

# Projeto 2

PGBIA 13 – Grupo 4

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ASSOCIATION  
**AMBA**  
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**UNICON**



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TIMES



**EQUIS**  
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# Business Understanding

## Business Understanding

A sua proposta de valor passa por ligar os **utilizadores** e as **empresas** para o preenchimento de **ofertas de trabalho** na área da tecnológica



A Landing Jobs pretende **otimizar** o **match** entre **utilizadores** e **empresas** usando automatização, previsão e classificação



# Solução de BI

# Ciclo de desenvolvimento do modelo de dados

Recolha de  
requisitos

- Processo feito em conjunto com os Business Owners que permite iniciar o desenho do Modelo de Dados / Estrutura do Negócio e da Data Warehouse

Construção  
do modelo

- Processo feito pela equipa de BI do projecto

## Vantagens de uma Data warehouse

- Garantir a disponibilidade de informação analítica sem comprometer a execução do negócio;
- Permitir uma visão consistente e integrada de dados de diferentes fontes de negócio;
- Permitir um a criação de histórico de negócio;

## Motivação dos stakeholders

- Melhor informação sobre o comportamento do “job”
- Conhecimento da reação dos clientes face determinado job;
- Informação “live” ;
- Automatização de tarefas;
- Controle de KPI’s;
- Noção da taxa de sucesso dos job’s por país, categoria, empresa ou mercado.

## Etapas base do processo de modelação

O processo de definição do modelo, na sua essência, inclui 4 etapas:

- 1) Identificação dos Eventos/Processos de negócio: *o Job*
- 2) Identificação da granularidade do Evento: *a publicação do job*
- 3) Identificação das dimensões do Evento: *Job, Company, Date*
- 4) Identificação dos factos do Evento: *Interações com o job*



## 2. Recolha dos Requisitos

## Recolha de Requisitos

Num projecto de BI, a recolha de requisitos é feita essencialmente com base em reuniões e entrevistas com os Stakeholders, Business Users e outros intervenientes envolvidos (incluindo responsáveis pela parte técnica do projecto).



*Brainstorming num processo iterativo e colaborativo no grupo*

**Objetivo:** Criação de ETL que acompanhe o “status” de cada oferta de trabalho (Job). Calculo de KPI’s referentes às ofertas de trabalho.

## Recolha de Requisitos

Qual a metodologia que recorremos para recolha os requisitos associada à descoberta do negócio (e dos dados fonte)?

### Metodologia BEAM

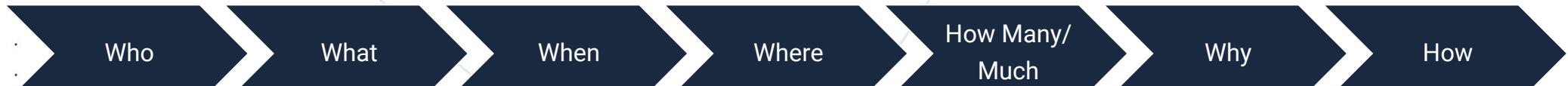
*BEAM : Business Event Analysis & Modeling é uma ferramenta de Modelstorming:  
“Data Modeling” + “Brainstorming”*

*Qual é o outcome?*

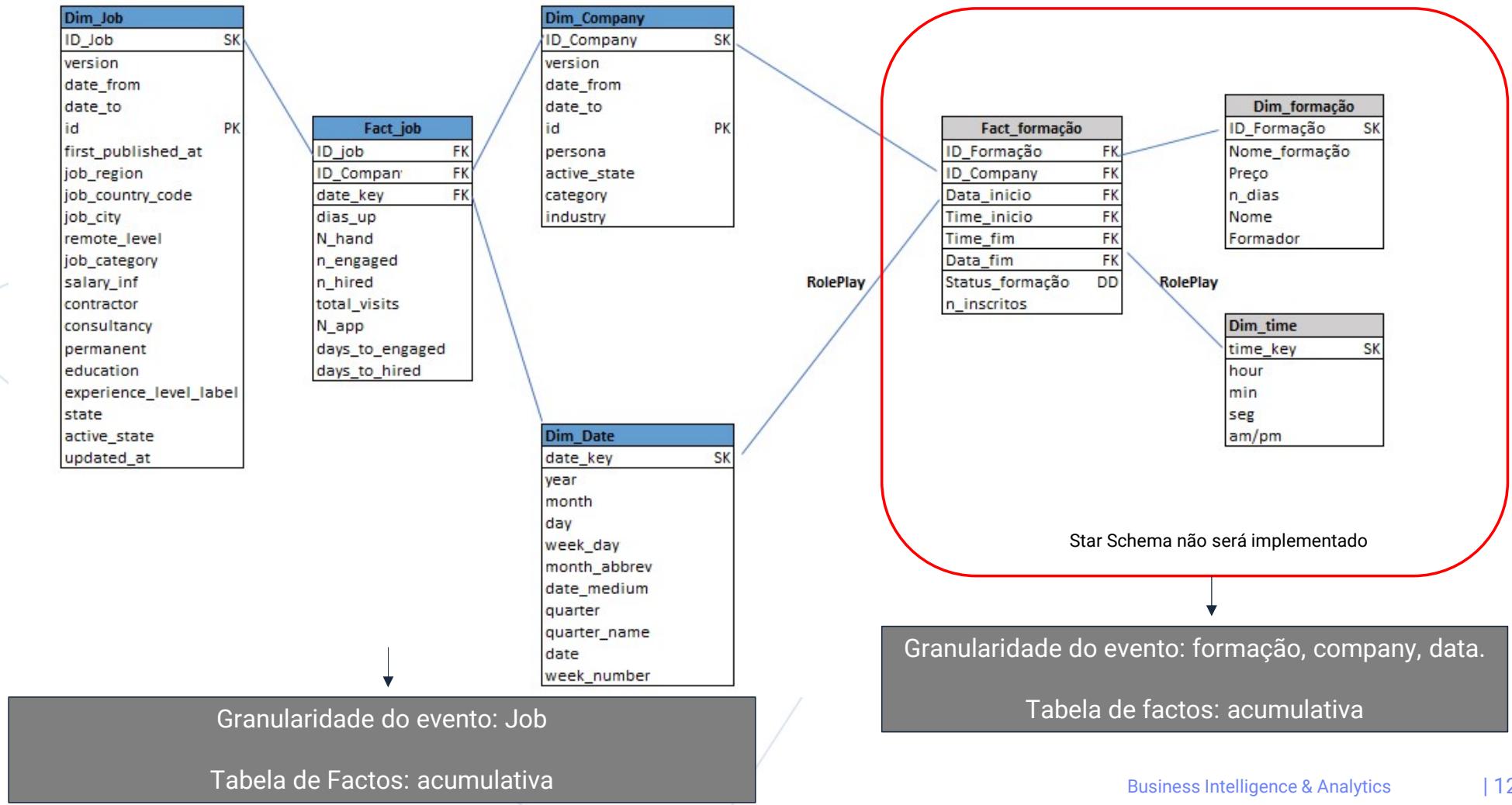
Narrativas de dados (“data stories”) que descrevem os eventos do negócio!

*Mas como faremos a narrativa da história dos dados?*

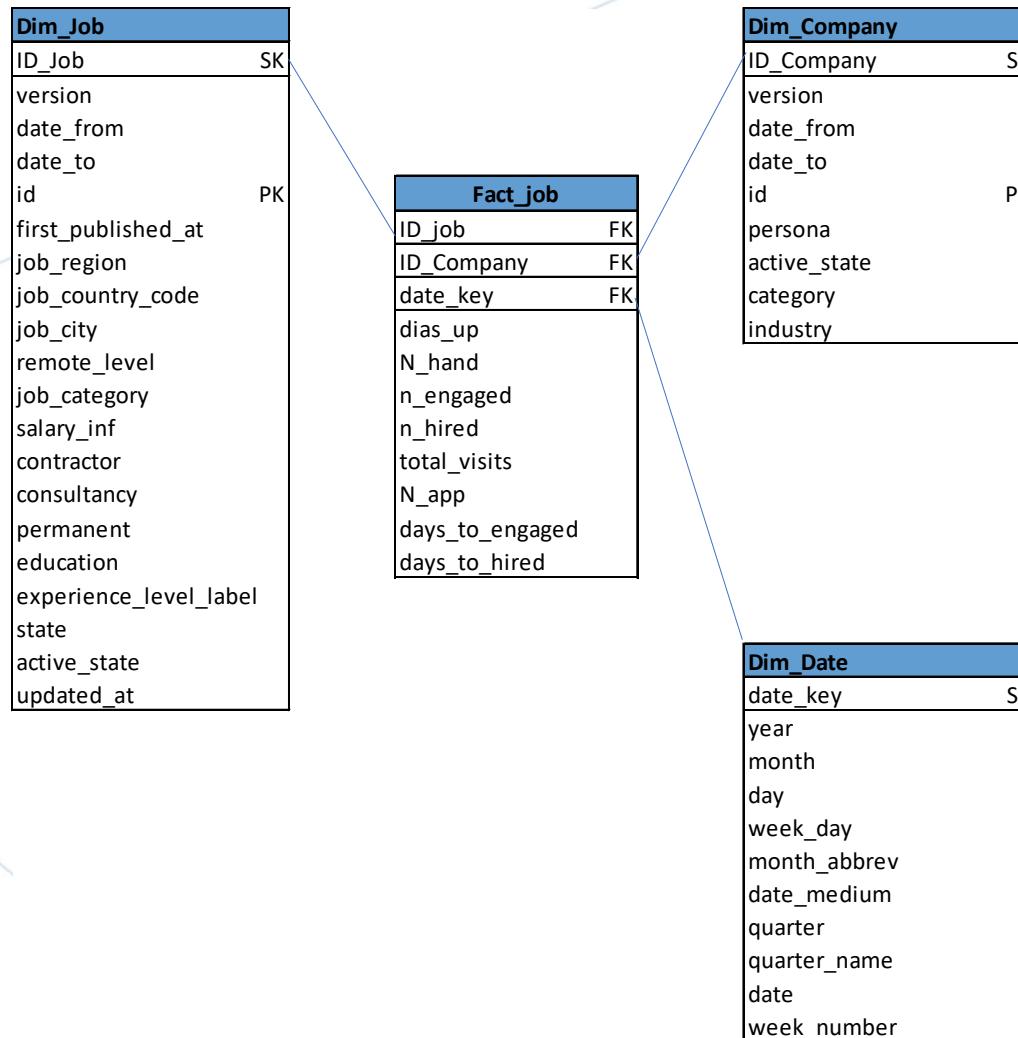
Através dos “7w’s”:



# Modelo lógico high-level (Star Schema)



# Modelo lógico high-level (Star Schema)



## 7W's

Who	What	When	Where	How Many?	Why	How
Company key	Job key	Date Key	<a href="https://landing.jobs/">https://landing.jobs/</a>	dias_up	Job_status	job key
	job_category			n_hands		
				n_eng		
				n_hired		
				total_visits		
				n_apps		
				min_engaged		
					min_hired	

# Métricas

Métricas	Source	Aditividade
Dias desde que a oferta foi publicada a 1ª vez até passar a "Closed" ou a "Unpublished" ou até ao dia 2022-03-15	dias_up	Não aditivo
Nº de handshakes associados à oferta que não estão como 'Requested' ou 'Rejected'	n_hands	Semi-aditivo
Nº de candidaturas, por job, que passaram à fase Engaged	n_eng	Semi-aditivo
Nº de candidaturas, por job, que passaram à fase Hired	n_hired	Semi-aditivo
Número de visitas total às ofertas de trabalho	total_visits	Semi-aditivo
Número de candidaturas por job	n_apps	Semi-aditivo
Número de dias até o job obter um engage	min_engaged	Não aditivo
Número de dias até o job obter um hired	min_hired	Não aditivo

<b>KPI's</b>
Número de dias até o job obter um engage
Número de dias até o job obter um hired
Taxa sucesso de preenchimento da vaga ("hired")
Número de jobs publicados
Número de candidaturas
Número de dias que um job demora até chegar a hired
Número de visitas

