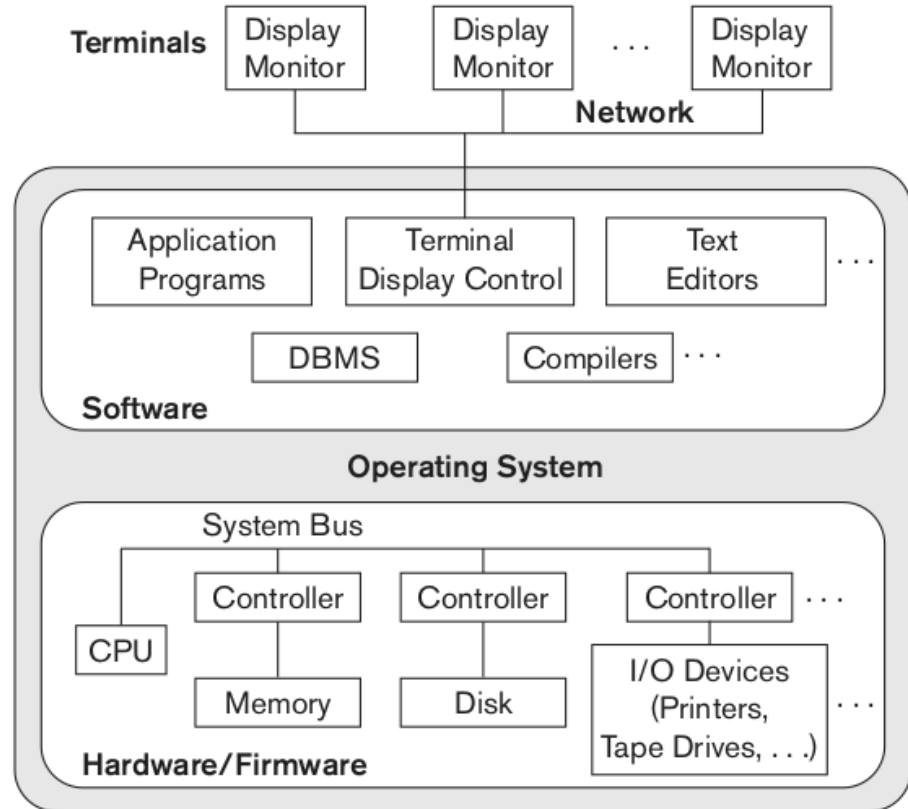
// Introdução à Banco de dados

Conversa



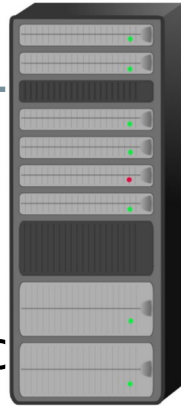
Arquitetura

Arquitetura Física
Centralizada

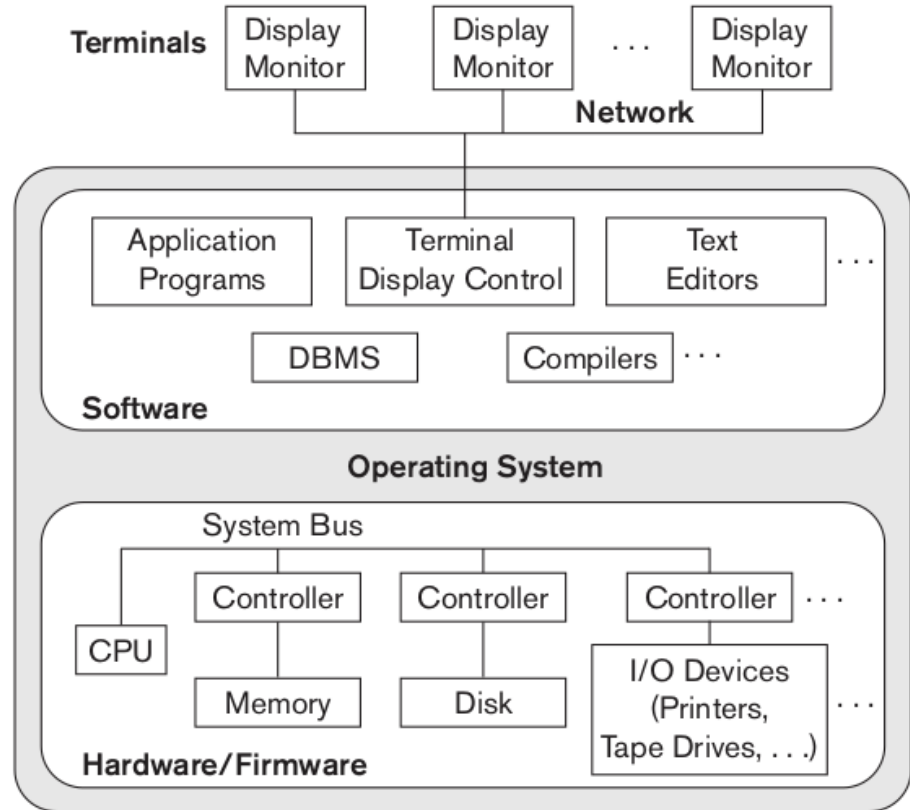


Arquitetura

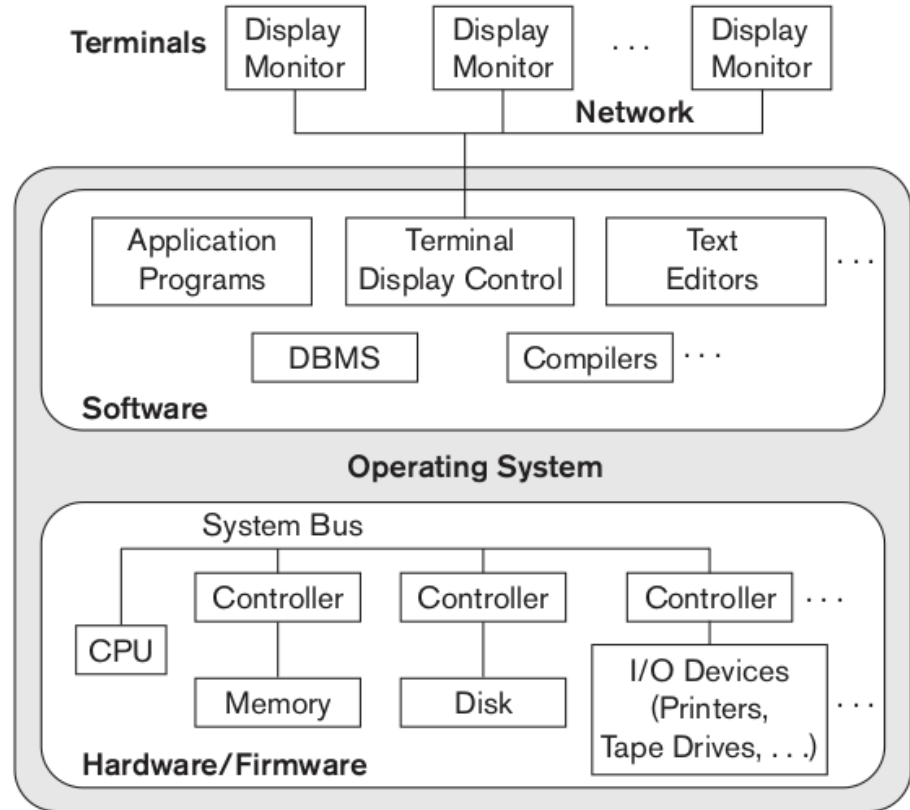
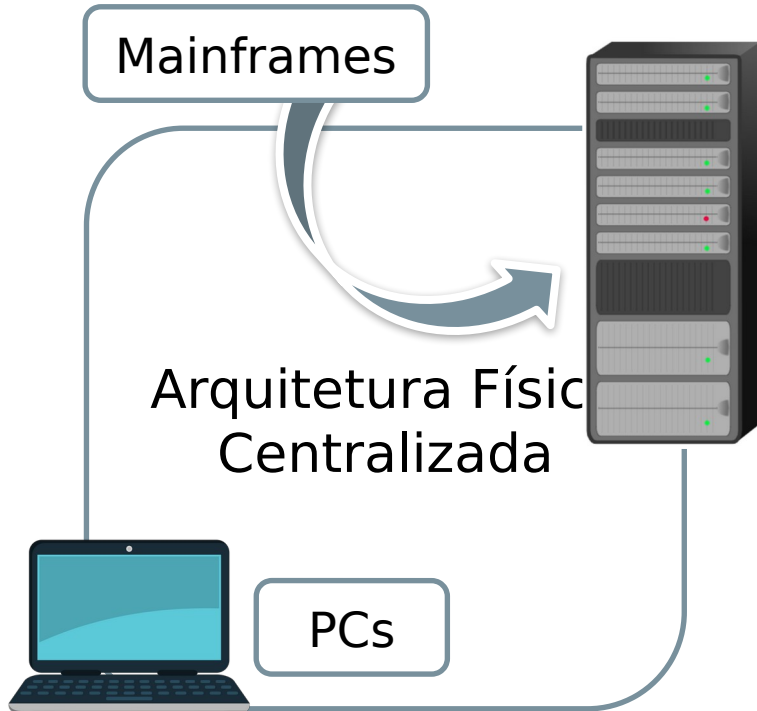
Mainframes



