# ADMT 2018 - Project report

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# 1 Introduction

The domain of our fictional company is the one of furniture production and retail. The company is located in the province of Bolzano and has several showrooms in the area and one production center.

## 1.1 Business processes

### 1.1.1 CRM - Showroom visit

One CRM process is the collection of data about visitors at the different showrooms. A visitor can either be one who is just looking around without intention of buying anything (Seeleute), a future potential customer or an already existing customer. A visit can lead to an order.

Business questions:

- Which is the best running showroom (most visitors, most orders, etc.)
- Where are the customers from (with different granularity)
- Which department are the customers the most interested in
- Compare the number of visitors to the number of customers for a time period and/or showroom

### 1.1.2 Production

The company logs every step in the production process, especially duration, defects and machine failures.

Business questions:

- What is the average time to produce a particular product
- Which is the product with the highest/lowest error rate
- How much effort/time is spent per order
- Which orders/products generated the most machine failures

# 2 Conceptual Design

Table 1: Fact table

| Fact | Dimensions | Measures |
|---|---|---|
| Showroom visit | Date, Showroom, Visitor, Order, Detail, Department, Sales representative | Duration (AVG), Amount of people (SUM, AVG) |
| Production | Start Date, End date, Product, Production Stage, Machine, Quality control, Operator | Duration (AVG), Raw material cost (AVG) |