# Source-to-target mapping – Dim\_Company

Target											Source					
Column Name	Display Name	Description	Datatype	Size	Precision	Null	FK to	Default value	SCD Type	System	Schema	Table	Field	Datatype	ETL Transformation	Comments
<b>id_company</b>	<b>Id_company</b>	surrogate primary key	bigint				Fact_jobs	-								
version	version	versão desta id	int						-							
date_from	date_from	inicio de validade desta versão	datetime						-							
date_to	date_to	fim de validade desta versão	datetime						-							
<b>id</b>	<b>id</b>	Company ID - Primary Key	bigint						-	MySQL	landing	current_companies	id	bigint		
persona	persona	Tipo de persona ("Not classified", "SME", "Boutique", "Scale-up", "Corporate")	text					Sem info	1	MySQL	landing	current_companies	persona	text		
active_state	active_state	Estado de atividade ("Never Published", "Dead", "Active", "Inactive")	text					Sem info	2	MySQL	landing	current_companies	active_state	text		
category	category	Categoria da empresa ("Funded Start-up", "Small-sized Enterprise", "Mid-sized Enterprise", "Large-sized Enterprise", "Bootstrapped Start-up")	text					Sem info	1	MySQL	landing	current_companies	category	text		
industry	industry	Tipo de industria ("Technology", "E-commerce", "Enterprise & B2B", "Finance", "Internet of Things (IoT)", "Education", "Media", "Travel & Leisure", "Miscellaneous", "Health" ...)	text					Sem info	1	MySQL	landing	current_companies	industry	text		

# Source-to-target mapping – Dim\_Job

Target												Source				
Column Name	Display Name	Description	Datatype	Size	Precision	Null	FK to	Default value	SCD Type	System	Schema	Table	Field	Datatype	ETL Transformation	Comments
ID_job	ID_job	surrogate primary key	bigint PK				Fact_jobs	-								
version	version	versão desta id	int					-								
date_from	date_from	inicio de validade desta versão	datetime					-								
date_to	date_to	fim de validade desta versão	datetime					-								
id	id	Job ID - Primary Key	bigint					-	MySQL	landing	current_jobs	id		bigint		
first_published_at	first_published_at	Data de publicação da oferta	datetime					sem info	1	MySQL	landing	current_jobs	first_published_at	text	transformar em data	
job_region	job_region	Região da oferta	text					sem info	1	MySQL	landing	current_jobs	job_region	text		
job_country_code	job_country_code	País da Oferta	text					sem info	1	MySQL	landing	current_jobs	country	text		
job_city	job_city	Cidade da oferta	text					sem info	1	MySQL	landing	current_jobs	job_city	text		
remote_level	remote_level	Nível de remoto	varchar(14)					sem info	1	MySQL	landing	current_jobs	full_remote & partial_remote	text	se for full_remote então full, se partial_remote então remote, outros casos então office	
job_category	job_category	Categoria	text					sem info	1	MySQL	landing	current_jobs	job_category	text		
salary_inf	salary_inf	Disponibiliza info sobre o salario	varchar(6)					sem info	1	MySQL	landing	current_jobs	show_salary & show_rate	text		
contractor	contractor	Do tipo contractor	text					sem info	1	MySQL	landing	current_jobs	contractor	text		
consultancy	consultancy	Do tipo consultor	text					sem info	1	MySQL	landing	current_jobs	consultancy	text		
permanent	permanent	Contrato premanente	text					sem info	1	MySQL	landing	current_jobs	permanent	text		
education	education	Nível de educação necessario	text					sem info	1	MySQL	landing	current_jobs	education	text		
experience_level_label	experience_level_label	Nível de experiencia necessaria	text					sem info	1	MySQL	landing	current_jobs	experience_level_label	text		
state	state	Fechado, expirado, publicado, dormente	text					sem info	1	MySQL	landing	current_jobs	state	text		
active_state	active_state	Ativo/ Inativo	text					sem info	1	MySQL	landing	current_jobs	active_state	text		
updated_at	updated_at	data de ultima alteração à oferta	datetime					sem info	1	MySQL	landing	current_jobs	updated_at	text	transformar em data	
.	.															
.	.															
.	.															
.	.															

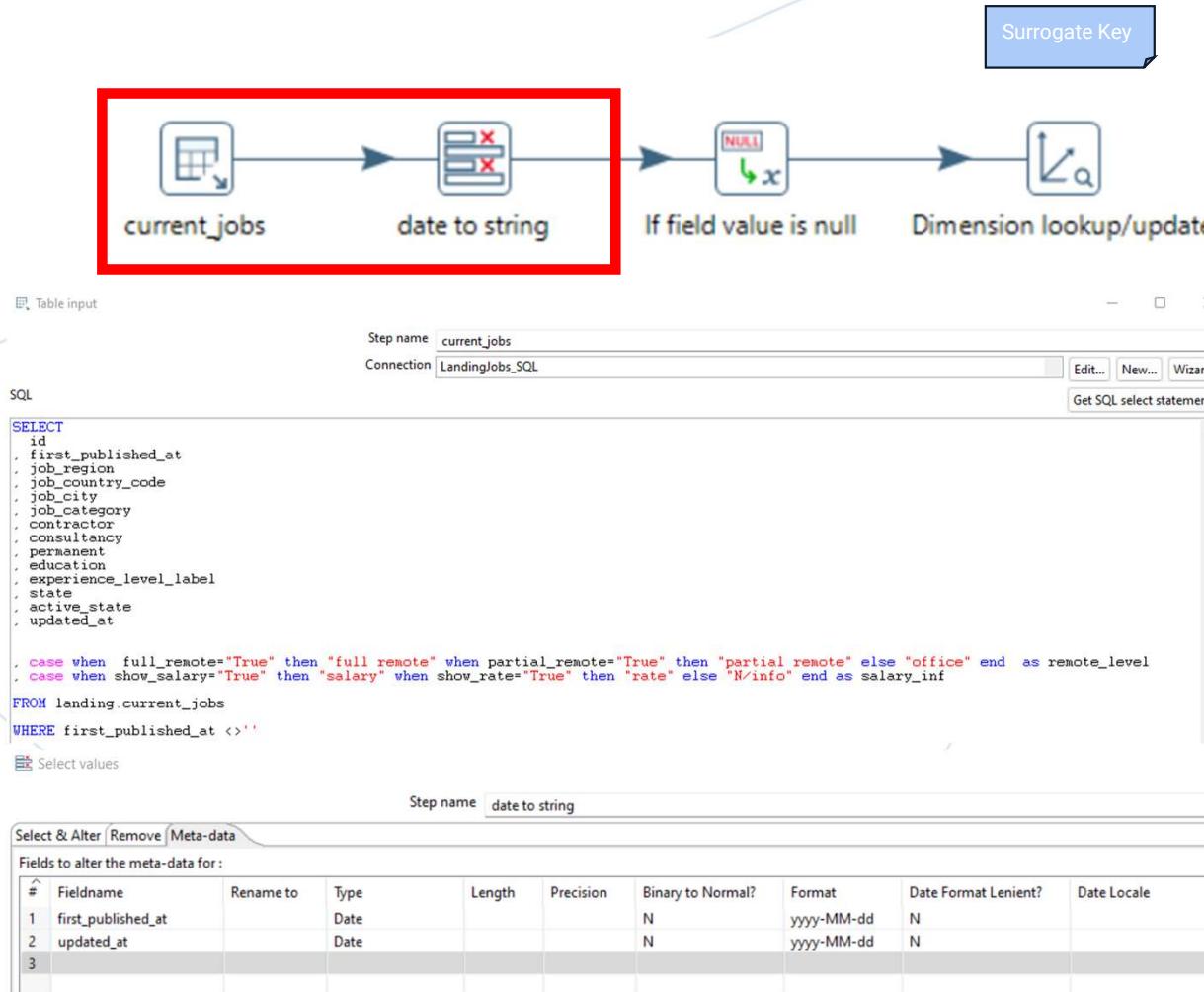
# Source-to-target mapping – Fact Table

Fact_Job																	
Target													Source				
Column Name	Display Name	Description	Datatype	Size	Precision	Null	FK to	Default value	SCD Type	System	Schema	Table	Field	Datatype	ETL Transformation	Comments	
date_key	date_key	Foreigner Key	int				dim_date	-	-								
id_company	id_company	Foreigner Key	bigint				dim_comp	-	-								
ID_job	ID_job	Foreigner Key	bigint				dim_job	-	-								
dias_up	dias_up	Dias desde que a oferta foi publicada a 1ª vez até passar a "Closed" ou a "Unpublished" ou até ao dia 2022-03-15	int			0				MySQL	landing	current_jobs	job_state & updated_at	text	se jobs.state = 'Closed' ou jobs.state = 'Unpublished' então é o numero de dias entre jobs.updated_at e jobs.first_published_at se não é o numero de dias entre '2022-03-15' e jobs.first_published_at		
N_hand	N_hand	Nº de handshakes associados à oferta que não estão como 'Requested' ou 'Rejected'	bigint			0			-	MySQL	landing	current_handshakes	state_labels	text	Contar numero de handshakes distintos em cada job que não estão como 'Requested' ou 'Rejected'		
n_engaged	n_engaged	Nº de candidaturas, à oferta, que passaram à fase Engaged	int			0			-	MySQL	landing	applications	state	text	Contar o numero de candidaturas para cada job que tem state='Engaged'		
n_hired	n_hired	Nº de candidaturas, à oferta, que passaram à fase Hired	int			0			-	MySQL	landing	applications	state	text	Contar o numero de candidaturas para cada job que tem state='Hired'		
total_visits	total_visits		bigint			0			-	MySQL	landing	current_jobs	total_visits	bigint			
N_app	N_app	Nº de candidaturas, à oferta	bigint			0			-	MySQL	landing	applications	state	text	Contar o numero de candidaturas para cada job que tem state diferente de 'Pre-draft','Draft'		
days_to_engaged	days_to_engaged	Dias desde que a oferta foi publicada a 1ª vez até à primeira candidatura chegar à fase de Engaged	int			null			-	MySQL	landing	applications	state & last_state_change_at		Numero de dias entre a publicação do job e data em que a primeira candidatura que chegou a engaged (ver campo last_state_change_at)		
days_to_hired	days_to_hired	Dias desde que a oferta foi publicada a 1ª vez até à primeira candidatura chegar à fase de Hired	int			null			-	MySQL	landing	applications	state & last_state_change_at		Numero de dias entre a publicação do job e data em que a primeira candidatura que chegou a hired (ver campo last_state_change_at)		

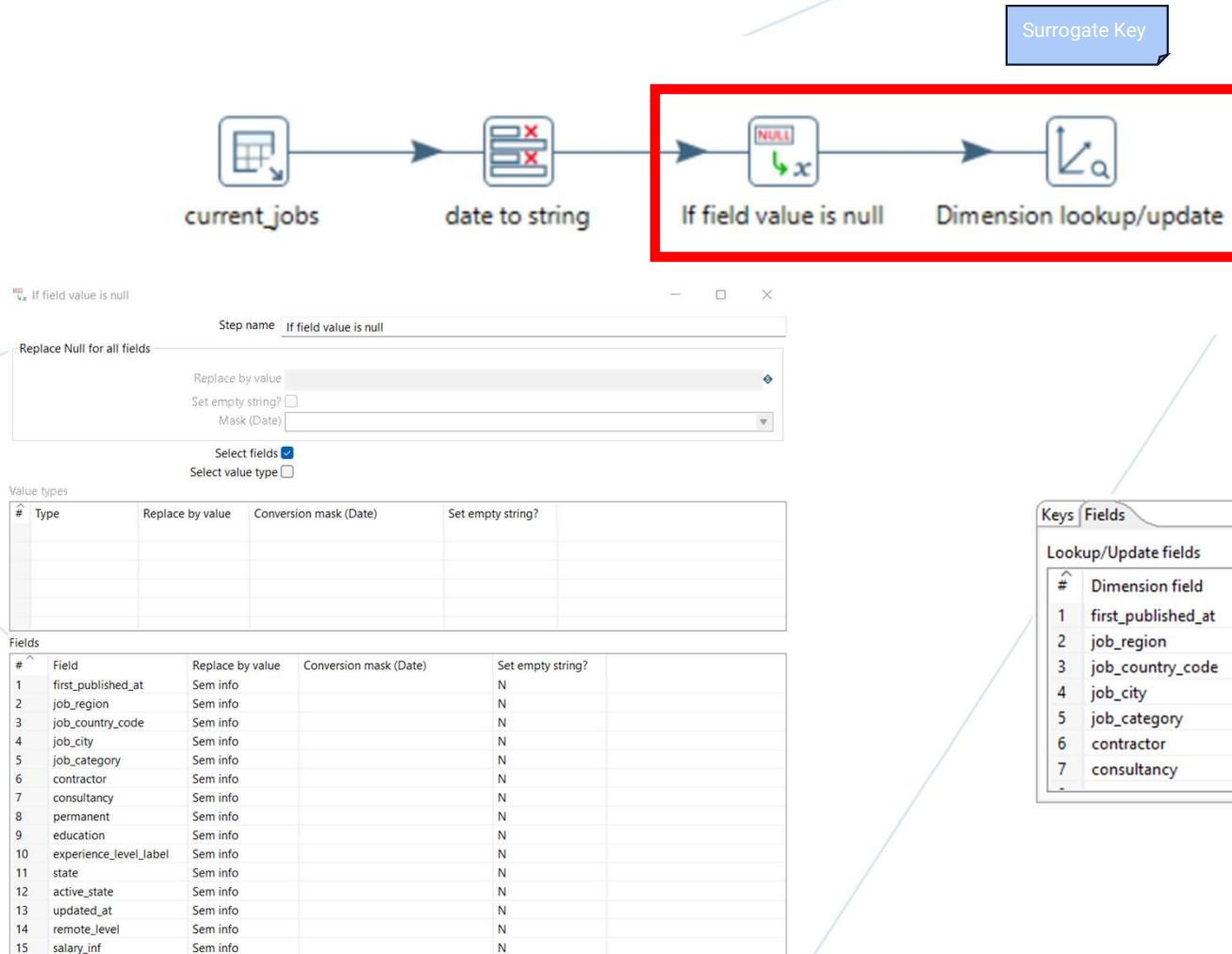


## 3. ETL

## ETL – Dim\_Job (1/2)



## ETL – Dim\_Job (2/2)



## ETL – Dim\_Companies (1/2)

Table input

SQL

```
SELECT
    id
    , persona
    , active_state
    , category
    , industry
FROM landing.current_companies
```

