Project Requirements Document

Technical Manager: *DATA RAMUS*

Analysts: *Luis Coelho*

General Analysis

The Tera customer of the retail branch, needs to store their data through a system that will be built after the modeling of the database. The Data Ramus team initiated the requirements gathering in 14/04/2023 as described in this document.

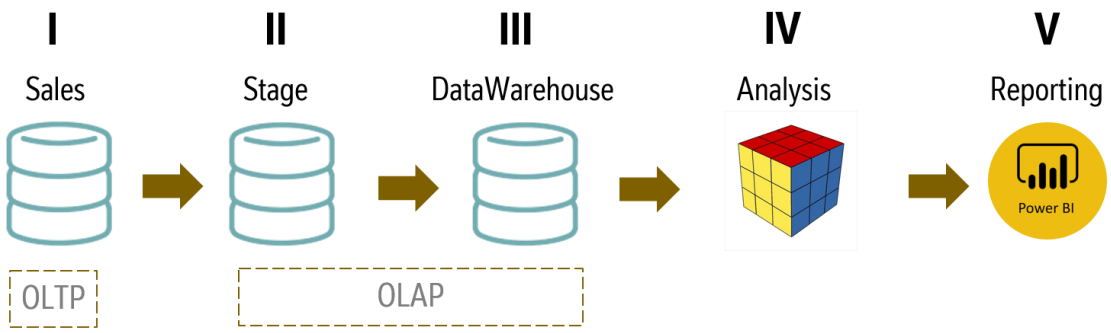
In macro needs, the project was divided into 04 major phases:

Phase 01: Construction of the OLTP environment.

Phase 02: Construction of the Stage area.

Phase 03: Construction of the Datawarehouse.

Phase 04: Data analysis tools.

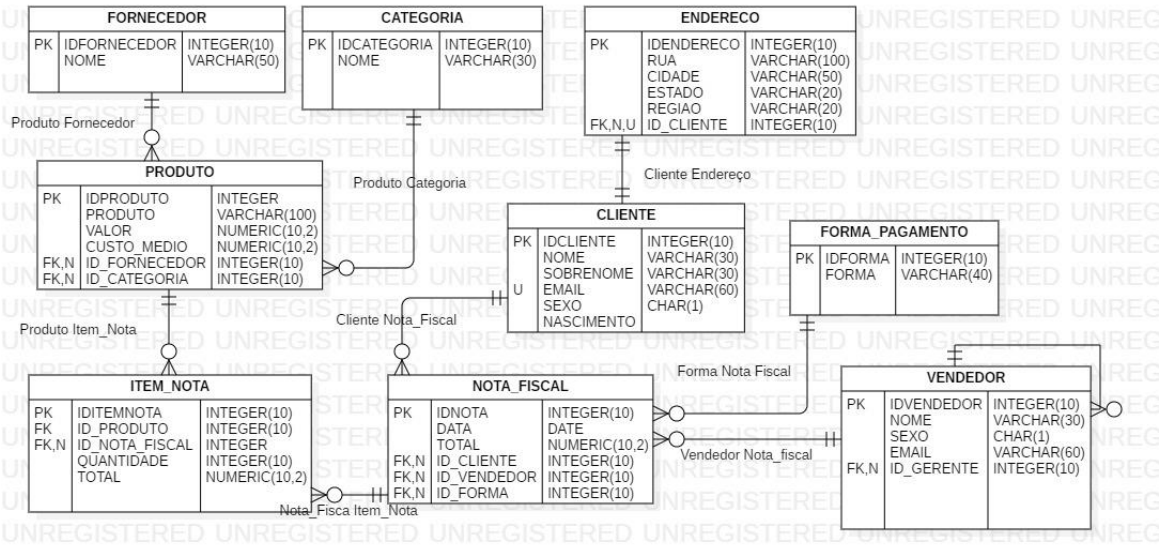


Phase 01

Phase 01 comprises the relational modeling of the business. The DBMS used will be **SQL Server 2017, Enterprise version.** DATA RAMUS is only responsible for the modeling and construction of the database in its optimized form, being in charge of Tera its maintenance as Backups and security.

