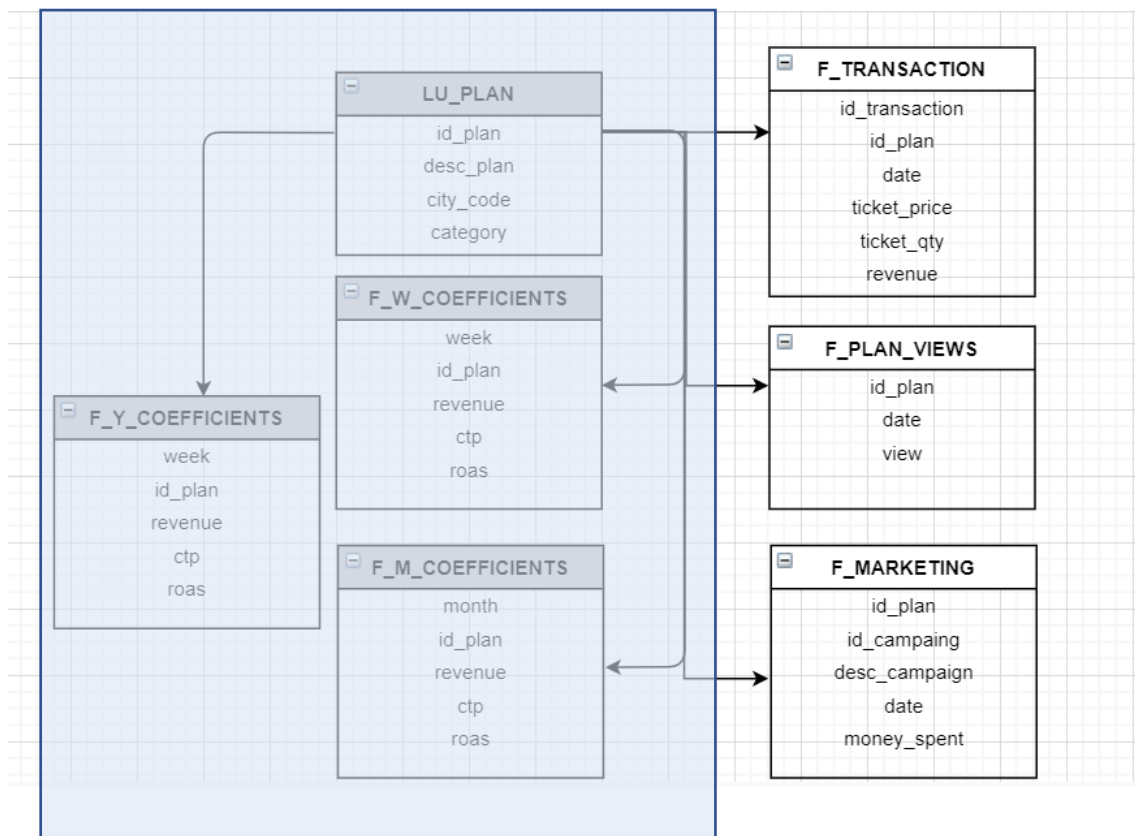


## Exercise 1: Dimensional Model



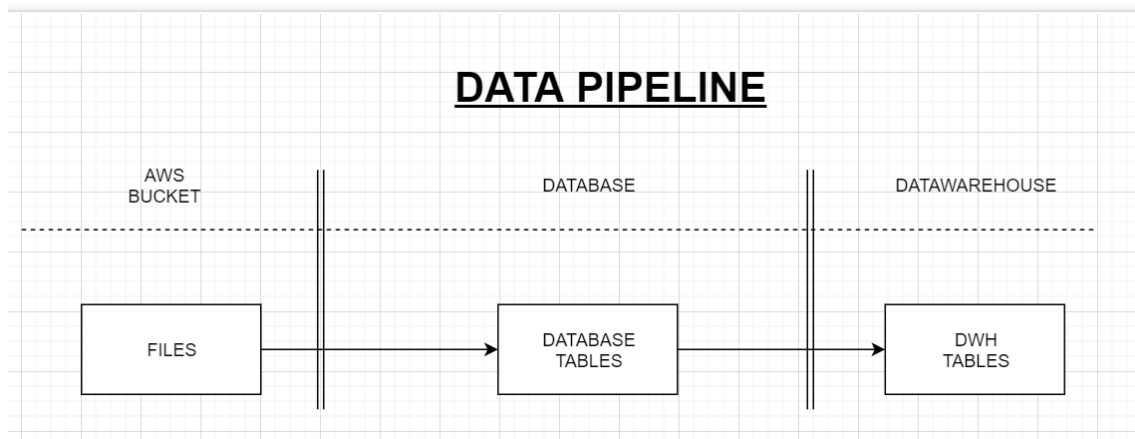
Given the provided information we have opted for a Star Schema. We consider a look-up table for the plan, and we consider the other tables fact\_tables. We take several decisions.