Step name Companies  
Connection LandingJobs\_SQL



Surrogate Key

If field value is null

Step name **If field value is null**

Replace Null for all fields

Replace by value   
Set empty string?   
Mask (Date)

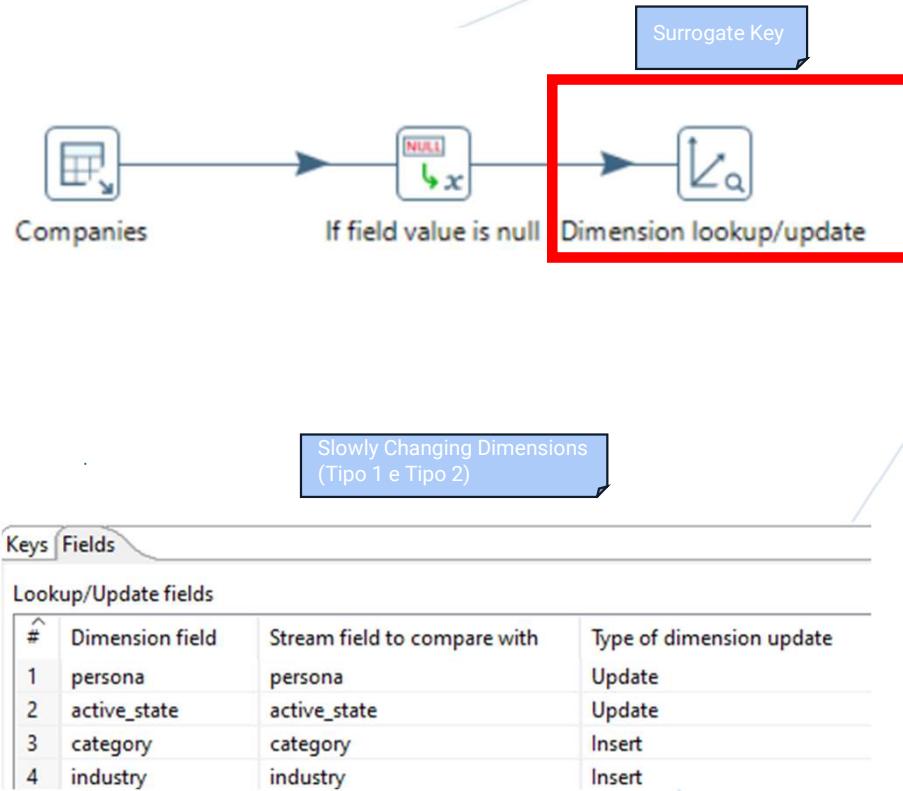
Select fields  Select value type

#	Type	Replace by value	Conversion mask (Date)	Set empty string?
1	category	Sem info		N
2	industry	Sem info		N

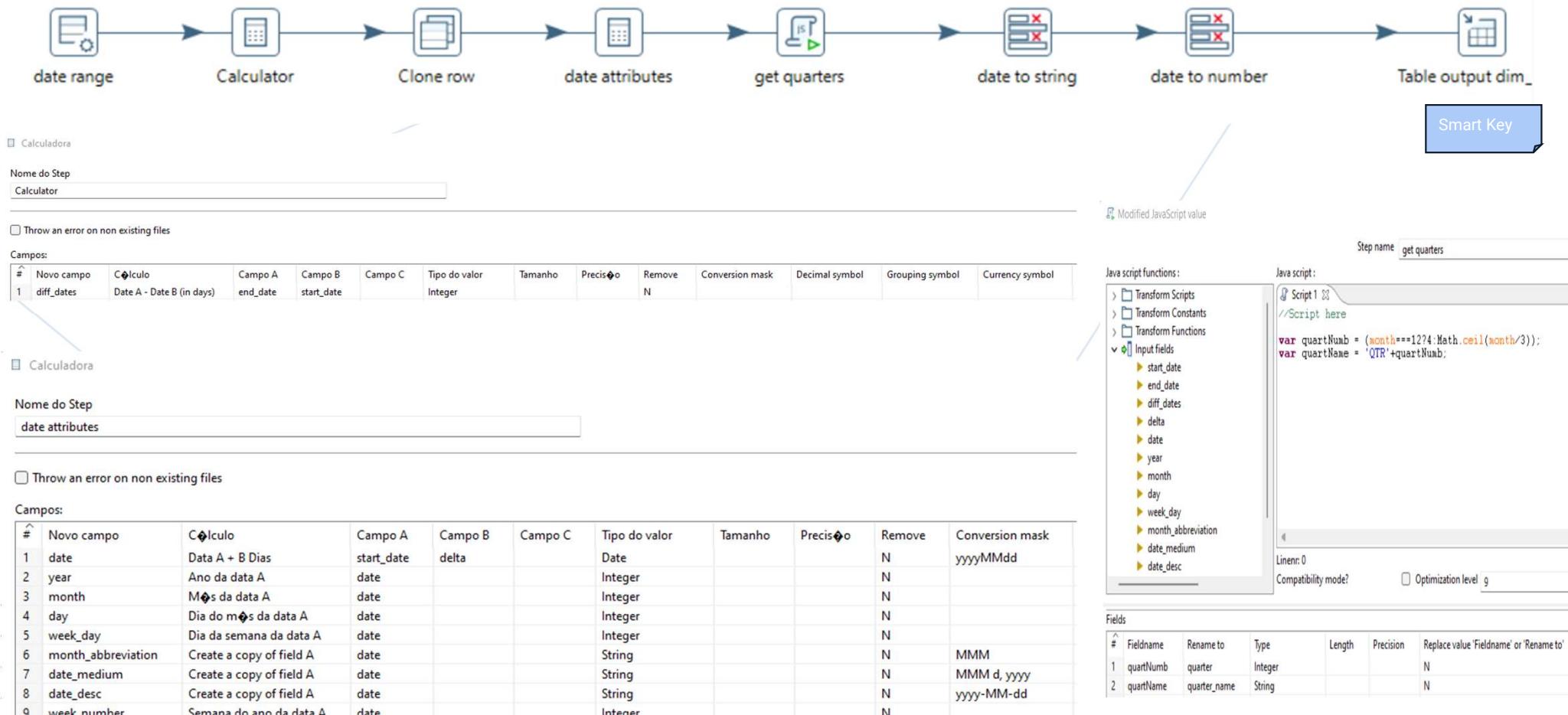
Fields

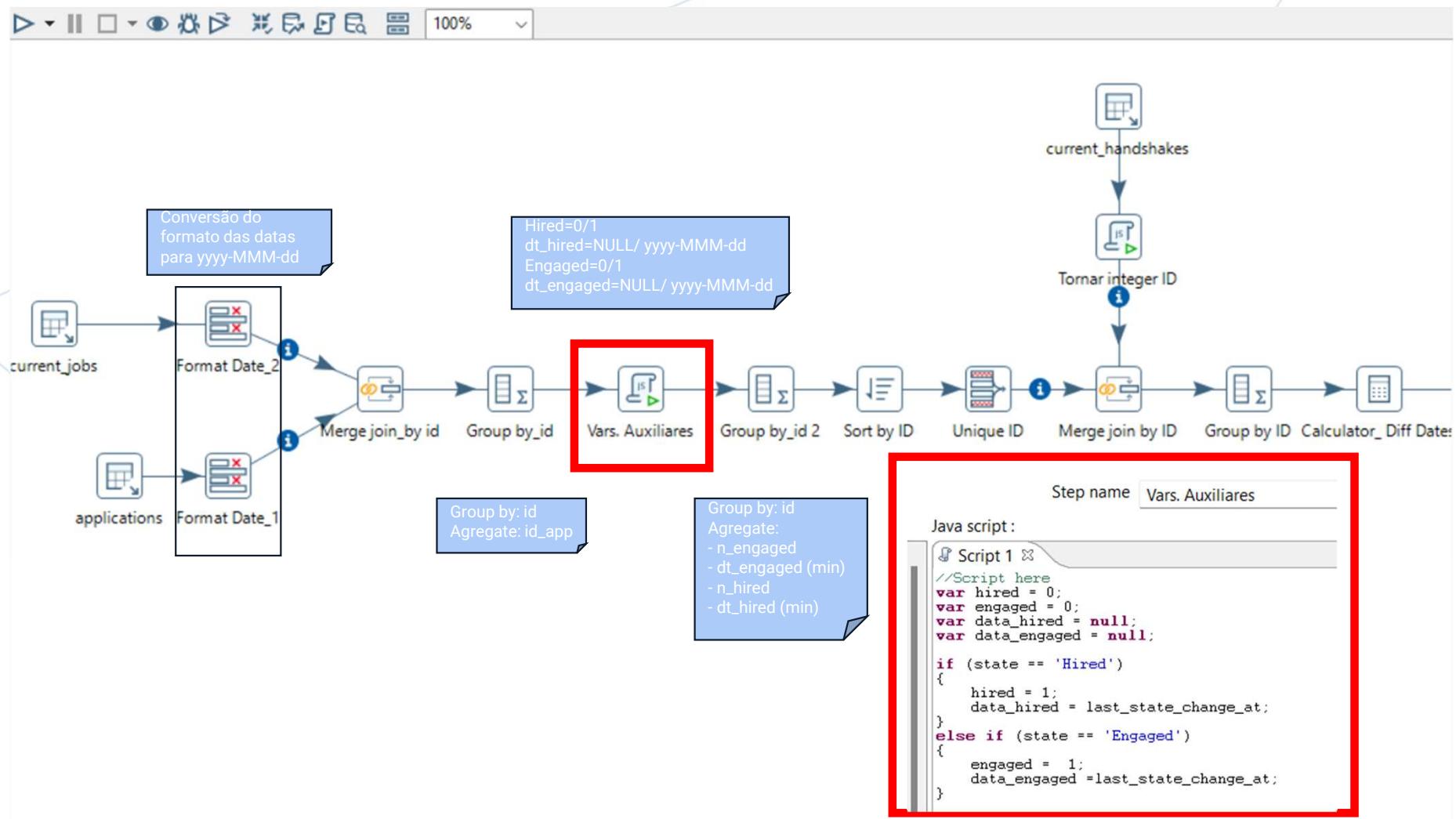
#	Field	Replace by value	Conversion mask (Date)	Set empty string?
1	category	Sem info		N
2	industry	Sem info		N