Artifacts

Logical Modeling



Physical Modeling

```sql
/* OLTP TRADE MODELING */

CREATE DATABASE COMERCIO_OLTP
GO

USE COMERCIO_OLTP
GO

CREATE TABLE CLIENTE(
    IDCLIENTE INT PRIMARY KEY IDENTITY,
    NOME VARCHAR(30) NOT NULL,
    SOBRENOME VARCHAR(30) NOT NULL,
    EMAIL VARCHAR(60) NOT NULL,
    SEXO CHAR(1) NOT NULL,
    NASCIMENTO DATE NOT NULL
)
GO

CREATE TABLE ENDERECO(
    IDENDERECO INT PRIMARY KEY IDENTITY,
    RUA VARCHAR(100) NOT NULL,
    CIDADE VARCHAR(50) NOT NULL,
    ESTADO VARCHAR(20) NOT NULL,
    REGIAO VARCHAR(20) NOT NULL,
    ID_CLIENTE INT UNIQUE
)
GO

CREATE TABLE VENDEDOR(
    IDVENDEDOR INT PRIMARY KEY IDENTITY,
    NOME VARCHAR(30) NOT NULL,
    SEXO CHAR(1) NOT NULL,
    EMAIL VARCHAR(30) NOT NULL,
    ID_GERENTE INT
)
GO
```


```sql
/* OLTP TRADE MODELING */

CREATE DATABASE COMERCIO_OLTP
GO

USE COMERCIO_OLTP
GO

CREATE TABLE CLIENTE(
    IDCLIENTE INT PRIMARY KEY IDENTITY,
    NOME VARCHAR(30) NOT NULL,
    SOBRENOME VARCHAR(30) NOT NULL,
    EMAIL VARCHAR(60) NOT NULL,
    SEXO CHAR(1) NOT NULL,
    NASCIMENTO DATE NOT NULL
)
GO

CREATE TABLE ENDERECO(
    IDENDERECO INT PRIMARY KEY IDENTITY,
    RUA VARCHAR(100) NOT NULL,
    CIDADE VARCHAR(50) NOT NULL,
    ESTADO VARCHAR(20) NOT NULL,
    REGIAO VARCHAR(20) NOT NULL,
    ID_CLIENTE INT UNIQUE
)
GO

CREATE TABLE VENDEDOR(
    IDVENDEDOR INT PRIMARY KEY IDENTITY,
    NOME VARCHAR(30) NOT NULL,
    SEXO CHAR(1) NOT NULL,
    EMAIL VARCHAR(30) NOT NULL,
    ID_GERENTE INT
)
GO
```


```sql
GO

CREATE TABLE NOTA_FISCAL(
    IDNOTA INT PRIMARY KEY IDENTITY(1000,10),
    DATA DATE,
    TOTAL NUMERIC(10,2),
    ID_FORMA INT,
    ID_CLIENTE INT,
    ID_VENDEDOR INT
)
GO
```

Data Dictionary

Requirements

Tera needs to store your sales data. The stock is not part of the scope of this project; however, it will use the products registered in this modeling.

From the General Registers

In general, follow the registration requirements below.

01 – Product Registration

02 – Supplier Registration

03 – Category Registration

04 – Registration of Invoices

05 - Customer Address Registration

06 – Customer Registration

07 - Registration of Payment Methods

08 – Registration of sellers (Sellers take care of online orders, following them from origin to delivery, optimizing and solving problems.).

From the Fields

All registrations must have automatic and random identification numbers*, in order to leave the control of identification of transactions to the system.*

Register:	*Product*
Produto (Product)	Nome do Produto (Product Name)
Valor (Value)	Valor de Venda do Produto (Product Sales Value)
Custo Médio (Average Cost)	Custo de Compra do Produto (Product Purchase Cost)

Register:	*Supplier*
Nome (Name)	Nome ou Razão Social do Vendedor (Name of the Seller)

Register:	*Category*
Nome (Name)	Nome da Categoria do Produto (Product Category Name)

Register:	*Receipt*
Data (Date)	Data da Venda do(s) Produto(s) (Date of Sale of the Product(s))
Quantidade (Quantity)	Quantidade de Itens (Quantity of Items)
Total Item	Valor Total dos Itens (Total Value of Items)
Total	Valor Total da Nota Fiscal (Total Invoice Value)

Register:	*Address*
Rua (Street)	Nome da Rua (Street Name)
Cidade (City)	Nome da Cidade (City Name)
Estado (State)	Nome do Estado (State Name)
Região (Region)	Região (Norte, Sul, Etc…)Region (North, South, Southeast, etc.)