- No look up tables for attributes like category, marketing or city. In these cases, as not a lot of additional information is provided, we prefer redundancy in the fact tables. As mainly have ids for these objects, in case of a look up needed, it would be easily added.
- About the date, we maintain the timestamp format in the original fact tables because in a future, it could be needed the time to make dossiers by time of the day. With microstrategy, we don't have problems using the timestamp as a normal date attribute using the objects available in the tool.
- Monthly, Weekly and Yearly tables because we are working with coefficients. For sake of the required calculations is better to do the coefficients in the database.

As the question is for the optimal model, it could be interpreted that we are going to model just the needed part for answering the questions. In that case, we should only consider in the model the tables LU\_PLAN, F\_W\_COEFFICIENTS, F\_M\_COEFFICIENTS and F\_Y\_COEFFICIENTS. If we consider optimal in terms of scalability, then all the tables should be added to the DWH, because we would be able to answer more questions.

In this case, we will consider optimal the model with just the look up table for plans and the three facts tables.

## Exercise 2: Pipeline



We have a very simple pipeline.

### **DATABASE INGESTION**

First, we get the files from the AWS bucket to the database tables. This is a normal ingestion of files. Depending of the type of generated files we can overwrite or update the tables of the database.

This could be made with a script in Python or with any normal ingestion tool. During the ingestion we could make changes like extracting the plan\_id from the campaign\_name.

In this case we will have four tables.

#### tmp\_test\_micro\_transactions

- id
- plan\_id
- purchase\_date
- ticket\_price
- ticket\_qty

#### tmp\_test\_micro\_plans

- id
- description
- city\_code
- category

#### tmp\_test\_micro\_plan\_views

- plan\_id
- date

#### tmp\_test\_micro\_marketing\_spend

- campaign\_id
- campaign\_name
- date
- marketing\_spend

- plan\_id

## DATAWAREHOUSE

From the database tables we load the datawarehouse. If we choose the option of only the needed tables we would update four tables in the datawarehouse. If we try the more complete model, we would update the seven tables.

These could be made with powercenter or with other ETL tool. We would have the following tables. In green there's the origin of the field.

When calculating the fact (coefficients) tables we should make an outer join with the available weeks in order to make it easier to calculate the coefficients.

### LU\_PLAN

- id\_plan (tmt\_test\_micro\_plans.id)
- desc\_plan (tmt\_test\_micro\_plans.description)
- city\_code (tmt\_test\_micro\_plans.city\_code)
- category (tmt\_test\_micro\_plans.category)

### F\_W\_COEFFICIENTS

- id\_plan (tmt\_test\_micro\_plans.id)
- week (extracted from date)
- revenue (ticket\_price \* ticket\_qty)
- ctp (n° of transactions / n° of plan views)
- roas (revenue / marketing spen)

### F\_M\_COEFFICIENTS

- id\_plan (tmt\_test\_micro\_plans.id)
- month (extracted from date)
- revenue (ticket\_price \* ticket\_qty)
- ctp (n° of transactions / n° of plan views)
- roas (revenue / marketing spen)