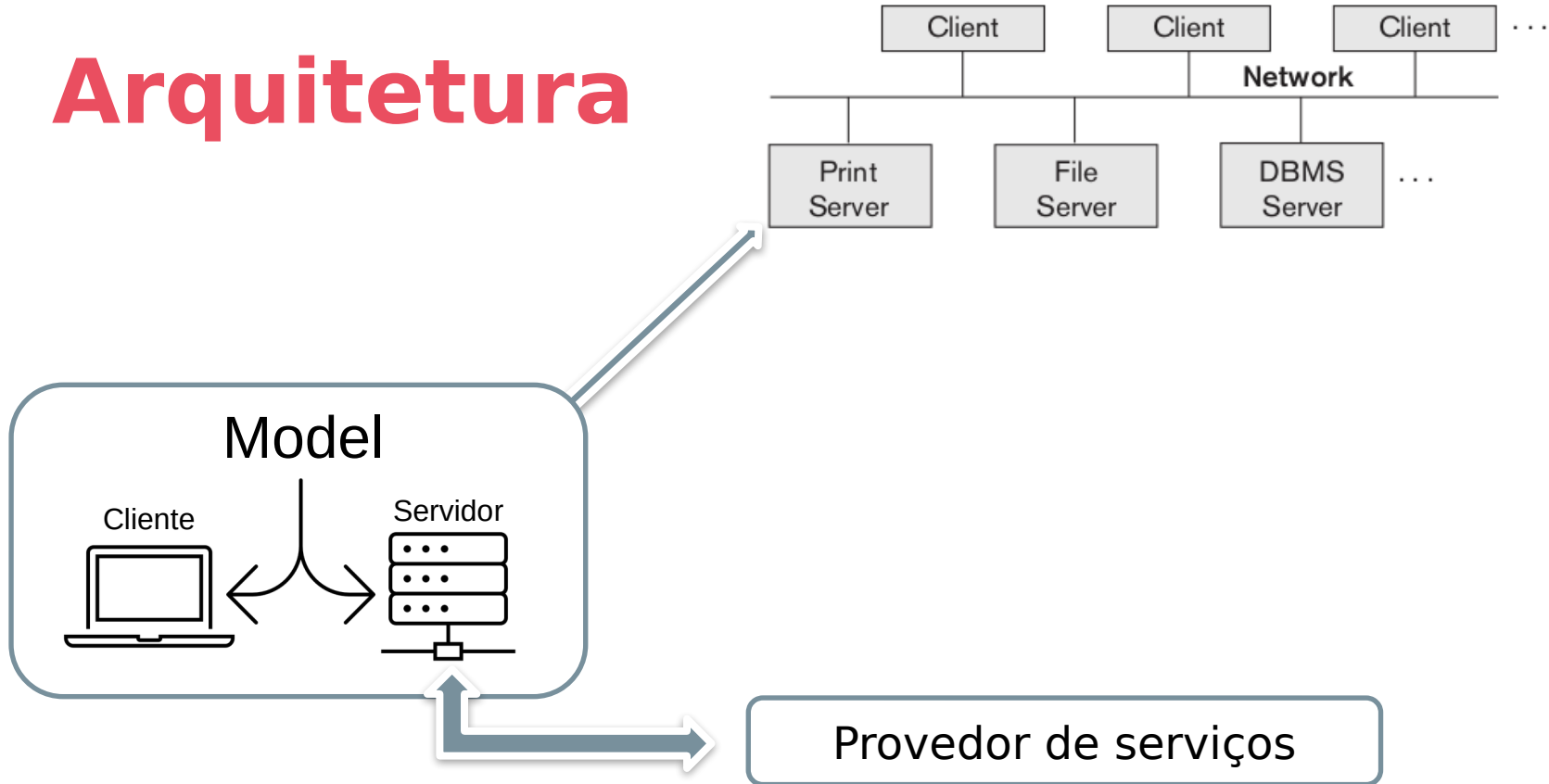
Arquitetura Física Centralizada



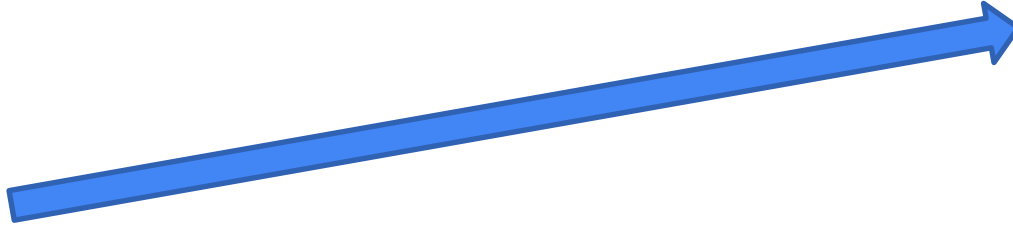
Arquitetura