Register:	*Customer*
Name (Name)	Nome do Cliente (Customer Name)
Sobrenome Surname	Sobrenome do Cliente (Customer Surname)

Email	Endereço de Email Completp (Full Email Address)
Sexo (Gender)	Sexo do Cliente (Client's Gender)
Data de Nascimento (Birth)	Data de Nascimento do Cliente (Client's Date of Birth)

Register:	*Payment Method*
Forma (Form)	Nome da Forma de Pagamento (Payment Method Name)

Register:	*Seller*
Nome (Name)	Nome do Vendedor (Seller's Name)
Sexo (Gender)	Sexo do vendedor (Seller's Gender)
Email	Email do Vendedor (Seller's Email)

Particularities

Requirements raised by the team regarding details of Tera's business model. The particularities are requirements and are mandatory.

01 – In sales, an invoice can contain one or more products, different or of the same type, containing a subtotal of products of the same type and a total, with the sum of all products.

02 – Employees have managers, who should be stored in the database.

Essential Business Rules

Here the business rules were analyzed with Tera users. DATA RAMUS analysts have listed the main ones, and if doubts or other rules arise, these should be informed to the team of analysts to be implemented in the database.

- One vendor can supply multiple products.
- A customer can buy multiple times
- An invoice can have only one form of payment

- A seller can issue multiple invoices, but one invoice can only be issued by one seller.
- A customer can only have one address
- A product can only belong to one category.
- A fiscal document can have multiple invoice items.

Constraints

Below is the dictionary of constraints created in the bank COMERCIO_OLTP

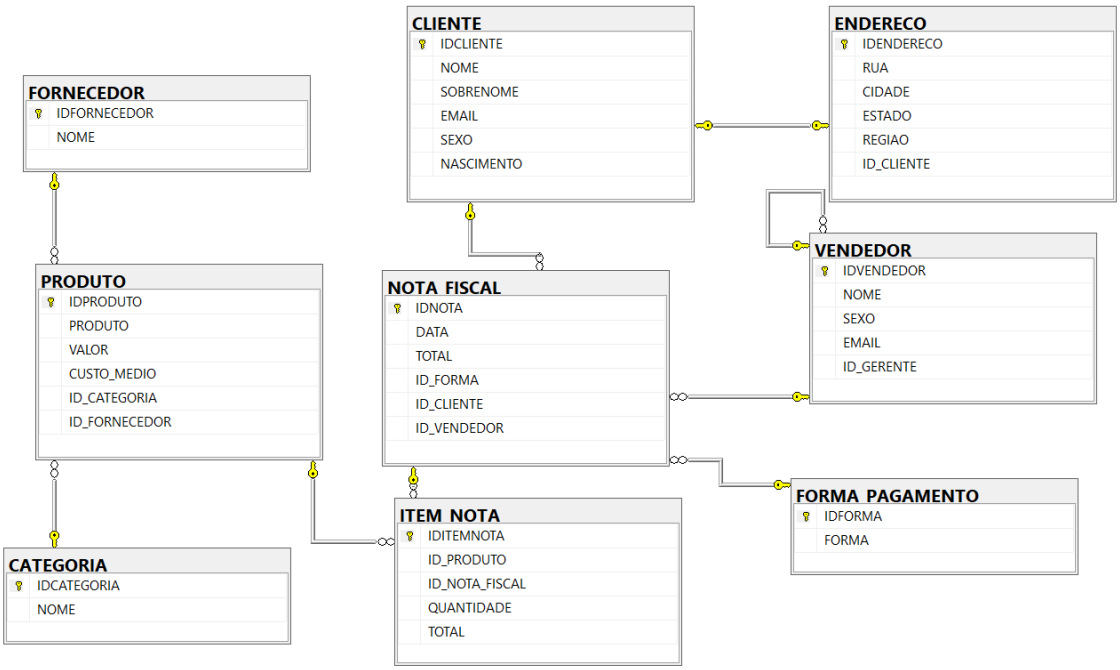
REFERENCIA	TABELA HOST	CAMPO HOST	CONSTRAINT	TIPO
VENDEDOR	VENDEDOR	ID_GERENTE	FK_VENDEDOR_GERENTE	FOREIGN KEY
CLIENTE	NOTA_FISCAL	ID_CLIENTE	FK_NOTA_CLIENTE	FOREIGN KEY
VENDEDOR	NOTA_FISCAL	ID_VENDEDOR	FK_NOTA_VENDEDOR	FOREIGN KEY
PRODUTO	ITEM_NOTA	ID_PRODUTO	FK_ITEM_PRODUTO	FOREIGN KEY
NOTA_FISCAL	ITEM_NOTA	ID_NOTA_FISCAL	FK_ITEM_NOTAFISCAL	FOREIGN KEY
FORNECEDOR	PRODUTO	ID_FORNECEDOR	FK_PRODUTO_FORNECEDOR	FOREIGN KEY
CATEGORIA	PRODUTO	ID_CATEGORIA	FK_PRODUTO_CATEGORIA	FOREIGN KEY
CLIENTE	ENDERECO	ID_CLIENTE	FK_ENDERECO_CLIENTE	FOREIGN KEY
FORMA_PAGAMENTO	NOTA_FISCAL	ID_FORMA	FK_NOTA_FORMA	FOREIGN KEY
N.A	CLIENTE	IDCLIENTE	PK__CLIENTE__1EA344C29BAF6790	PRIMARY KEY