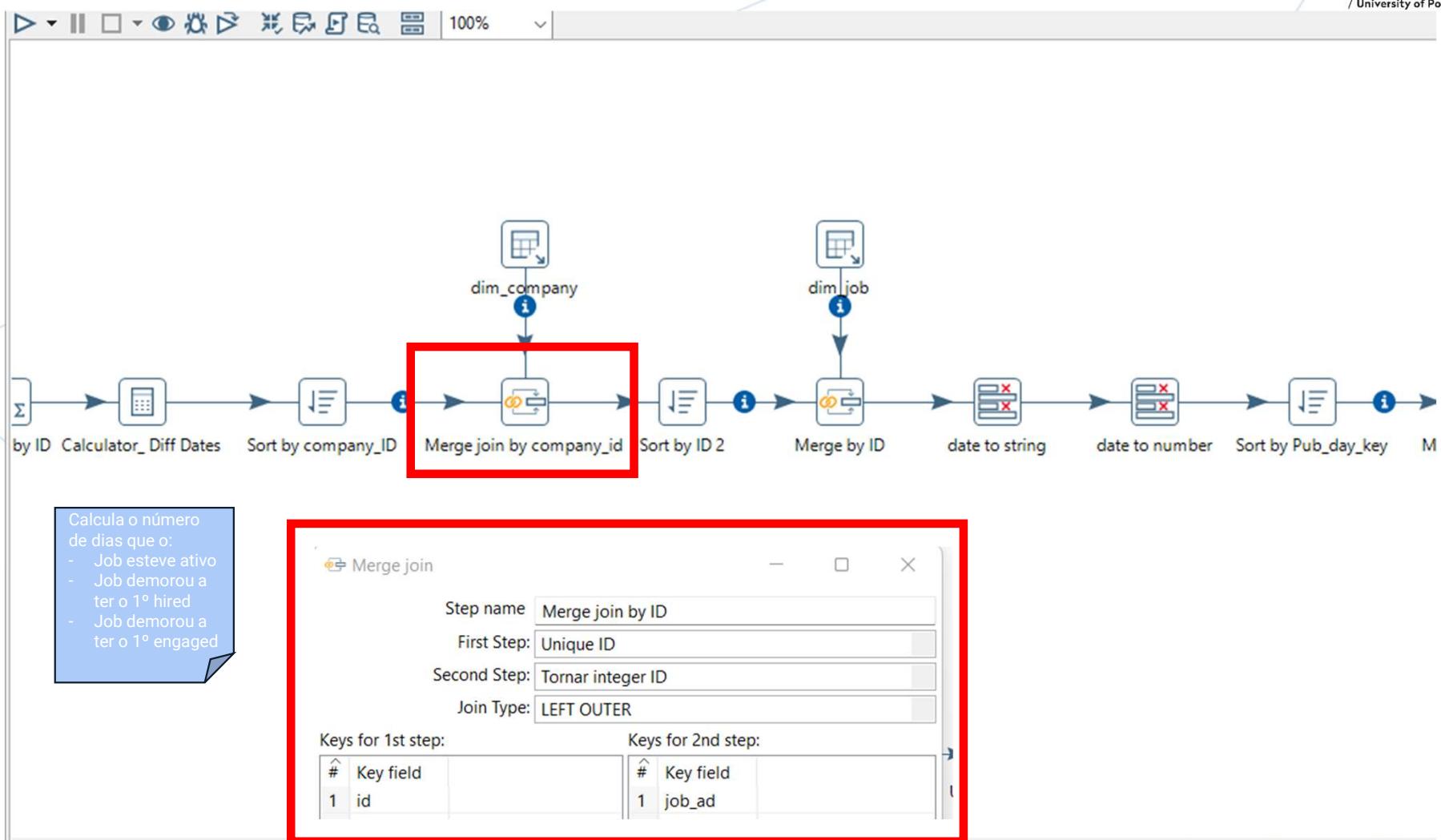
## ETL – Dim\_Companies (2/2)



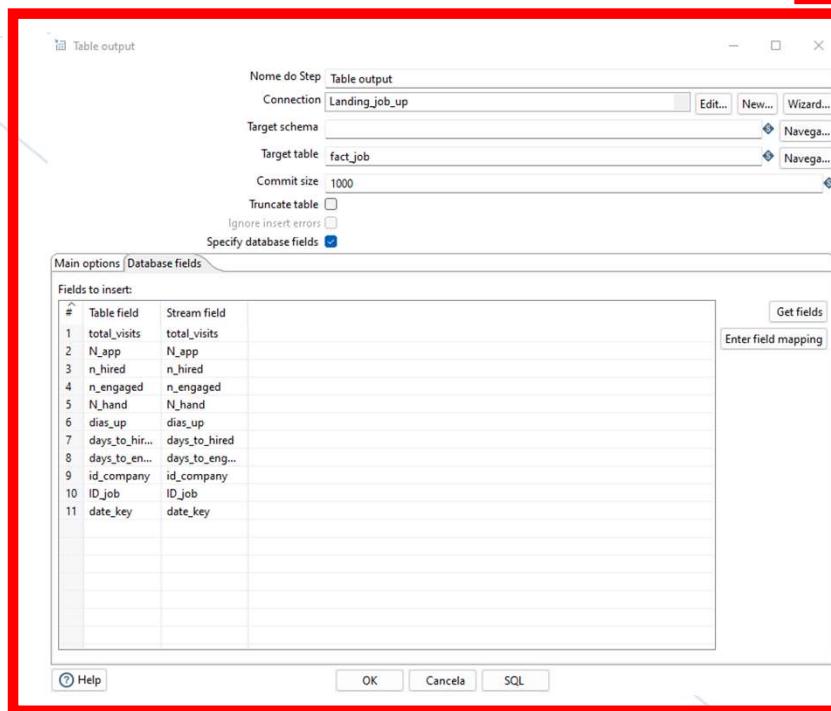
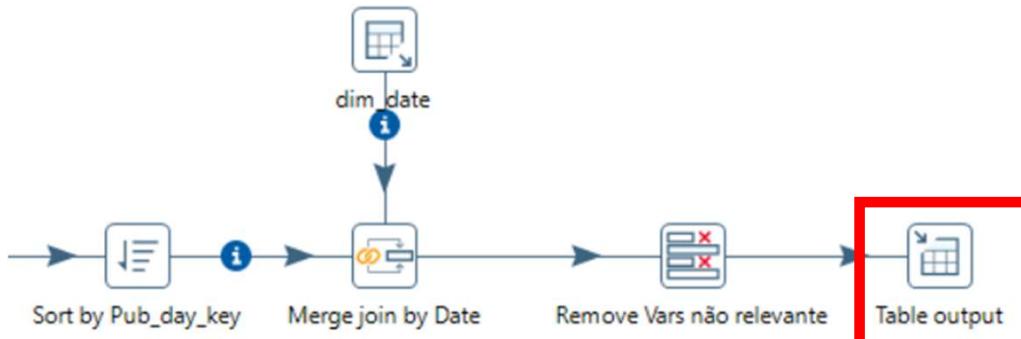
# ETL – Dim\_Date







# ETL

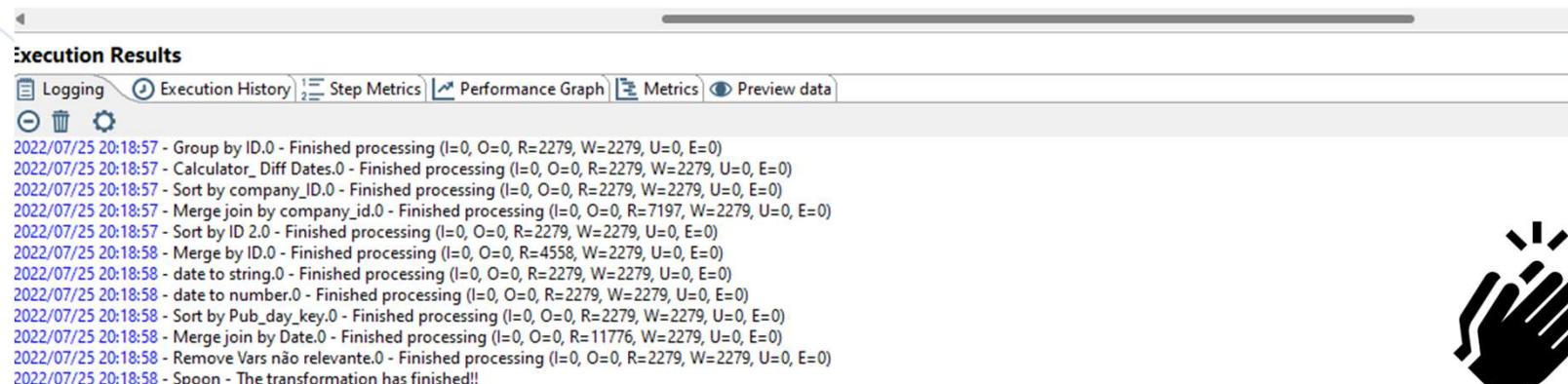
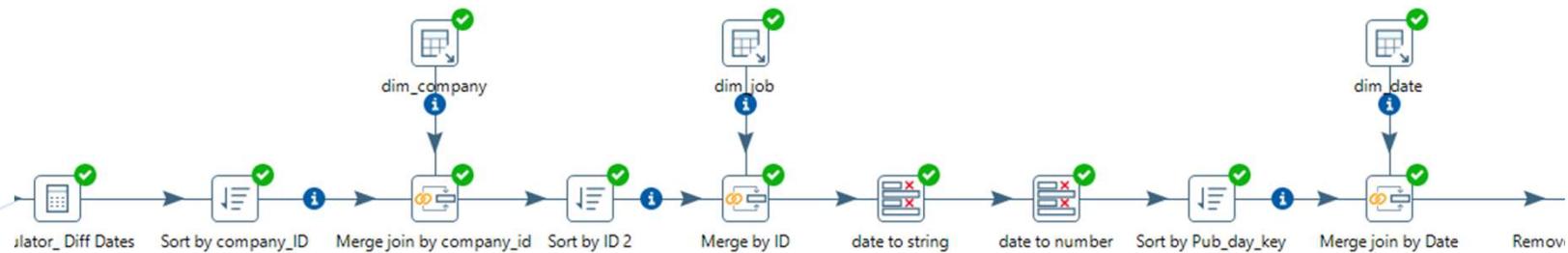


<b>Dim_Job</b>	SK
version	
date_from	
date_to	
<b>id</b>	PK
first_published_at	
job_region	
job_country_code	
job_city	
remote_level	
job_category	
salary_inf	
contractor	
consultancy	
permanent	
education	
experience_level_label	
state	
active_state	
updated_at	

<b>Fact_job</b>	
ID_job	FK
ID_Company	FK
date_key	FK
dias_up	
N_hand	
n_engaged	
n_hired	
total_visits	
N_app	
days_to_engaged	
days_to_hired	

<b>Dim_Company</b>	SK
version	
date_from	
date_to	
<b>id</b>	PK
persona	
active_state	
category	
industry	

<b>Dim_Date</b>	SK
date_key	
year	
month	
day	
week_day	
month_abbrev	
date_medium	
quarter	
quarter_name	
date	
week_number	



**Execution Results**

Logging Execution History Step Metrics Performance Graph Metrics Preview data

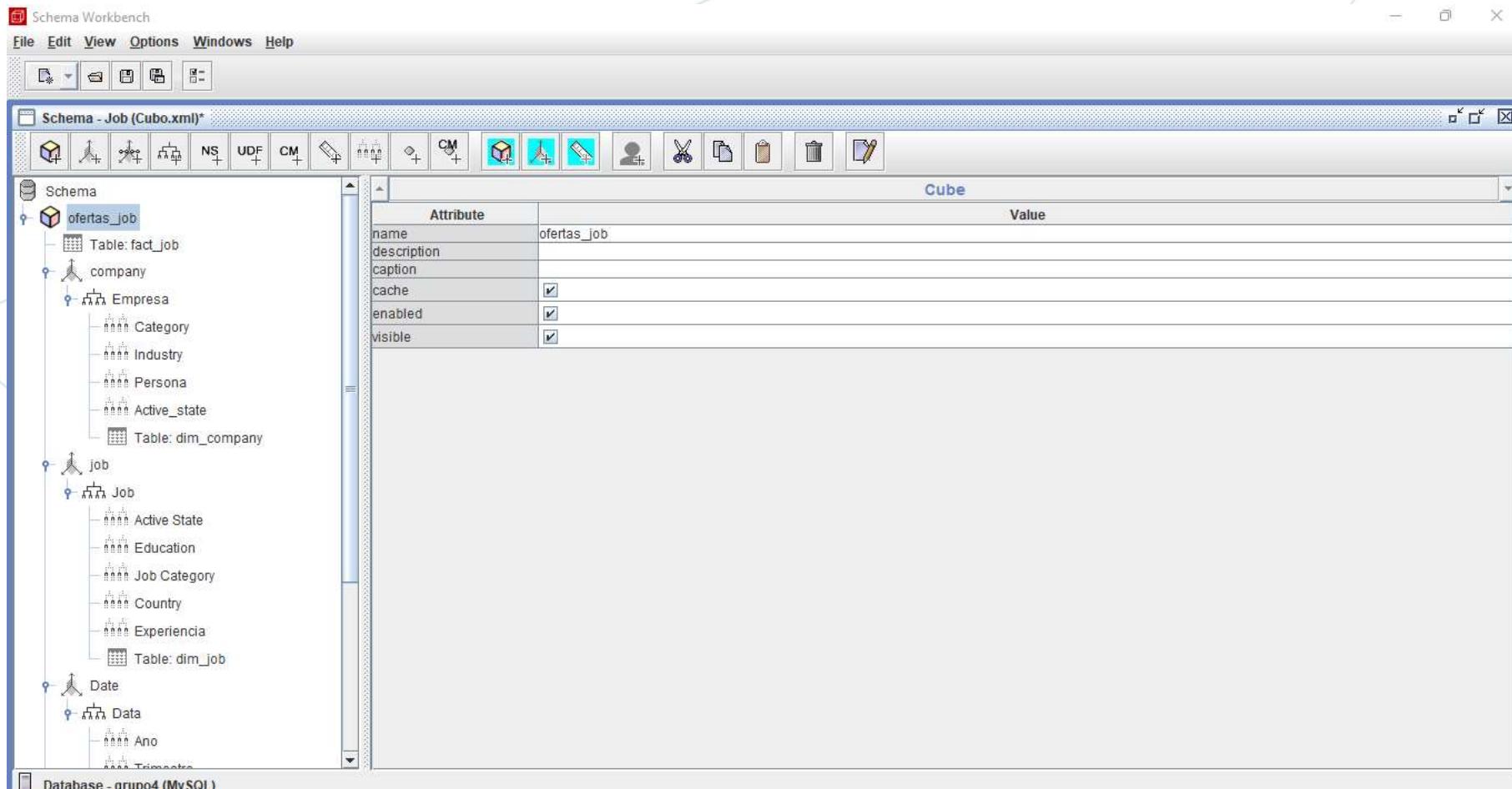
2022/07/25 20:18:57 - Group by ID.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:57 - Calculator\_Diff Dates.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:57 - Sort by company\_ID.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:57 - Merge join by company\_id.0 - Finished processing (I=0, O=0, R=7197, W=2279, U=0, E=0)  
2022/07/25 20:18:57 - Sort by ID 2.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - Merge by ID.0 - Finished processing (I=0, O=0, R=4558, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - date to string.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - date to number.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - Sort by Pub\_day\_key.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - Merge join by Date.0 - Finished processing (I=0, O=0, R=11776, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - Remove Vars não relevante.0 - Finished processing (I=0, O=0, R=2279, W=2279, U=0, E=0)  
2022/07/25 20:18:58 - Spoon - The transformation has finished!!