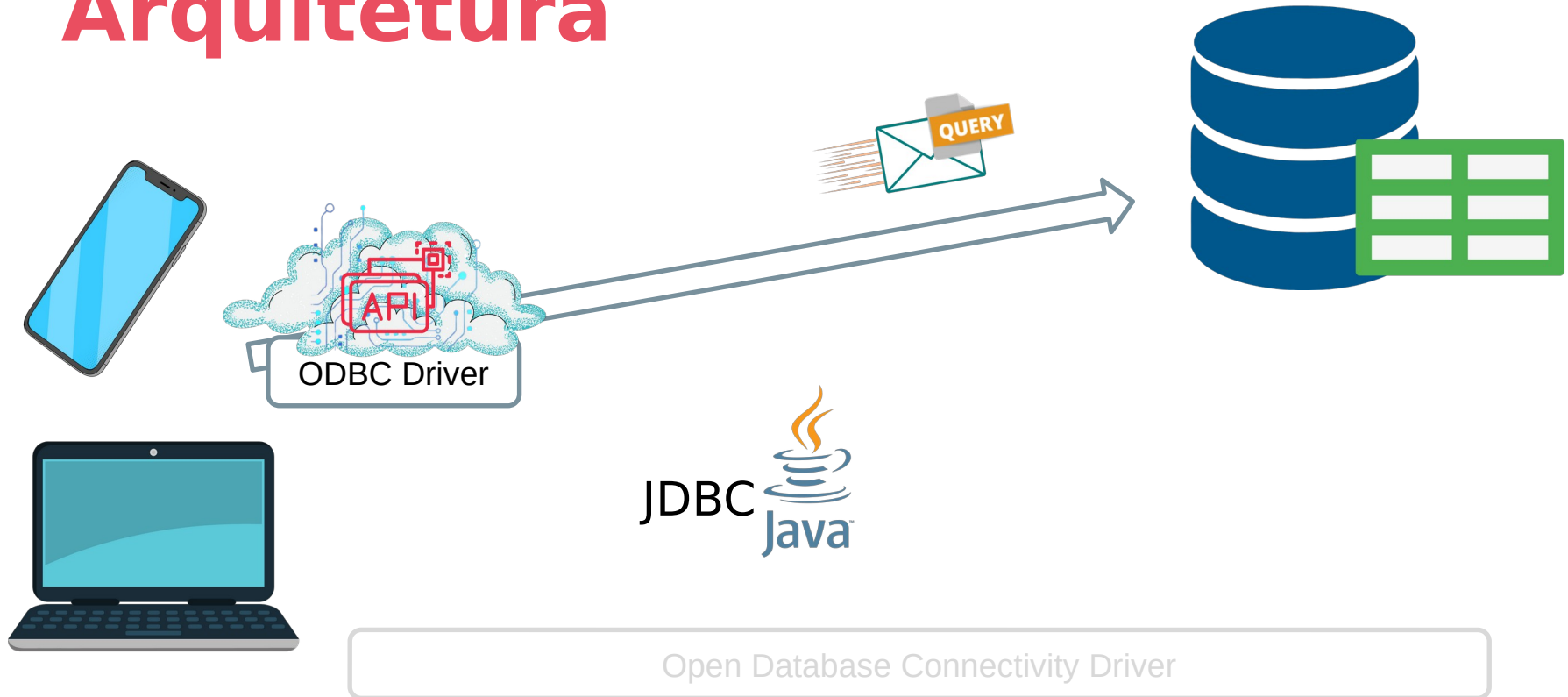
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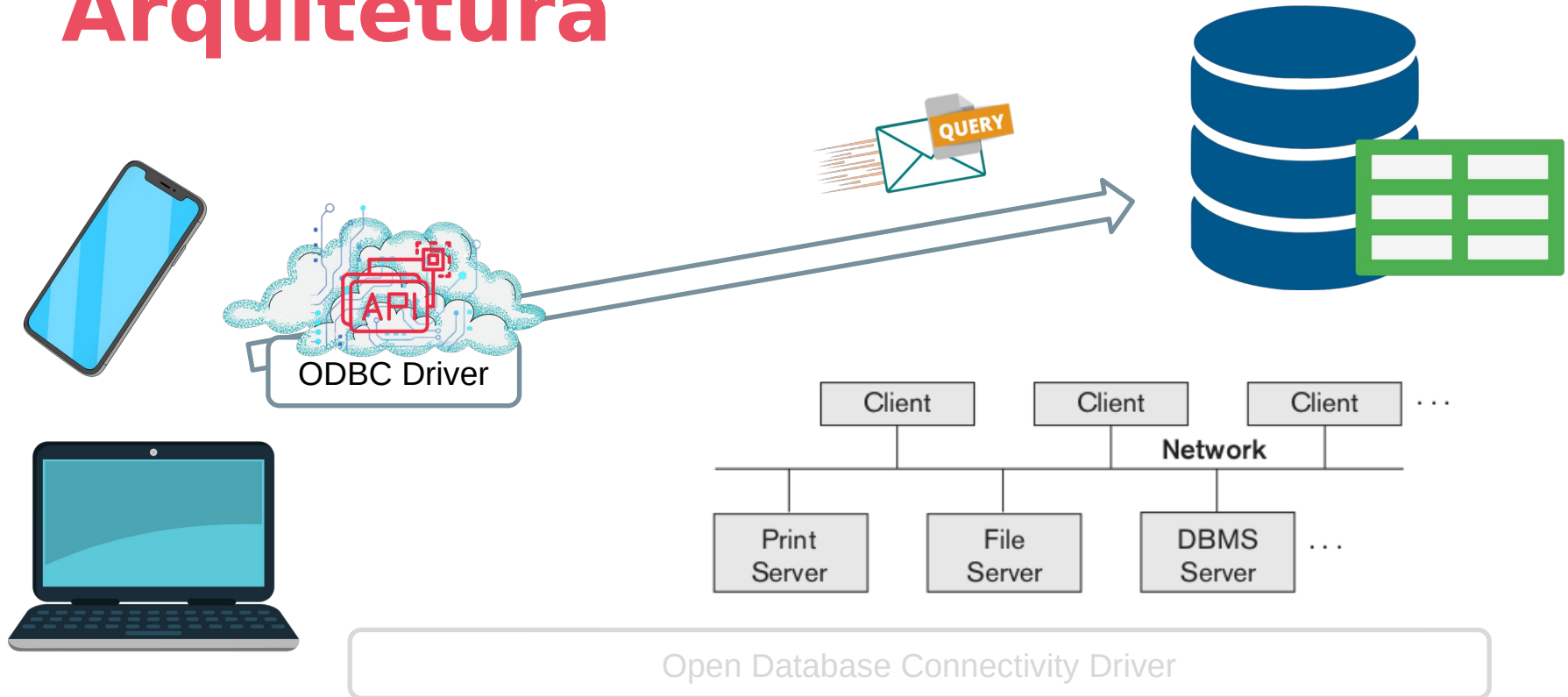
Arquitetura