Script

```sql
/* ENABLING RESTRICTIONS */

USE COMERCIO_OLTP
GO

ALTER TABLE VENDEDOR ADD CONSTRAINT FK_GERENTE
FOREIGN KEY(ID_GERENTE) REFERENCES VENDEDOR(IDVENDEDOR)
GO

ALTER TABLE NOTA_FISCAL ADD CONSTRAINT FK_NOTA_CLIENTE
FOREIGN KEY(ID_CLIENTE) REFERENCES CLIENTE(IDCLIENTE)
GO

ALTER TABLE NOTA_FISCAL ADD CONSTRAINT FK_NOTA_VENDEDOR
FOREIGN KEY(ID_VENDEDOR) REFERENCES VENDEDOR(IDVENDEDOR)
GO

ALTER TABLE ITEM_NOTA ADD CONSTRAINT FK_ITEM_PRODUTO
FOREIGN KEY(ID_PRODUTO) REFERENCES PRODUTO(IDPRODUTO)
GO

```

```sql

ALTER TABLE ITEM_NOTA ADD CONSTRAINT FK_ITEM_NOTAFISCAL
FOREIGN KEY(ID_NOTA_FISCAL) REFERENCES NOTA_FISCAL(IDNOTA)
GO

ALTER TABLE PRODUTO ADD CONSTRAINT FK_PRODUTO_FORNECEDOR
FOREIGN KEY(ID_FORNECEDOR) REFERENCES FORNECEDOR(IDFORNECEDOR)
GO


ALTER TABLE PRODUTO ADD CONSTRAINT FK_PRODUTO_CATEGORIA
FOREIGN KEY(ID_CATEGORIA) REFERENCES CATEGORIA(IDCATEGORIA)
GO

ALTER TABLE ENDERECO ADD CONSTRAINT FK_ENDERECO_CLIENTE
FOREIGN KEY(ID_CLIENTE) REFERENCES CLIENTE(IDCLIENTE)
GO

ALTER TABLE NOTA_FISCAL ADD CONSTRAINT FK_NOTA_FORMA
FOREIGN KEY(ID_FORMA) REFERENCES FORMA_PAGAMENTO(IDFORMA)
GO
```

Applied Constraints



Questions to be answered by the Datawarehouse

- Who are the best customers?
- Who are the best sellers?
- Which category yields the most?
- What is my relationship with suppliers?
- What is my worst and best product?
- In which region do I sell the most?

Interview with the manager of Tera, **João Carvalho**.

*-Today we sell a lot, we make a profit, but I do not know which **category**, **supplier** or **product** gives me more profit. I'm not interested in quantity. I need summary analysis. Today I am not interested in knowing how many sales a seller has, but the total sold, because they can recommend products to our customers. I would also like to know my **costs** by **seasonality**. I need to know what time of year I spend the most to control my inventory investments or hiring. Knowing which **customer** buys the most from me in total terms would also be a good idea. **Another need is a report with the data of my clients, because sending direct***

mail will be a practice of the company. *I'm not sure if an analysis by* ***category or vendor*** *would be helpful. Your team can also provide what they think is relevant to the business.*

Requirements Change:

On the day *20/04/2023* the MKT manager, *Maria de Lourdes*, requested the analyst *Luis Coelho* to include/change the requirements described below:

Single-named column.

Gender – Male and Female.

Products in standard Camel Case.

_____

Signature of the Responsible.