## 4. Cubo

# Cubo



The screenshot shows the Oracle Database Schema Workbench interface. The title bar reads "Schema Workbench" and the window title is "Schema - Job (Cubo.xml)". The menu bar includes File, Edit, View, Options, Windows, and Help. The toolbar contains various icons for schema management. The left pane displays a tree view of the schema structure under "Schema". The root node is "ofertas\_job", which contains a "Table: fact\_job". Below it are "company" and "job" dimensions, and a "Date" dimension. The "company" dimension has children "Empresa", "Category", "Industry", "Persona", and "Active\_state", along with a "Table: dim\_company". The "job" dimension has children "Job", "Active State", "Education", "Job Category", "Country", and "Experiencia", along with a "Table: dim\_job". The "Date" dimension has children "Data", "Ano", and "Trimestres". The right pane shows a table titled "Cube" with the following attributes and values:

Attribute	Value
name	ofertas_job
description	
caption	
cache	<input checked="" type="checkbox"/>
enabled	<input checked="" type="checkbox"/>
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table for 'ofertas\_job' Cube

Attribute	Value
schema	
name	fact_job
alias	

Attribute Editor

Schema

ofertas\_job

- Table: fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
  - Table: dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - Table: dim\_job
- Date
  - Data
    - Ano
    - Trimestre

Database - drup04 (MySQL)

# Cubo

The screenshot shows the Oracle BI Schema Workbench interface. The title bar reads "Schema - Job (Cubo.xml)\*". The menu bar includes File, Edit, View, Options, Windows, Help, and a toolbar with various icons. The left pane displays a schema tree for the "ofertas\_job" cube, which includes tables like fact\_job, dim\_company, dim\_job, and dim\_data, along with dimensions for company, job, and date. The right pane shows the configuration for the "Dimension for 'ofertas\_job' Cube", specifically for the "company" dimension. The table has the following data:

Attribute	Value
name	company
description	
foreignKey	id_company
type	StandardDimension
usagePrefix	
caption	
visible	<input checked="" type="checkbox"/>

At the bottom, it says "Database - grupo4 (MySQL)".

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Hierarchy for 'company' Dimension

Attribute	Value
name	Empresa
description	
hasAll	<input checked="" type="checkbox"/>
allMemberName	
allMemberCaption	
allLevelName	
defaultMember	
memberReaderClass	
primaryKeyTable	
primaryKey	id_company
caption	
visible	<input checked="" type="checkbox"/>

Schema

- ofertas\_job
  - Table: fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
  - Table: dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - Table: dim\_job
- Date
  - Data
    - Ano

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Level for 'Empresa' Hierarchy

Attribute	Value
name	Category
description	
table	dim_company
column	category
nameColumn	category
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

ofertas\_job

- Table: fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
- Table: dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
- Table: dim\_job
- Date
  - Data
    - Ano
    - Trimestre

Database - grupo4 (MySQL)

C:\Users\jofis\Associação Porto Business School\PGBI\A13P1G04 - General\Projeto 2\01.Pentaho\Cubo.xml

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Level for 'Empresa' Hierarchy

Attribute	Value
name	Industry
description	dim_company
table	industry
column	industry
nameColumn	industry
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

ofertas\_job

Table: fact\_job

company

Empresa

Category

Industry

Persona

Active\_state

Table: dim\_company

job

Job

Active State

Education

Job Category

Country

Experiencia

Table: dim\_job

Date

Data

Ano

Trimestre

Database - grupo4 (MySQL)

Attribute Value

name Industry

description dim\_company

table industry

column industry

nameColumn industry

parentColumn

nullParentValue

ordinalColumn

type String

internalType

uniqueMembers

levelType Regular

hideMemberIf Never

approxRowCount

caption

captionColumn

formatter

visible

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Level for 'Empresa' Hierarchy

Attribute	Value
name	Persona
description	
table	dim_company
column	persona
nameColumn	persona
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

ofertas\_job

- Table: fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
  - Table: dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - Table: dim\_job
- Date
  - Data
    - Ano
    - Trimestre

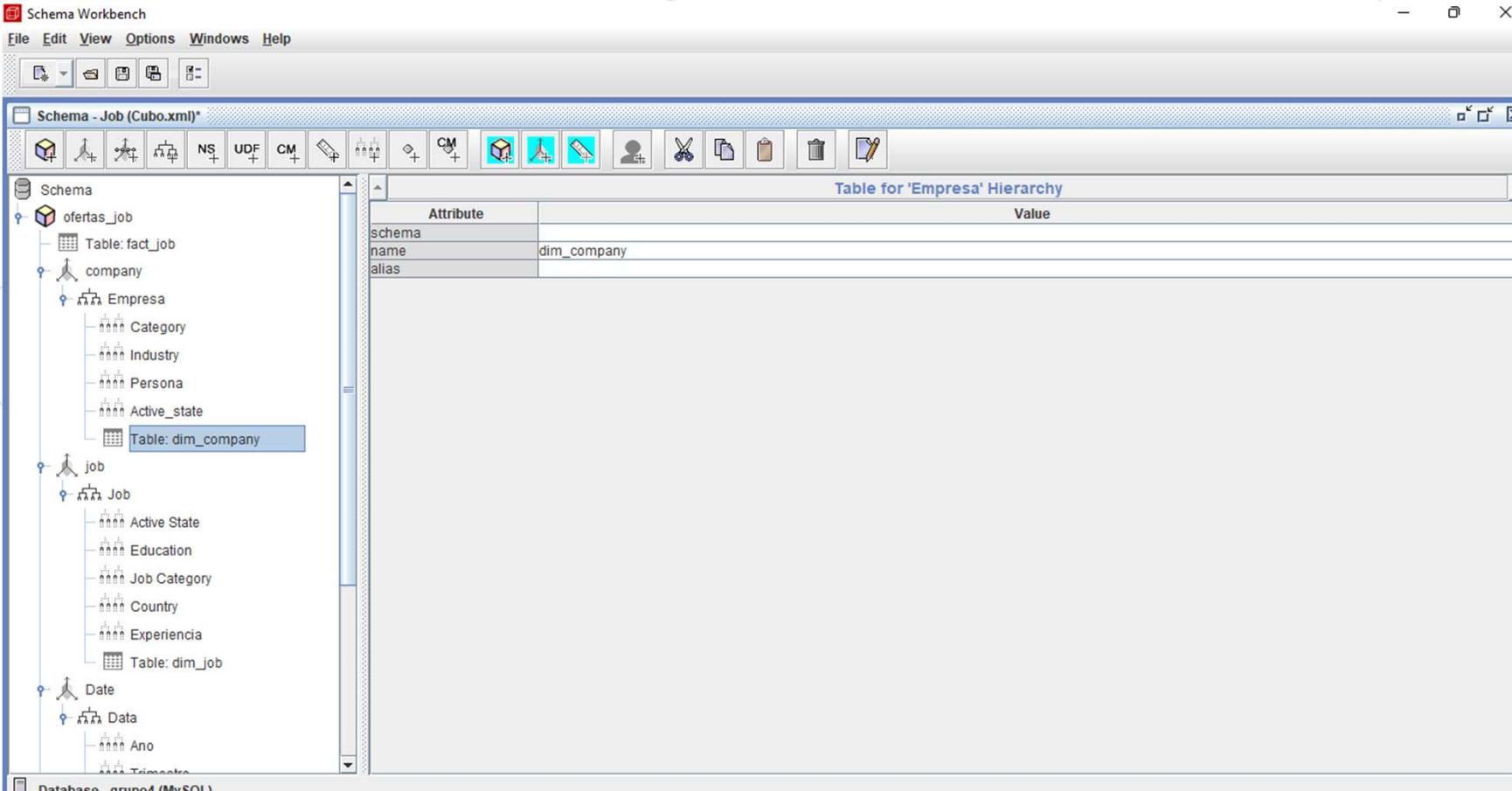
Database - ormu04 (MySQL)

Schema - Job (Cubo.xml)\*

Attribute Value

name	Persona
description	dim_company
table	dim_company
column	persona
nameColumn	persona
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

# Cubo



The screenshot shows the Oracle Schema Workbench interface. The title bar reads "Schema Workbench" and the window title is "Schema - Job (Cubo.xml)". The menu bar includes File, Edit, View, Options, Windows, and Help. The toolbar contains various icons for schema management. The left pane displays a hierarchical schema structure:

- Schema
  - ofertas\_job
    - Table: fact\_job
  - company
    - Empresa
      - Category
      - Industry
      - Persona
      - Active\_state
    - Table: dim\_company
  - job
    - Job
      - Active State
      - Education
      - Job Category
      - Country
      - Experiencia
    - Table: dim\_job
  - Date
    - Data
      - Ano
      - Trimestre

The right pane shows a table titled "Table for 'Empresa' Hierarchy" with the following data:

Attribute	Value
schema	
name	dim_company
alias	

At the bottom, the database connection is listed as "Database - grupo4 (MySQL)".

# Cubo

The screenshot shows the Schema Workbench interface for defining a dimension in a cube. The main window title is "Schema - Job (Cubo.xml)\*". The left pane displays the schema structure, including a dimension named "ofertas\_job" which contains tables like "fact\_job", "dim\_company", and "dim\_job". The right pane shows the configuration for the "job" dimension, titled "Dimension for 'ofertas\_job' Cube". The configuration table includes the following attributes:

Attribute	Value
name	job
description	
foreignKey	ID_job
type	StandardDimension
usagePrefix	
caption	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Hierarchy for 'job' Dimension

Attribute	Value
name	Job
description	
hasAll	<input checked="" type="checkbox"/>
allMemberName	
allMemberCaption	
allLevelName	
defaultMember	
memberReaderClass	
primaryKeyTable	
primaryKey	ID_job
caption	
visible	<input checked="" type="checkbox"/>

Schema

- ofertas\_job
  - fact\_job
  - company
    - Empresa
      - Category
      - Industry
      - Persona
      - Active\_state
  - dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - dim\_job
- Date
  - Data
    - Ano
      - Trimestre

Database - grupo4 (MySQL)

The screenshot shows the Schema Workbench application window. The title bar reads "Schema - Job (Cubo.xml)\*". The menu bar includes File, Edit, View, Options, Windows, and Help. The toolbar contains various icons for schema management. The left pane displays a hierarchical tree of database objects: "Schema", "ofertas\_job" (containing "fact\_job", "company" (with "Empresa" having "Category", "Industry", "Persona", "Active\_state"), and "dim\_company"), "job" (with "Job" having "Active State", "Education", "Job Category", "Country", "Experiencia", and "dim\_job"), and "Date" (with "Data" having "Ano" and "Trimestre"). The right pane shows a table titled "Hierarchy for 'job' Dimension" with columns "Attribute" and "Value". The table lists attributes like name (Job), hasAll (checked), primaryKey (ID\_job), and visible (checked). The bottom status bar indicates "Database - grupo4 (MySQL)".