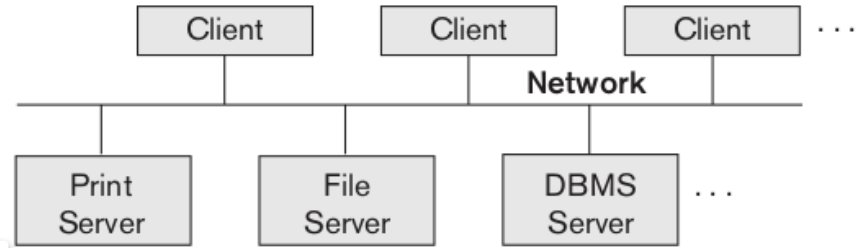
Arquitetura



Arquitetura

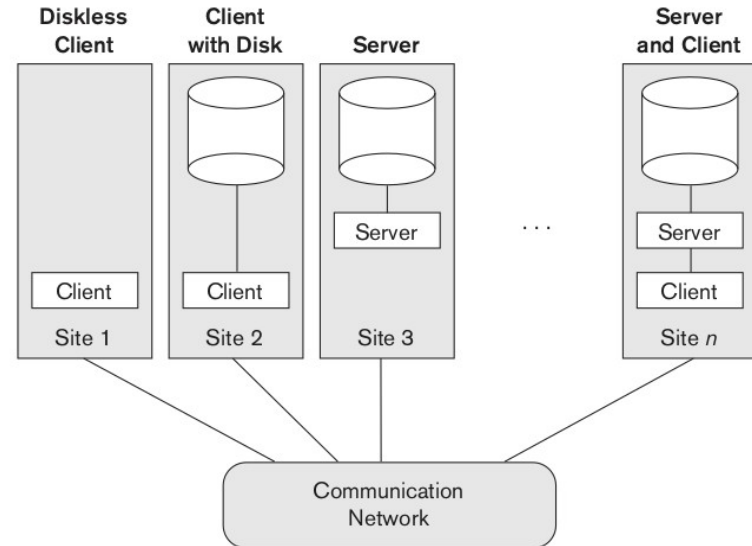


Arquitetura



Arquitetura Lógica
e Física
cliente/servidor

Two-tier

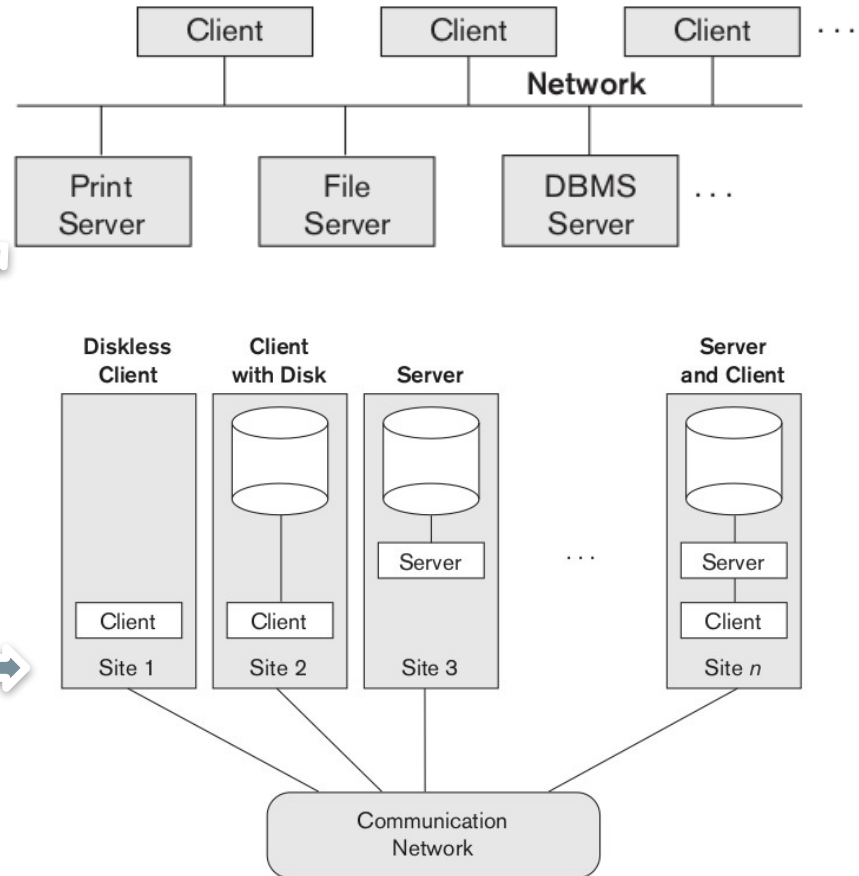


Arquitetura

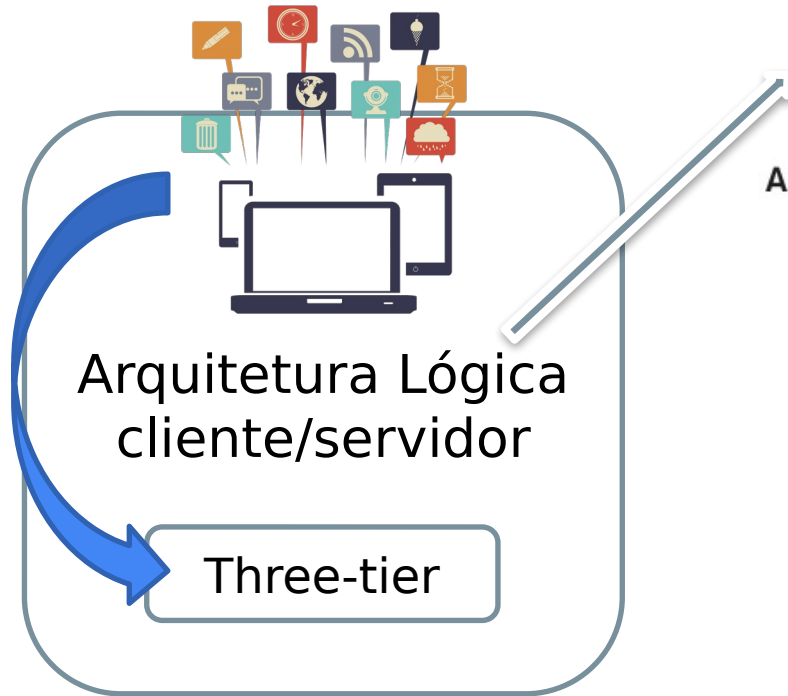