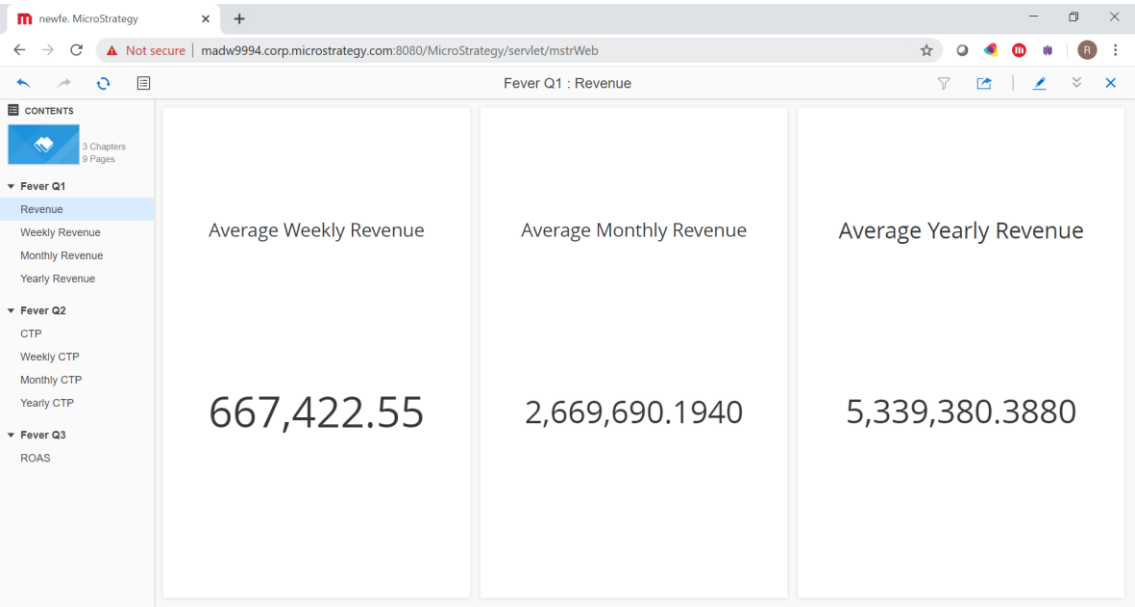
### F\_Y\_COEFFICIENTS

- id\_plan (tmt\_test\_micro\_plans.id)
- year (extracted from date)
- revenue (ticket\_price \* ticket\_qty)
- ctp (n° of transactions / n° of plan views)
- roas (revenue / marketing spen)

# Exercise 4: Answers

As I wasn't able to build the pipeline, this microstrategy dossiers are made from datasets loaded from the provided csv files. I built some datasets with the same structure as the tables I mention in the exercise 3 and I worked with them.

## Question 1:



## Question 2:

The screenshot shows a MicroStrategy dashboard titled "Fever Q2 : CTP". The dashboard displays three tables: Weekly CTP, Monthly CTP, and Yearly CTP. Each table has columns for Plan, description, Average CTP, and Rank.

Weekly CTP			
Plan	description	Average CTP	Rank
605	Car Rope	102.08%	1
392	Balloon Festival	100.83%	2
938	Roof Cave	100.00%	3
522	Fungus Bed	97.92%	4
58	Drum Bowl	96.88%	5
263	Book Foot	91.67%	6
128	Printer Hose	90.63%	7
401	Alphabet Onion	87.50%	8
349	Kaleidoscope Shoes	84.38%	9
12	Gemstone Bowl	81.25%	10
32	Mist Rope	81.25%	10
808	Box Kaleidoscope	81.25%	10
893	Tiger Circus	81.25%	10

Monthly CTP			
Plan	description	Average CTP	Rank
856	Spectrum Sandpaper	300.00%	1
842	Passport Milk	212.50%	2
358	Perfume Hose	193.75%	3
9	Spice Bowl	175.00%	4
893	Tiger Circus	175.00%	4
643	Rock Surveyor	164.29%	6
780	Saddle Elephant	150.00%	7
605	Car Rope	137.50%	8
916	Mosquito Air	133.33%	9
522	Fungus Bed	120.83%	10

Yearly CTP				
Plan	description	Rank (Average CTP) 1	Average Ctp	Rank
842	Passport Milk	2	183.33%	1
856	Spectrum Sandpaper	1	166.67%	2
742	Carpet Sunglasses	430	150.00%	3
893	Tiger Circus	4	112.50%	4
358	Perfume Hose	3	111.11%	5
934	Triangle Record	13	111.11%	5
605	Car Rope	8	109.09%	7
9	Spice Bowl	4	100.00%	8
304	Baby Leg	26	100.00%	8
522	Fungus Bed	10	100.00%	8
725	Signature Chocolates	30	100.00%	8
726	Flower Record	26	100.00%	8
916	Mosquito Air	9	100.00%	8