Schema - Job (Cubo.xml)\*

Attribute Value

name	Active State
description	
table	dim_job
column	active_state
nameColumn	active_state
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
CaptionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

Database - arup04 (MySQL)

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

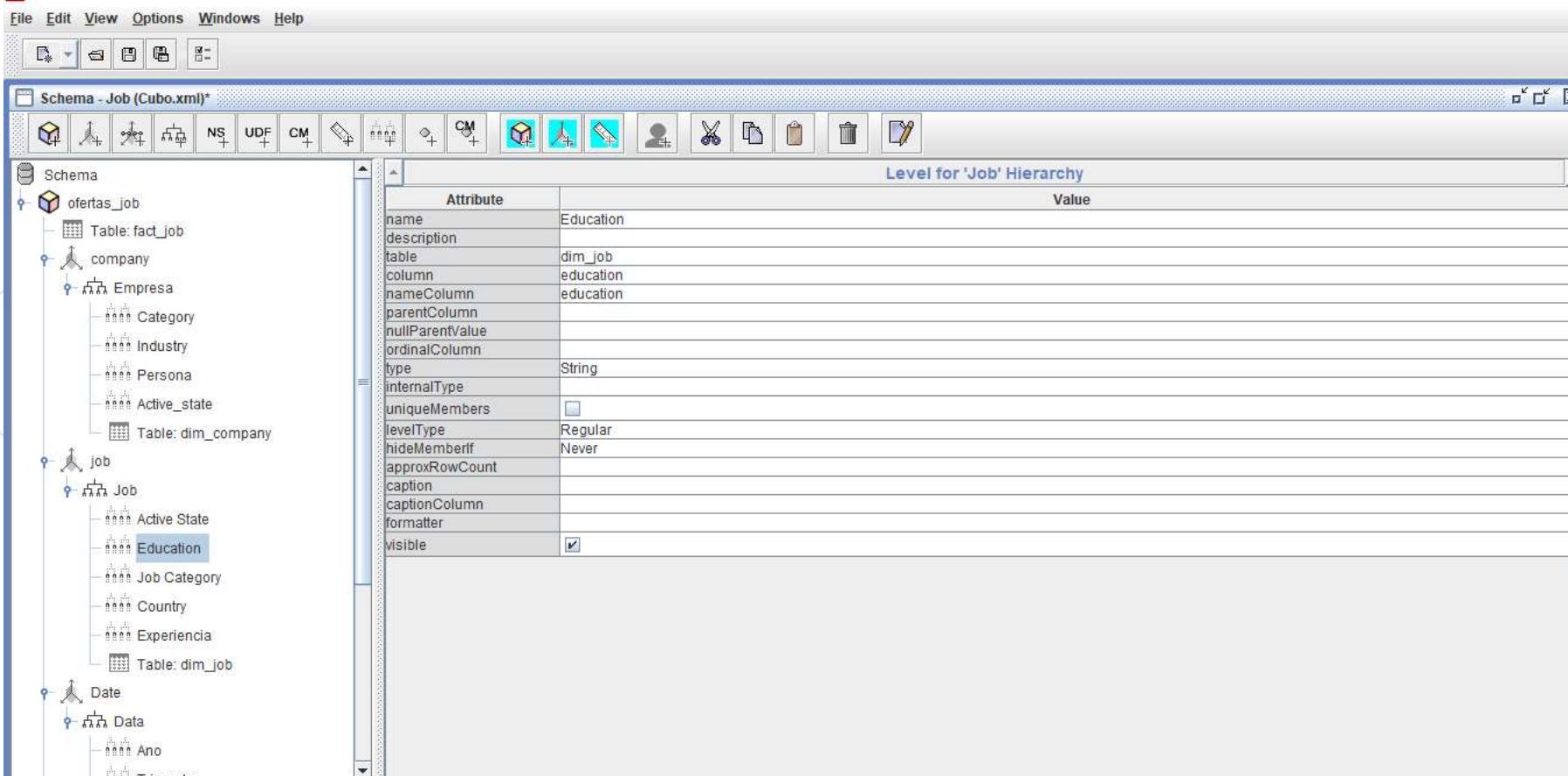
Level for 'Job' Hierarchy

Attribute	Value
name	Education
description	dim_job
table	education
column	education
nameColumn	education
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

ofertas\_job

- fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
  - dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - dim\_job
- Date
  - Data
    - Ano
    - Trimestre

Database - grupo4 (MySQL)



# Cubo

The screenshot shows the Oracle Database Schema Workbench interface. The left pane displays the schema structure under 'Schema - Job (Cubo.xml)\*'. The 'ofertas\_job' schema contains several objects:

- fact\_job**: A fact table.
- company**: A dimension table.
- Empresa**: A dimension table with levels: Category, Industry, Persona, and Active\_state.
- dim\_company**: A dimension table.
- job**: A dimension table with levels: Job, Active State, Education, Job Category, Country, Experiencia, and dim\_job.
- Date**: A dimension table with levels: Data, Ano, and Trimestre.

The right pane shows the properties for the 'Job Category' level of the 'Job' hierarchy. The table is titled 'Level for 'Job' Hierarchy'.

Attribute	Value
name	Job Category
description	
table	dim_job
column	job_category
nameColumn	job_category
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

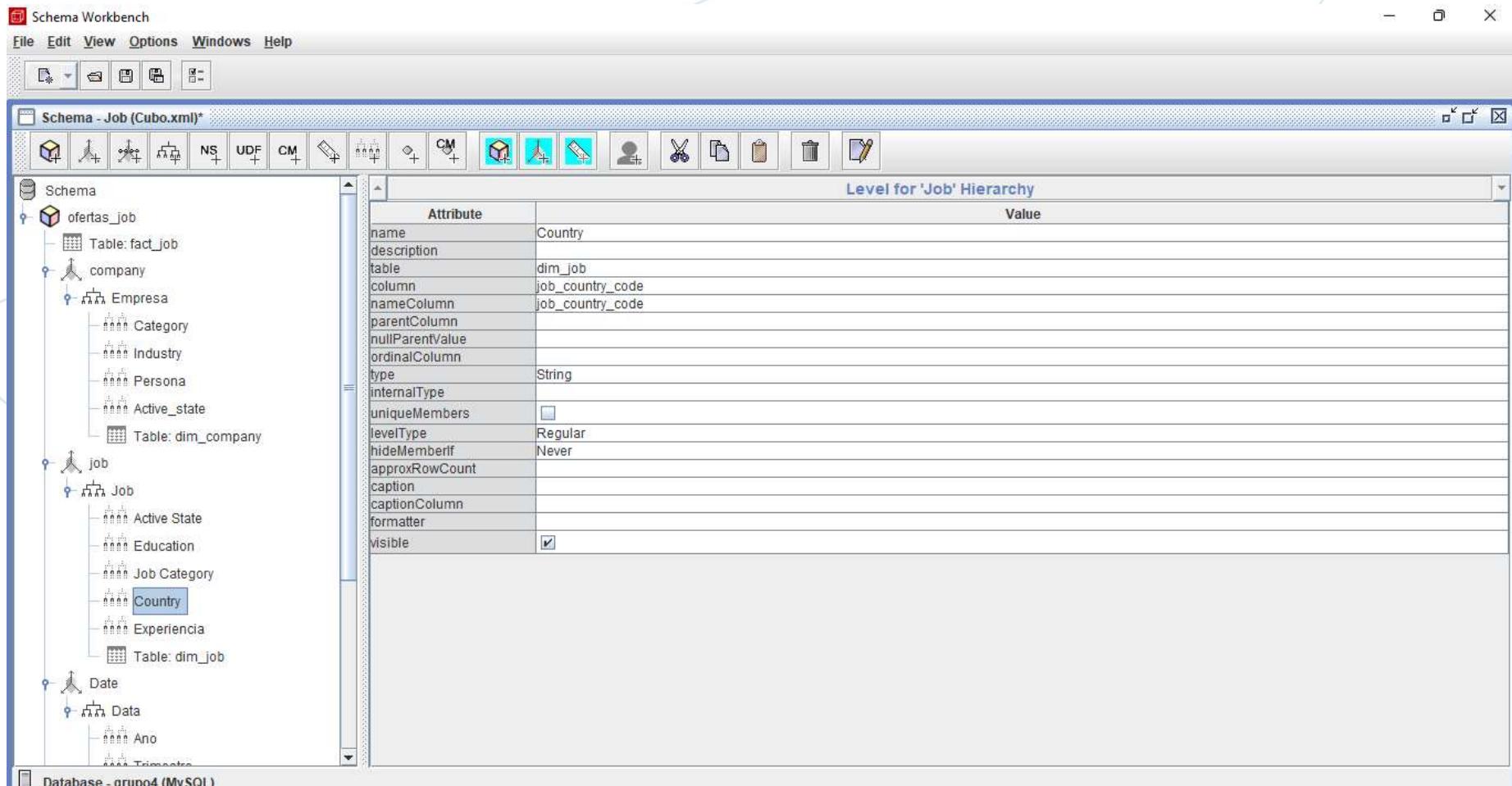
Level for 'Job' Hierarchy

Attribute	Value
name	Country
description	
table	dim_job
column	job_country_code
nameColumn	job_country_code
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
Visible	<input checked="" type="checkbox"/>

Schema

- ofertas\_job
  - Table: fact\_job
- company
  - Empresa
    - Category
    - Industry
    - Persona
    - Active\_state
  - Table: dim\_company
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
      - Experiencia
  - Table: dim\_job
- Date
  - Data
    - Ano
    - Trimestre

Database - arudo4 (MySQL)



Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

Level for 'Job' Hierarchy

Attribute	Value
name	Experiencia
description	
table	dim_job
column	experience_level_label
nameColumn	experience_level_label
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input checked="" type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia

Table: dim\_job

Table: dim\_date

Nr\_candidaturas

Nr\_visitas

Nr\_dias\_até\_engaged

Nr\_dias\_até\_hired

Nr\_hired

Nr\_engaged

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia**

Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Level for 'Job' Hierarchy

Attribute	Value
name	Experiencia
description	
table	dim_job
column	experience_level_label
nameColumn	experience_level_label
parentColumn	
nullParentValue	
ordinalColumn	
type	String
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Dimension for 'ofertas\_job' Cube

Attribute	Value
name	Date
description	
foreignKey	date_key
type	StandardDimension
usagePrefix	
caption	
visible	<input checked="" type="checkbox"/>

Table: dim\_company

- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia

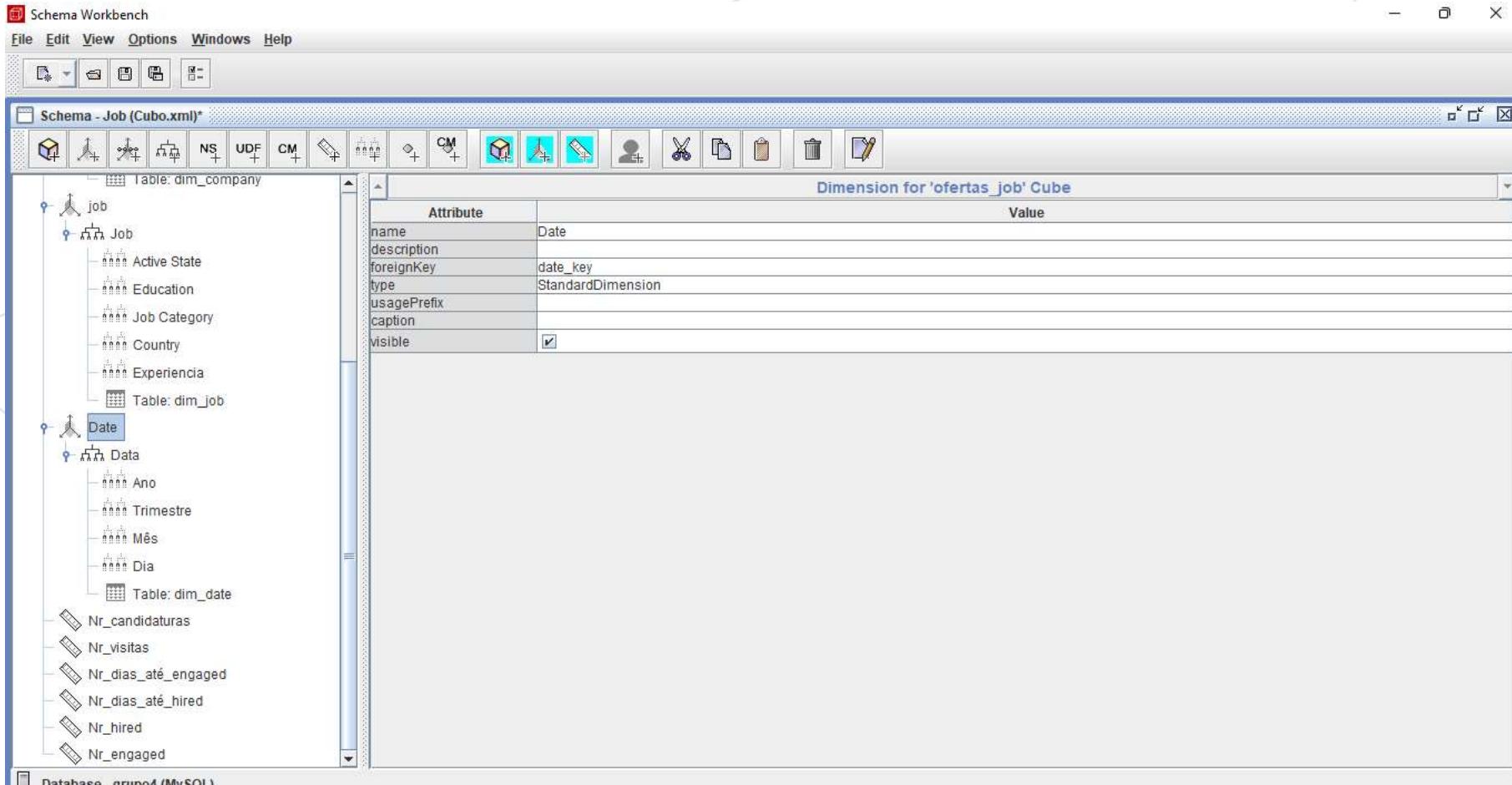
Table: dim\_job

- Date
  - Data
    - Ano
    - Trimestre
    - Mês
    - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - arujo4 (MySQL)



# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

Table: dim\_job

Date

Data

Ano

Trimestre

Mês

Dia

Table: dim\_date

Nr\_candidaturas

Nr\_visitas

Nr\_dias\_até\_engaged

Nr\_dias\_até\_hired

Nr\_hired

Nr\_engaged

Database - arudo4 (MySQL)

Hierarchy for 'Date' Dimension

Attribute	Value
name	Data
description	
hasAll	<input checked="" type="checkbox"/>
allMemberName	
allMemberCaption	
all_LevelName	
defaultMember	
memberReaderClass	
primaryKeyTable	
primaryKey	date_key
caption	
visible	<input checked="" type="checkbox"/>

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
- Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - grupo4 (MySQL)

Level for 'Data' Hierarchy	
Attribute	Value
name	Ano
description	
table	dim_date
column	year
nameColumn	year
parentColumn	
nullParentValue	
ordinalColumn	
type	Integer
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

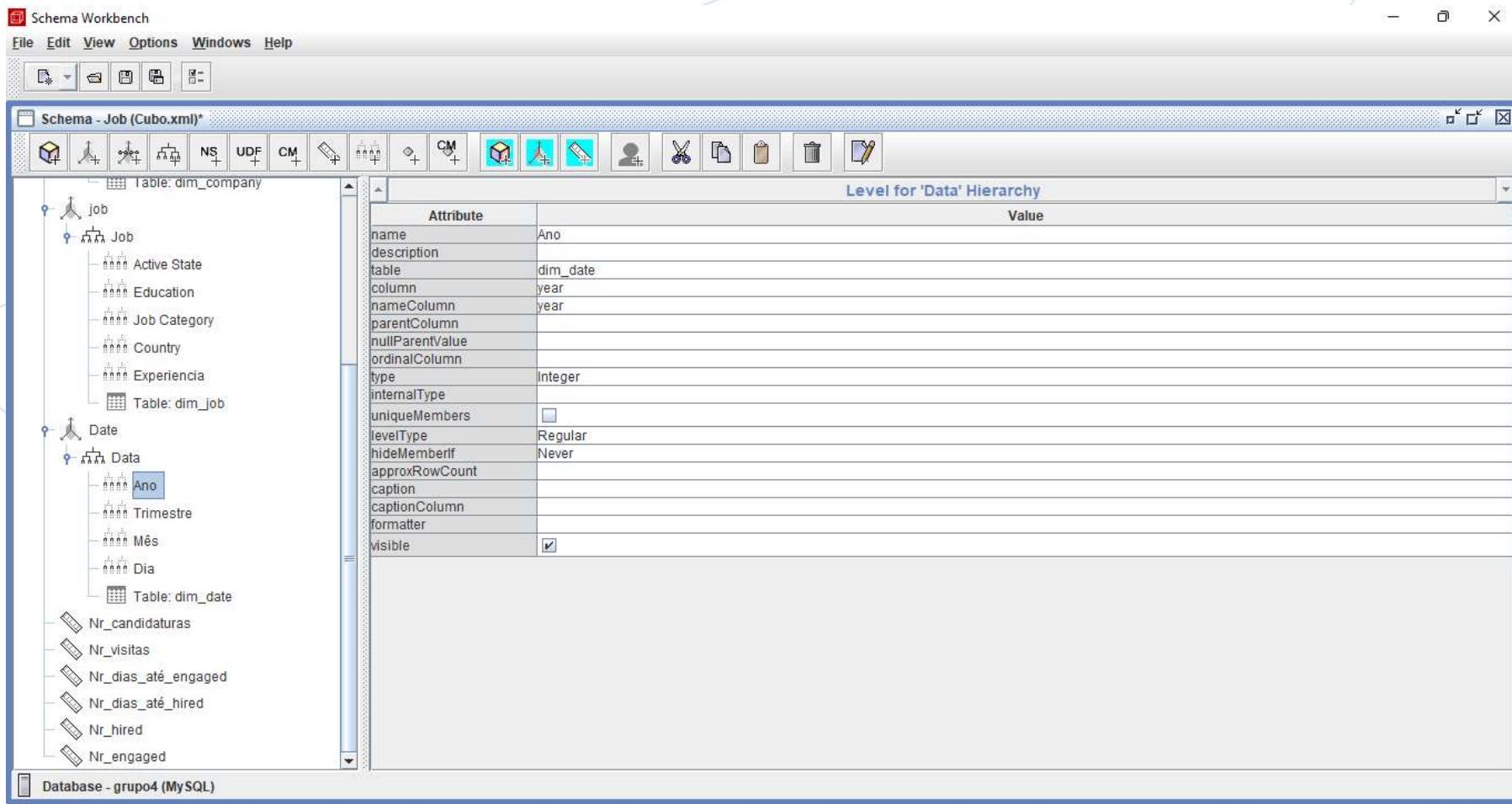
Attribute Value

name	Ano
description	
table	dim_date
column	year
nameColumn	year
parentColumn	
nullParentValue	
ordinalColumn	
type	Integer
internalType	
uniqueMembers	
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

Table: dim\_job

Table: dim\_date

Database - grupo4 (MySQL)



The screenshot shows the Oracle Database Schema Workbench application. The main window title is "Schema - Job (Cubo.xml)\*". On the left, there is a tree view of database objects: "job" (containing "Job", "Active State", "Education", "Job Category", "Country", "Experiencia", and "Table: dim\_job"); "Date" (containing "Data", which has "Ano", "Trimestre", "Mês", and "Dia"); and "dim\_date" (containing "Nr\_candidaturas", "Nr\_visitas", "Nr\_dias\_até\_engaged", "Nr\_dias\_até\_hired", "Nr\_hired", and "Nr\_engaged"). The "dim\_date" table is currently selected. On the right, a detailed configuration panel titled "Level for 'Data' Hierarchy" displays various attributes for the "Ano" dimension member. The "Value" column contains specific settings like "Ano" for name, "dim\_date" for table, "year" for column, and "Integer" for type. A checkbox for "visible" is checked.

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

Level for 'Data' Hierarchy

Attribute	Value
name	Mês
description	
table	dim_date
column	month
nameColumn	month
parentColumn	
nullParentValue	
ordinalColumn	
type	Integer
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia

Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
    - Mês
  - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - grupo4 (MySQL)

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

Attribute Value

name	Dia
description	
table	dim_date
column	day
nameColumn	day
parentColumn	
nullParentValue	
ordinalColumn	
type	Integer
internalType	
uniqueMembers	<input type="checkbox"/>
levelType	Regular
hideMemberIf	Never
approxRowCount	
caption	
captionColumn	
formatter	
visible	<input checked="" type="checkbox"/>

Table: dim\_job

Table: dim\_date

Database - orupro4 (MySQL)

The screenshot shows the Schema Workbench application window. On the left, there is a tree view of database objects under 'Schema - Job (Cubo.xml)\*'. The 'dim\_date' table is expanded, showing dimensions like 'Ano', 'Trimestre', 'Mês', and 'Dia'. The 'Dia' dimension is selected and highlighted with a blue border. On the right, a detailed configuration panel titled 'Level for 'Data' Hierarchy' displays various properties for the 'Dia' dimension, such as name, description, table, column, and type. The 'type' is set to 'Integer'. The 'visible' checkbox is checked, indicating it will be displayed in reports.

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia
- Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia
- Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - orupdo4 (MySQL)

17 de setembro de 2022

Table for 'Data' Hierarchy

Attribute	Value
schema	dim_date
name	dim_date
alias	

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Measure for 'ofertas\_job' Cube

Attribute	Value
name	Nr_candidaturas
description	
aggregator	sum
column	N_app
formatString	
datatype	integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

Table: dim\_company

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia

Table: dim\_job

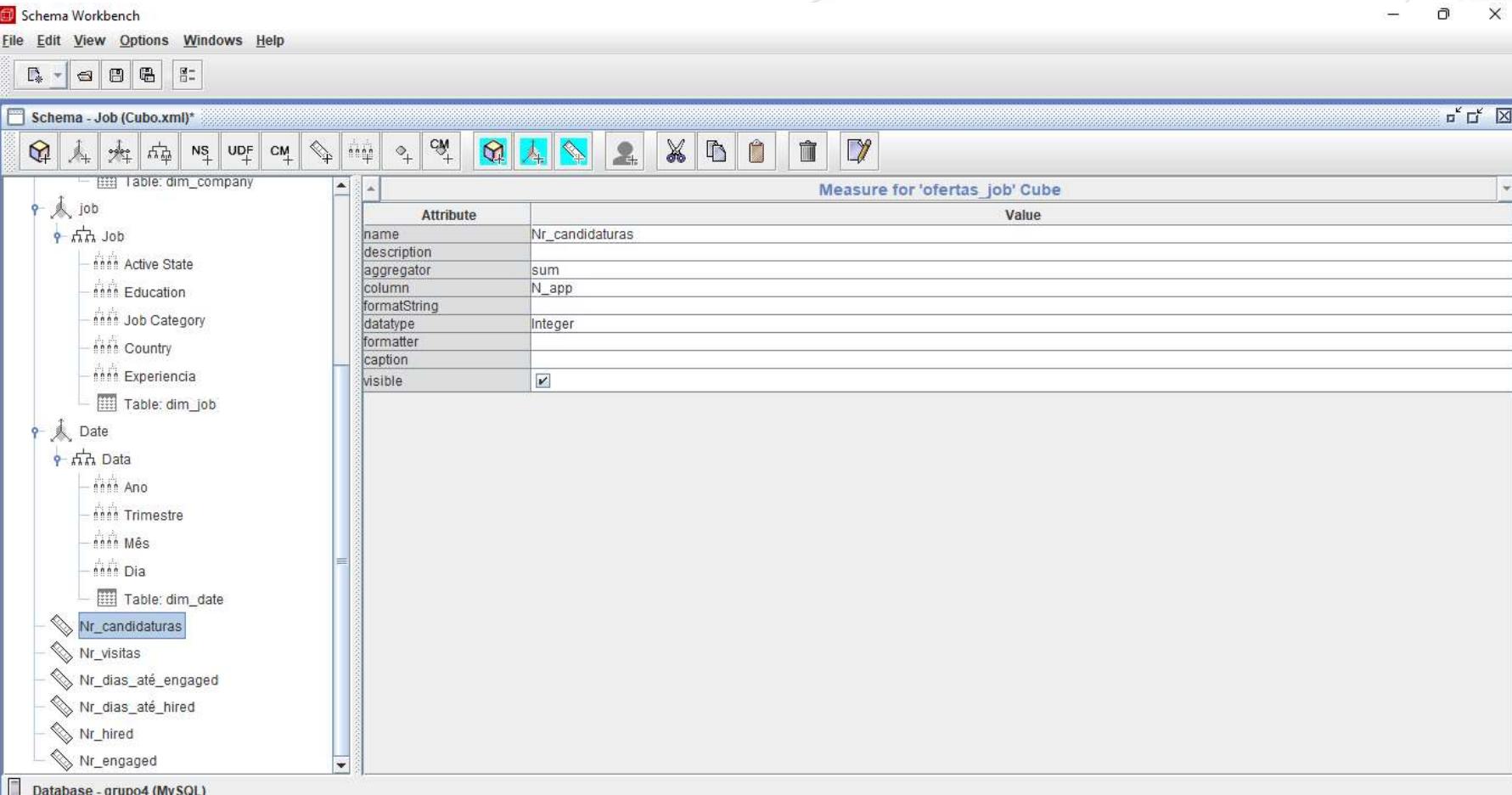
Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - druplo4 (MySQL)