Simplicidade &
Compatibilidade

Arquitetura Lógica
e Física
cliente/servidor

Two-tier



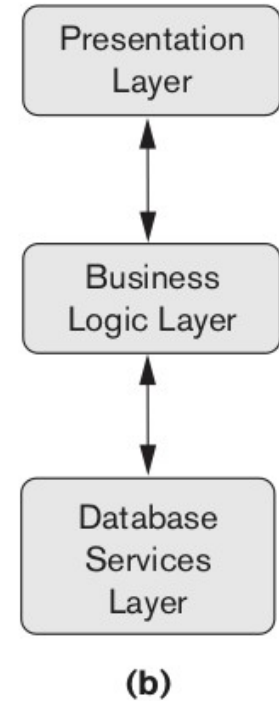
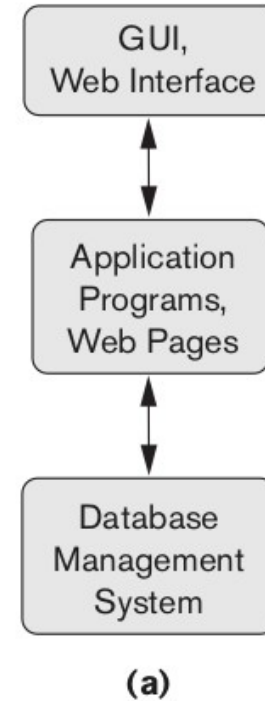
Arquitectura



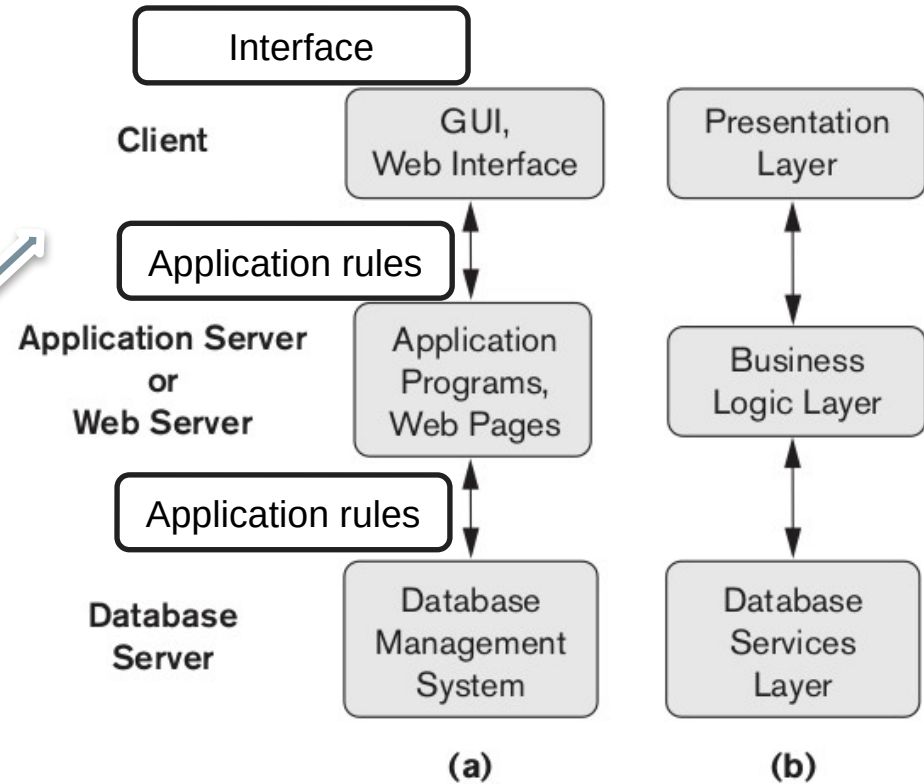
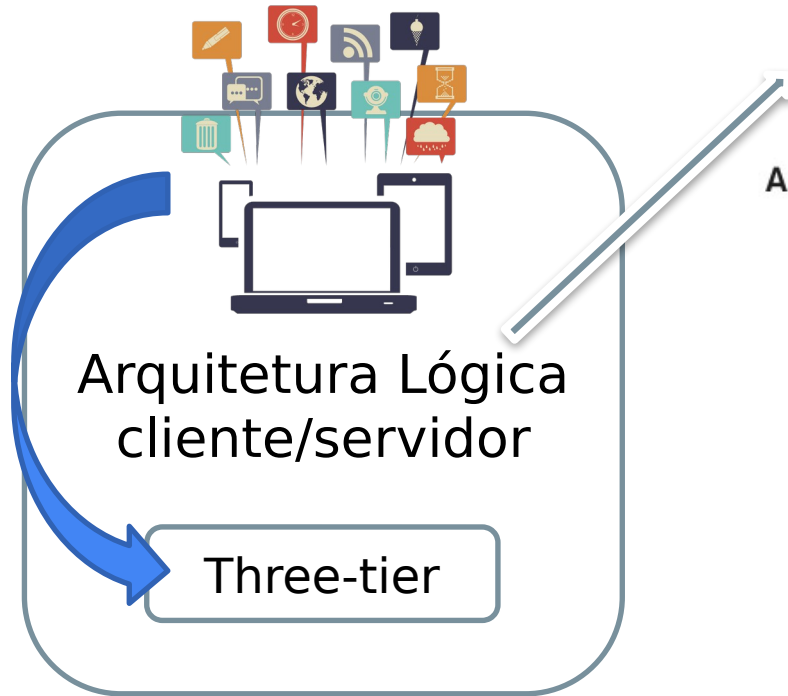
Client