Question 3:

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Fever Q3 : ROAS

CONTENTS

3 Chapters  
9 Pages

▼ Fever Q1

Revenue

Weekly Revenue

Monthly Revenue

Yearly Revenue

▼ Fever Q2

CTP

Weekly CTP

Monthly CTP

Yearly CTP

▼ Fever Q3

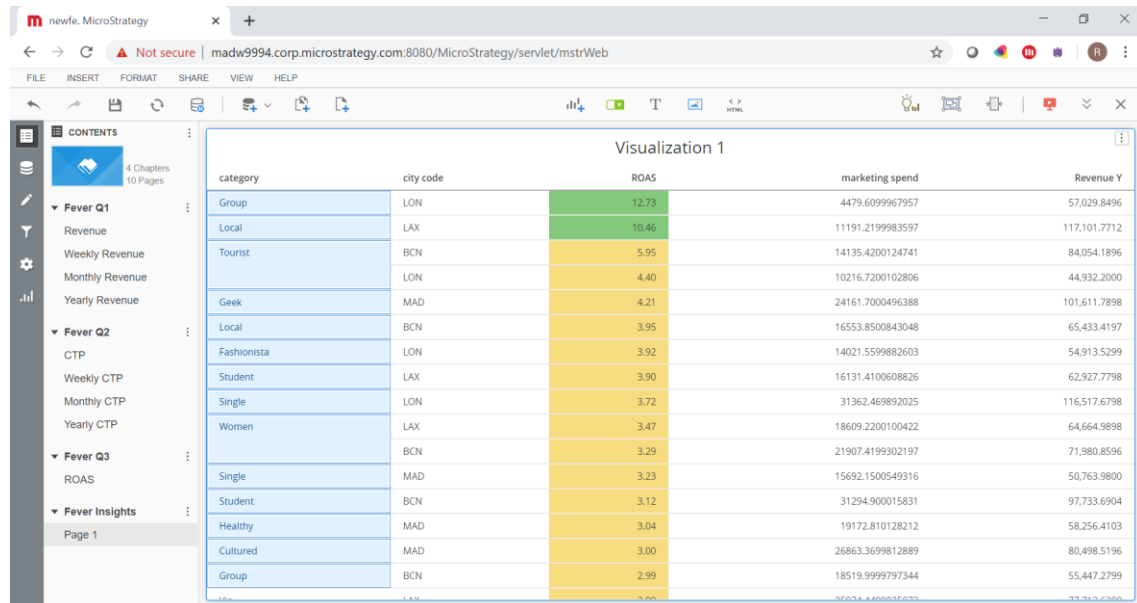
ROAS

ROAS

city code	W Roas	M Roas	Y Roas
BCN	2.1955	2.1839	2.1945
LAX	2.2842	2.2577	2.2684
LON	1.9837	1.9763	1.9775
MAD	2.1262	2.0679	2.0952

## Exercise 4: Answers

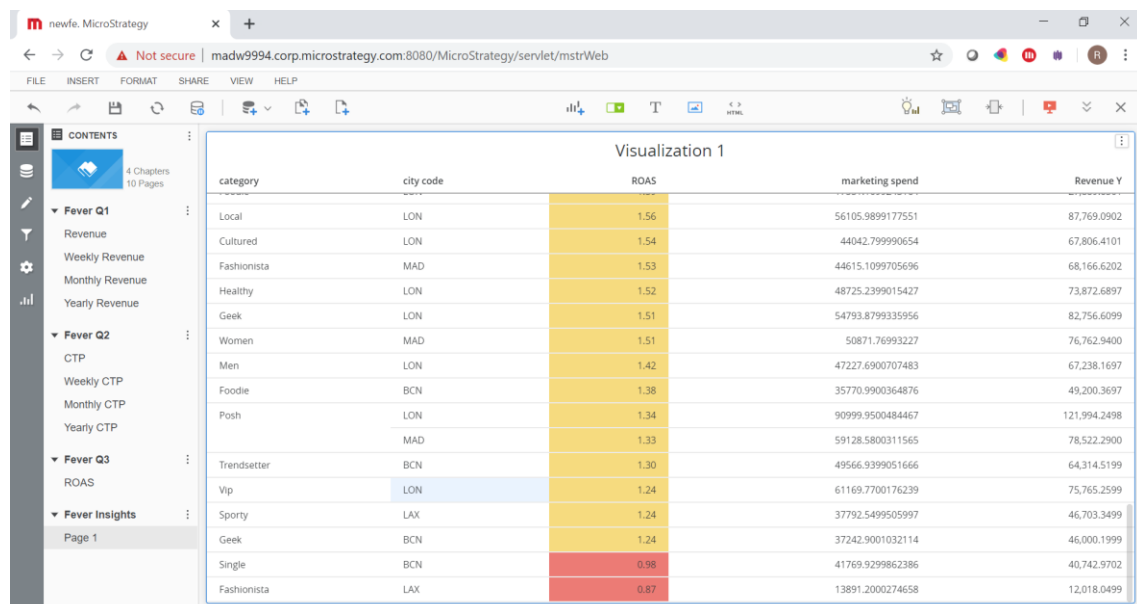
It's more profitable invest in marketing for activities of group in London or local in Los Angeles.