# Cubo

The screenshot shows the Schema Workbench interface for creating a cube named 'ofertas\_job'. The left pane displays the schema hierarchy with tables like dim\_company, dim\_job, and dim\_date, and dimensions like job, Date, and Ano. The right pane shows the configuration details for the 'Nr\_visitas' measure, which is part of the 'ofertas\_job' cube. The measure properties are listed in a table:

Attribute	Value
name	Nr_visitas
description	
aggregator	sum
column	total_visits
formatString	
datatype	Integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Measure for 'ofertas\_job' Cube

Attribute	Value
name	Nr_dias_até_engaged
description	
aggregator	avg
column	days_to_engaged
formatString	
datatype	integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

Table: dim\_company

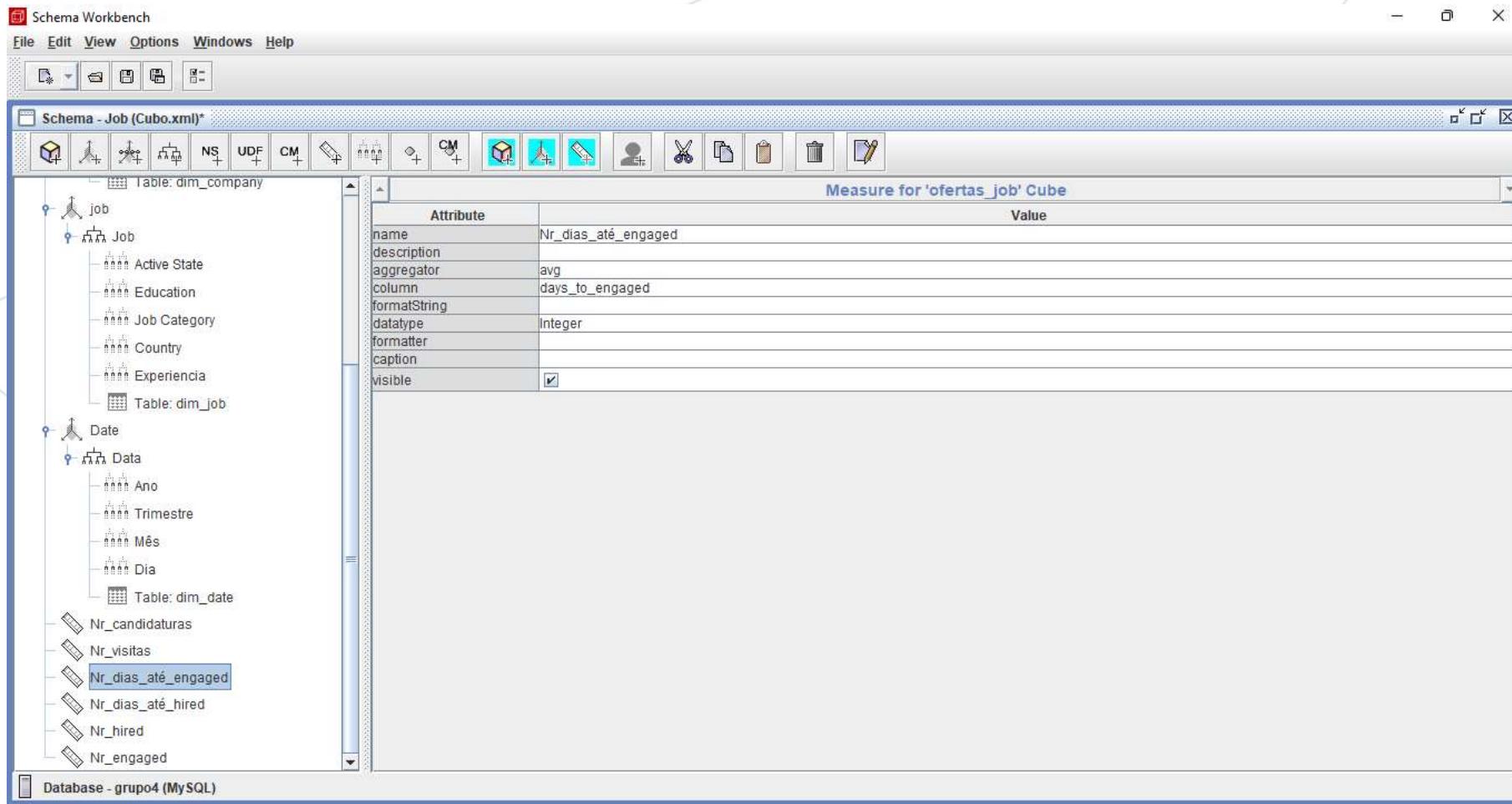
- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
  - Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia
- Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged**
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - grupo4 (MySQL)



# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

job

- Job
  - Active State
  - Education
  - Job Category
  - Country
  - Experiencia

Table: dim\_job

Date

- Data
  - Ano
  - Trimestre
  - Mês
  - Dia

Table: dim\_date

- Nr\_candidaturas
- Nr\_visitas
- Nr\_dias\_até\_engaged**
- Nr\_dias\_até\_hired
- Nr\_hired
- Nr\_engaged

Database - orupro4 (MySQL)

Measure for 'ofertas\_job' Cube

Attribute	Value
name	Nr_dias_até_engaged
description	
aggregator	avg
column	days_to_engaged
formatString	
datatype	Integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Table: dim\_company

Attribute Value

name	Nr_hired
description	
aggregator	sum
column	n_hired
formatString	
datatype	Integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

Measure for 'ofertas\_job' Cube

Table: dim\_job

Date

Data

Ano

Trimestre

Mês

Dia

Table: dim\_date

Nr\_candidaturas

Nr\_visitas

Nr\_dias\_até\_engaged

Nr\_dias\_até\_hired

**Nr\_hired**

Nr\_engaged

Database - orudo4 (MySQL)

# Cubo

Schema Workbench

File Edit View Options Windows Help

Schema - Job (Cubo.xml)\*

Measure for 'ofertas job' Cube

Attribute	Value
name	Nr_engaged
description	
aggregator	sum
column	n_engaged
formatString	
datatype	Integer
formatter	
caption	
visible	<input checked="" type="checkbox"/>

Table: dim\_company

- job
  - Job
    - Active State
    - Education
    - Job Category
    - Country
    - Experiencia
- Date
  - Data
    - Ano
    - Trimestre
    - Mês
    - Dia

Table: dim\_job

Table: dim\_date

Nr\_candidaturas

Nr\_visitas

Nr\_dias\_até\_engaged

Nr\_dias\_até\_hired

Nr\_hired

Nr\_engaged

Database - grupo4 (MySQL)

The screenshot shows the Schema Workbench interface for configuring a cube. On the left, there's a tree view of dimensions and facts: 'job' dimension has 'Job' with 'Active State', 'Education', 'Job Category', 'Country', and 'Experiencia'; 'Date' dimension has 'Data' with 'Ano', 'Trimestre', 'Mês', and 'Dia'. Fact tables include 'dim\_company' (under 'job') and 'dim\_date' (under 'Date'). On the right, a detailed configuration window for a measure named 'Nr\_engaged' is open, showing its properties: aggregator is 'sum', column is 'n\_engaged', datatype is 'Integer', and it is visible (checkbox checked). Below the configuration window, a list of measures is shown: 'Nr\_candidaturas', 'Nr\_visitas', 'Nr\_dias\_até\_engaged', 'Nr\_dias\_até\_hired', 'Nr\_hired', and 'Nr\_engaged'. At the bottom, it says 'Database - grupo4 (MySQL)'.



## 5. MDX Query

# MDX Query

The screenshot shows the Schema Workbench application interface. On the left, the 'Schema' tree view displays the database schema with nodes like 'ofertas\_job', 'company', 'job', 'Date', and 'Database - grupo4 (MySQL)'. In the center, a detailed view of the 'Ano' attribute of the 'dim\_date' table is shown in a table format. To the right, the 'MDX Query' editor window is open, connected to 'Cubo.xml'. The query editor contains the following MDX code:

```
SELECT {[job].members} ON COLUMNS,  
       {[company].category.members} ON ROWS  
FROM [ofertas_job]  
WHERE {[Measures].[Nr_candidaturas]}
```

The 'Execute' button is visible at the bottom of the query editor.



## 5. Dashboard

## Status de Ofertas

Mês de Publicação

Janeiro de 2021

Março de 2022

### Ofertas por Mês



Temos publicações em 21 Países



### Ofertas vs Hired (Industria)



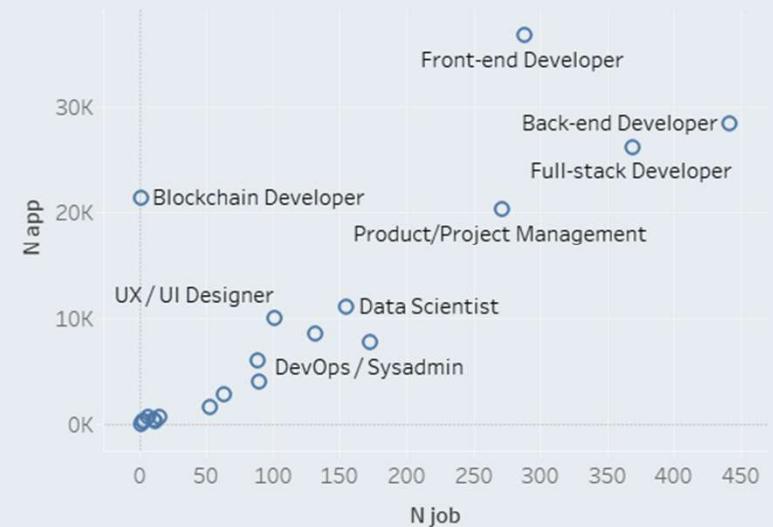
### Persona



Dias até ...

Persona	Engag..	Hired
Corporate	52	105
Scale-up	33	85
Boutique	33	81
SME	25	61
Not classified	3	

### Candidaturas por oferta (Cat. Job)



# Status de Ofertas

Filtro que afeta todas as visualizações

Landing.Jobs

Mês de Publicação

Janeiro de 2021

Março de 2022

## Ofertas por Mês



O numero de ofertas publicadas por mês tem vindo a diminuir

## Ofertas vs Hired (Industria)



Numero de ofertas publicadas por persona da empresa, e numero médio de dias até um job chegar a engaged e a hired

## Persona



## Dias até ...

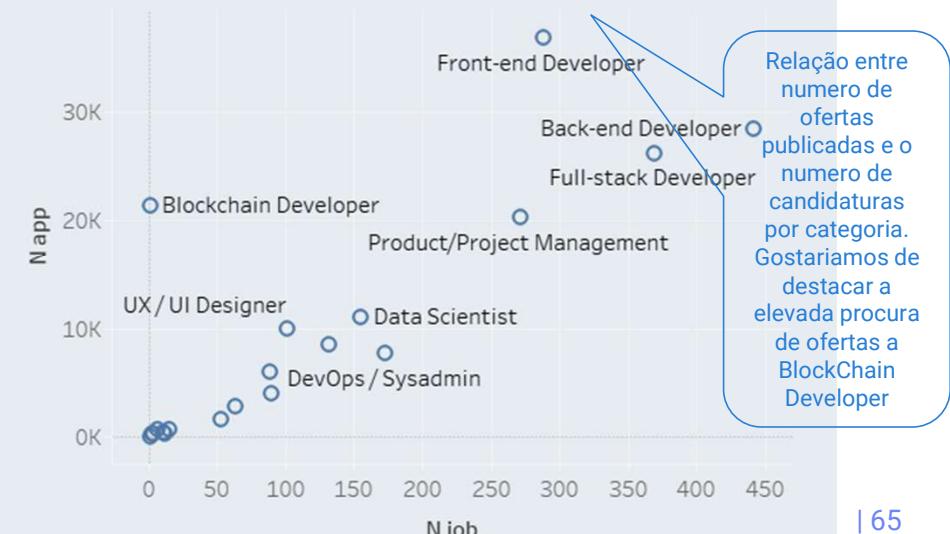
Persona	Engag.	Hired
Corporate	52	105
Scale-up	33	85
Boutique	33	81
SME	25	61
Not classified	3	

## Temos publicações em 21 Países



Podemos perceber para que países a landing jobs disponibiliza ofertas de emprego.  
Pode ser utilizado como filtro que afeta todas as outras visualizações

## Candidaturas por oferta (Cat. Job)



Relação entre numero de ofertas publicadas e o numero de candidaturas por categoria. Gostaríamos de destacar a elevada procura de ofertas a BlockChain Developer



Obrigada

# Make change happen



Associação Porto Business School (PBS) - U. Porto