Application Server
or
Web Server

Database
Server



Arquitectura



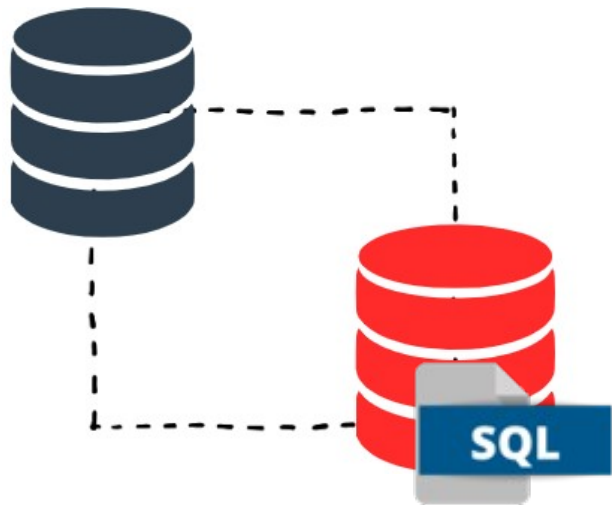
Classificação de SGBDs



Classificação



Classificação



Modelo de dados

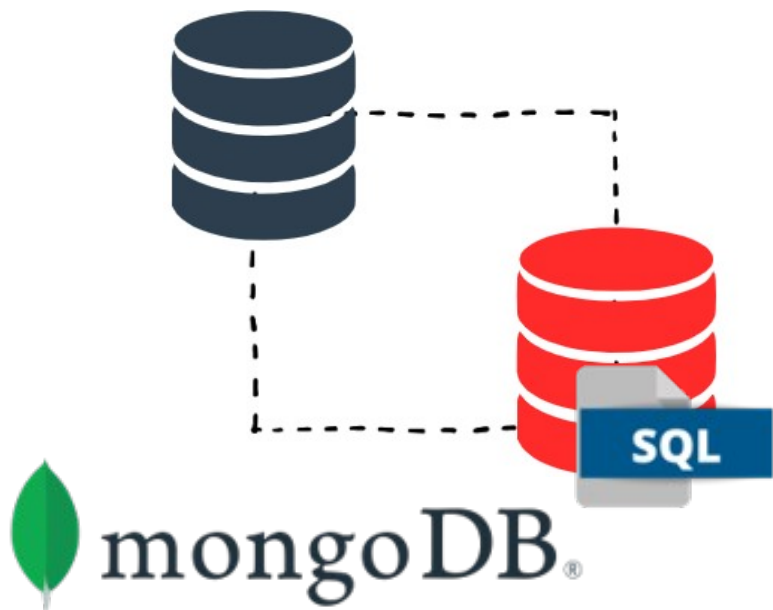
Nº de usuários

Nº de sites

Custo

Tipo de caminho de acesso

Classificação



Modelo de dados