The screenshot shows the MicroStrategy web interface. The left sidebar contains a 'CONTENTS' menu with sections for 'Fever Q1', 'Fever Q2', 'Fever Q3', and 'Fever Insights'. The main area displays 'Visualization 1' as a table with 5 columns: category, city code, ROAS, marketing spend, and Revenue Y. The table lists various categories like Group, Local, Tourist, Geek, Fashionista, Student, Single, and Women across different city codes (LON, LAX, BCN, MAD). ROAS values are color-coded: green for high (12.73, 10.46), yellow for medium (5.95 to 3.29), and red for low (3.04 to 2.99).

category	city code	ROAS	marketing spend	Revenue Y
Group	LON	12.73	4479.6099967957	57,029.8496
Local	LAX	10.46	11191.2199983597	117,101.7712
Tourist	BCN	5.95	14135.4200124741	84,054.1896
	LON	4.40	10216.7200102806	44,932.2000
Geek	MAD	4.21	24161.7000496388	101,611.7898
Local	BCN	3.95	16553.8500843048	65,433.4197
Fashionista	LON	3.92	14021.5599882603	54,913.5299
Student	LAX	3.90	16131.4100608826	62,927.7798
Single	LON	3.72	31362.469892025	116,517.6798
Women	LAX	3.47	18609.2200100422	64,664.9898
	BCN	3.29	21907.4199302197	71,980.8596
Single	MAD	3.23	15692.1500549316	50,763.9800
Student	BCN	3.12	31294.900015831	97,733.6904
Healthy	MAD	3.04	19172.810128212	58,256.4103
Cultured	MAD	3.00	26863.3699812889	80,498.5196
Group	BCN	2.99	18519.9999797344	55,447.2799

It's not profitable to invest in marketing for activities of single in Barcelona or fashionista in Los Angeles.



The screenshot shows the MicroStrategy web interface with 'Visualization 1' displayed as a table. This table focuses on specific categories and cities. ROAS values are color-coded: yellow for medium (1.56 to 1.24) and red for low (0.98 to 0.87).

category	city code	ROAS	marketing spend	Revenue Y
Local	LON	1.56	56105.9899177551	87,769.0902
Cultured	LON	1.54	44042.799990654	67,806.4101
Fashionista	MAD	1.53	44615.1099705696	68,166.6202
Healthy	LON	1.52	48725.2399015427	73,872.6897
Geek	LON	1.51	54793.8799335956	82,756.6099
Women	MAD	1.51	50871.76993227	76,762.9400
Men	LON	1.42	47227.6900707483	67,238.1697
Foodie	BCN	1.38	35770.9900364876	49,200.3697
Posh	LON	1.34	90999.9500484467	121,994.2498
	MAD	1.33	59128.5800311565	78,522.2900
Trendsetter	BCN	1.30	49566.9399051666	64,314.5199
Vip	LON	1.24	61169.7700176239	75,765.2599
Sporty	LAX	1.24	37792.5499505997	46,703.3499
Geek	BCN	1.24	37242.9001032114	46,000.1999
Single	BCN	0.98	41769.9299862386	40,742.9702
Fashionista	LAX	0.87	13891.2000274658	12,018.0499