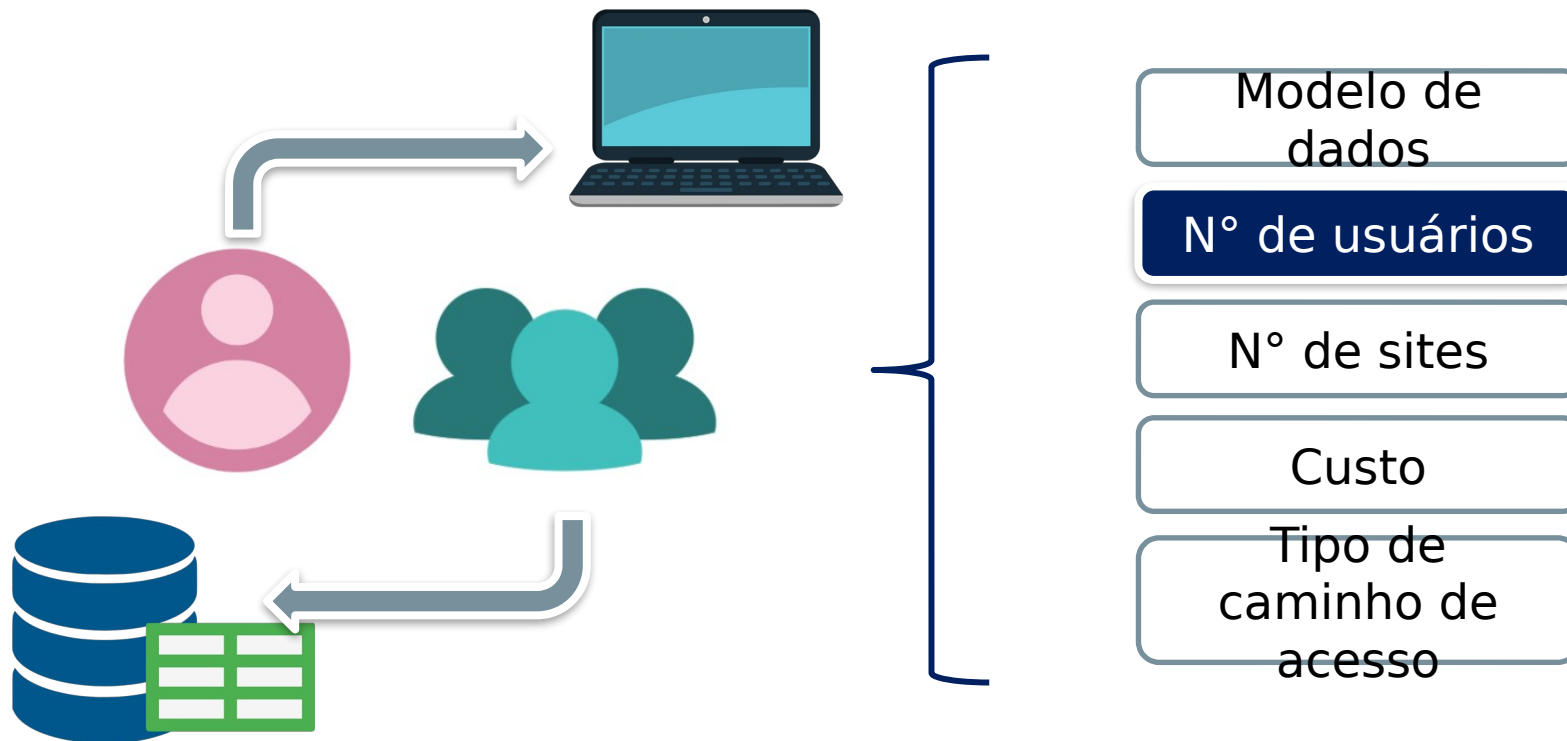
Nº de usuários

Nº de sites

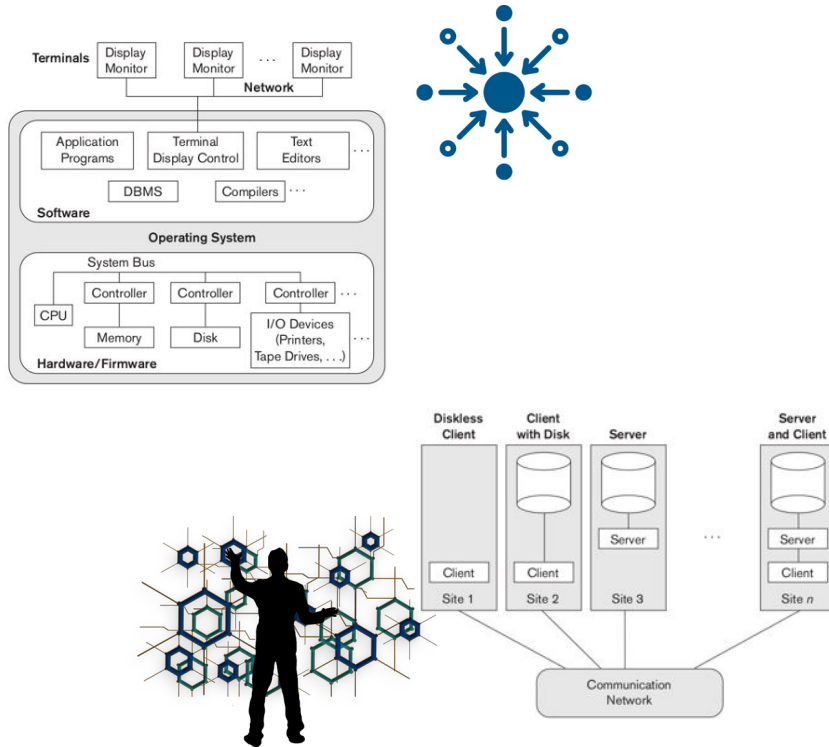
Custo

Tipo de
caminho de
acesso

Classificação



Classificação



Modelo de dados

Nº de usuários

Nº de sites

Custo

Tipo de caminho de acesso

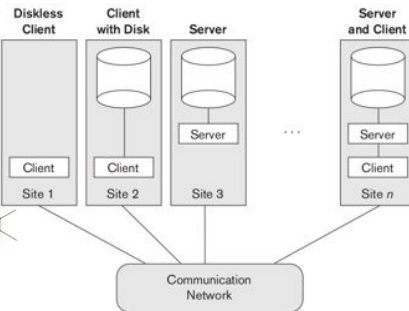
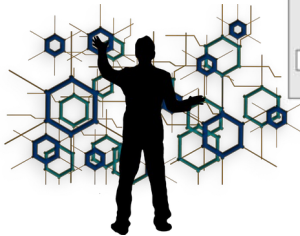
Classificação

Big data

Replicação

DB federado

Heterogeneidad
e



Modelo de
dados

Nº de usuários

Nº de sites

Custo

Tipo de
caminho de
acesso

Classificação



ORACLE®

User
licences

Módulos: replicação,
paralelismo

Modelo de
dados

Nº de usuários

Nº de sites

Custo

Tipo de
caminho de
acesso

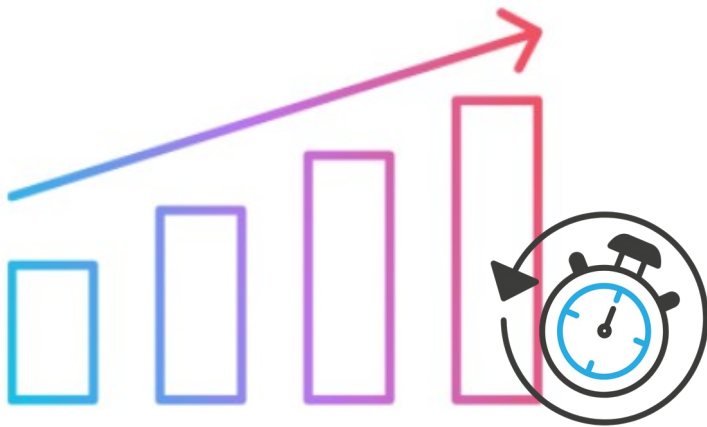


Classificação



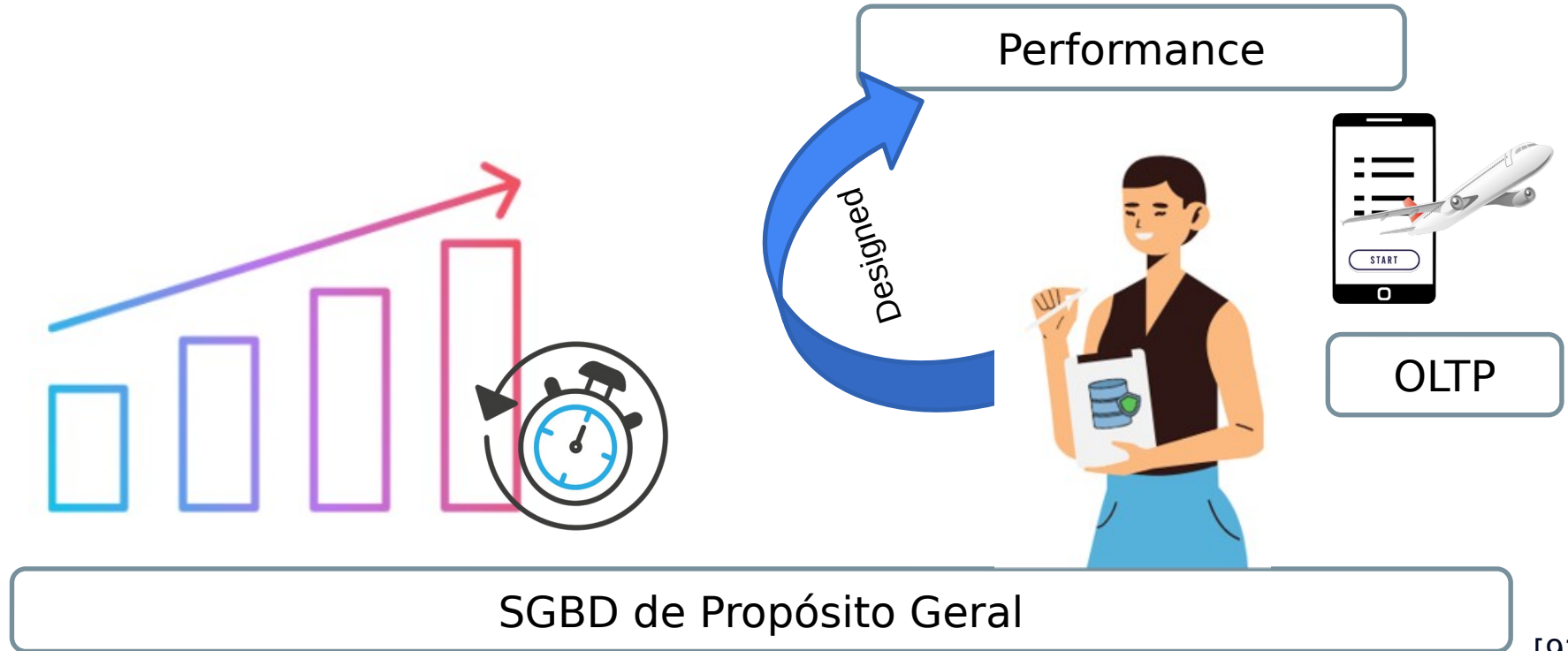
Classificação

Performance

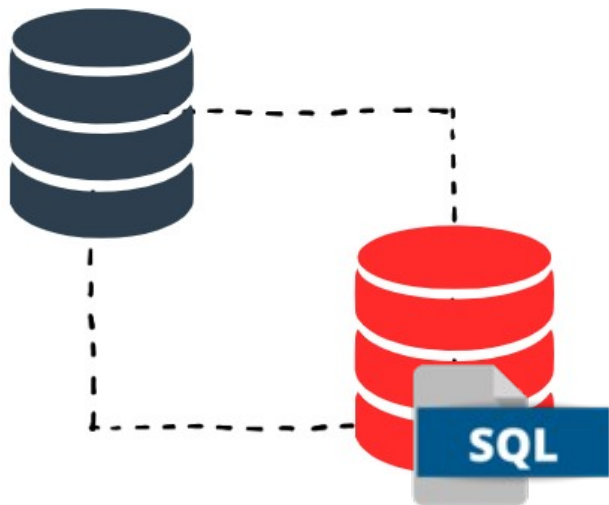


SGBD de Propósito Geral

Classificação

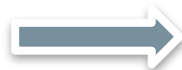


Classificação - Relacional



Coleções de tabelas

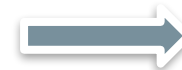
Tabela



File

Alto Nível

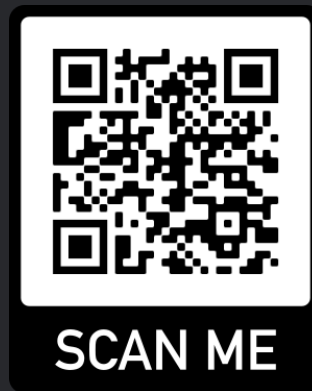
View



User

Dúvidas?

- > Fórum/Artigos
- > Comunidade
Online (Discord)



Para saber mais

Referências principais:

- Referência bibliográfica: Fundamentals of Database Systems – Navathe, 7º edição editora: Pearson
- Projeto de banco de dados: Uma visão prática - Edição revisada e ampliada - Machado 17º edição, editora: Saraiva



Para saber mais

Outras referências:

<https://www.ime.usp.br/~andrers/aulas/bd2005-1/aula3>

<https://www.devmedia.com.br/a-historia-dos-banco-de-dados/1678>

<https://db-engines.com/en/ranking>

<https://www.opservices.com.br/banco-de-dados/>

<https://www.quora.com/What-is-a-canned-transaction>



Para saber mais

Outras referências:

<https://www.geeksforgeeks.org/impedance-mismatch-in-dbm/#:~:text=Impedance%20mismatch%20is%20the%20term,Attributes%20and%20their%20data%20types>

<https://www.oreilly.com/library/view/mysql-reference-manual/0596002653/ch03s05.html>



Para saber mais

Outras referências:

<https://docs.oracle.com/pt-br/solutions/deploy-lustre-fs/index.html#:~:text=Lustre%C3%A9um%20sistema%20de,do%20Linux%20e%20do%20cluster>

<https://stackoverflow.com/questions/1075074/opinions-on-netcdf-vs-hdf5-for-storing-scientific-data#:~:text=NetCDF%C2%20starting%20with%20version%204.0,a%20much%20wider%20tool%20base>



Para saber mais

Empresas e SGBDs:

<https://www.quora.com/What-are-all-the-DBMS-that-are-being-used-by-Google-Facebook-and-Twitter-1>

<https://introbigdata.org/>

<https://www.mongodb.com/big-data-explained/examples>

<https://intellipaat.com/blog/10-big-data-examples-application-of-big-data-in-real-life/>

<https://instagram-engineering.com/instagrator-pt-2-scaling-our-infra-structure-to-multiple-data-centers-5745cbad7834>



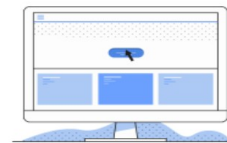
Para saber mais

Empresas e SGBDs:

https://blog.twitter.com/engineering/en_us/topics/infrastructure/2017/the-infrastructure-behind-twitter-scale#:~:text=Twitter%20was%20built%20on%20MySQL,eventually%20many%20large%20databases%20clusters

<https://www.mysql.com/customers/view/?id=757>

<https://engineering.linkedin.com/espresso/introducing-espresso-link-edins-hot-new-distributed-document-store#:~:text=To%20meet%20the%20needs%20of,both%20serving%20different%20use%20cases>



Desafio textual

Defina!

- Dados e banco de dados
- SGBD, Sistema de Banco de Dados e Catálogo de BD
- Independência program/data, user view
- DBA, transações canned, metadados e aplicação de processamento de transação