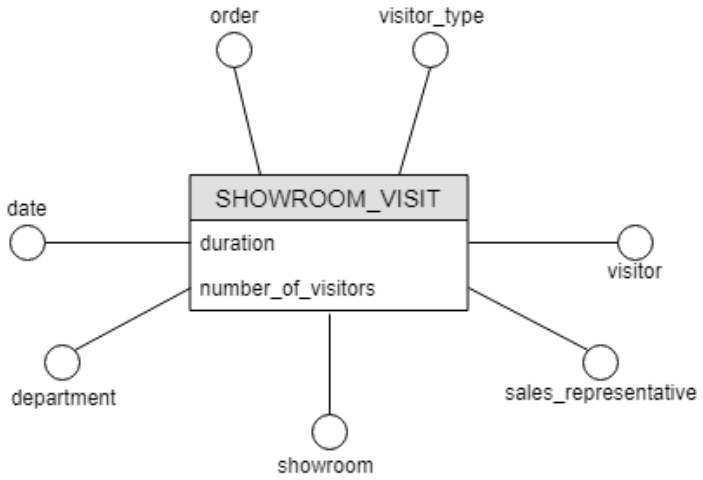


Figure 1: DFM of the showroom visit

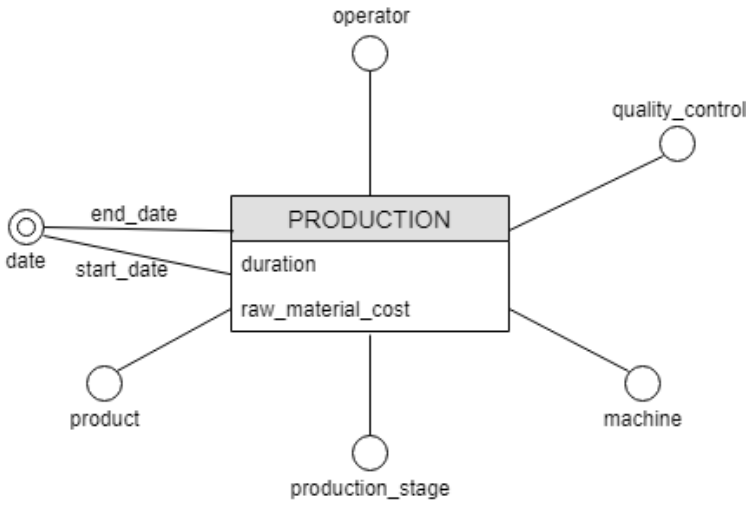


Figure 2: DFM of the production

## 2.1 Showroom visit

Table 2: Fact table

| Dimension | Attributes |
|---|---|
| Date | Day, Month, Year, Quartal, Week, Day of Week, Season, Holiday |
| Showroom | Name, City, District, Province, Region, Country, Manager, Address, Telephone, Size |
| Visitor | Name, City, District, Province, Region, Country, Language, Telephone, E-Mail, Type, Sector, Gender, Customer number |
| Order | Order Number, Total Price, Discount |
| Order Detail | Quantity, Quantity Type, Product, Unit price, Total price |
| epartment | Name |
| Sales representative | Name, City, District, Province, Region, Country, Language, Telephone, E-Mail, Gender |

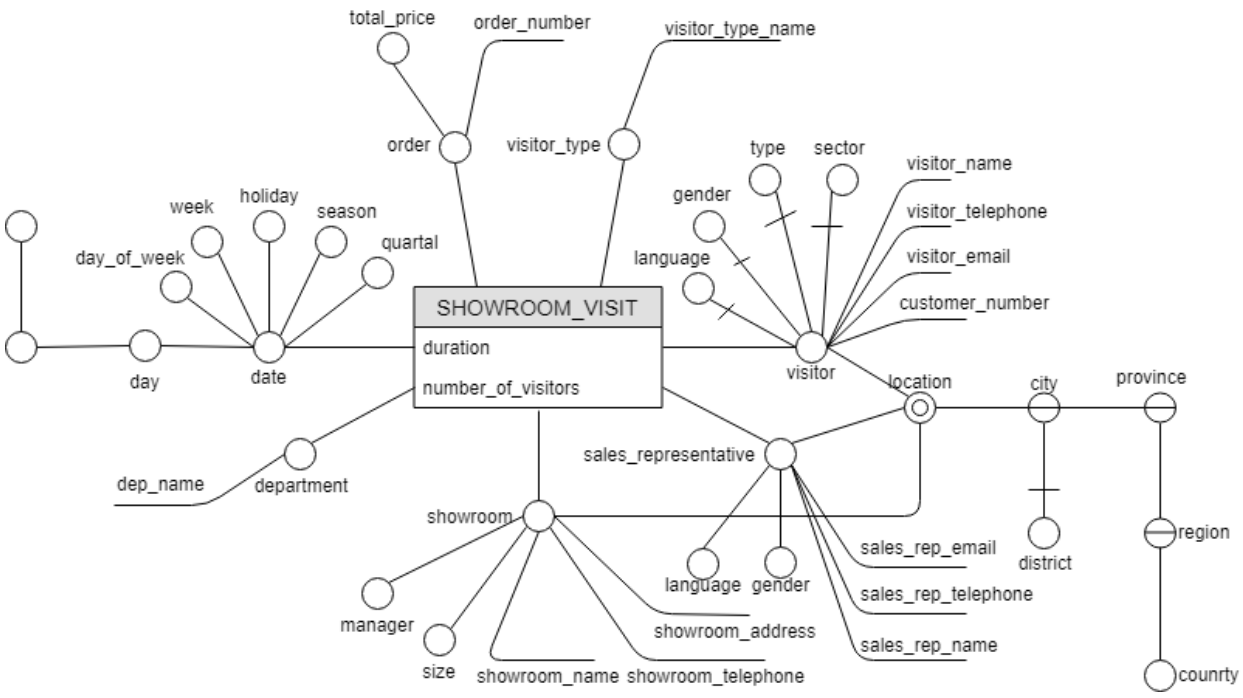


Figure 3: DFM of the showroom visit with attributes

## 2.2 Production

Table 3: Fact table

| Dimension | Attributes |
|---|---|
| Start date | Day, Month, Year, Week |
| End date | Day, Month, Year, Week |
| Product | Product number, Name, Department, Category |
| Production stage | Name |
| Machine | Name, Purchasing year, Vendor |
| uality control | Grade |
| Operator | Name |

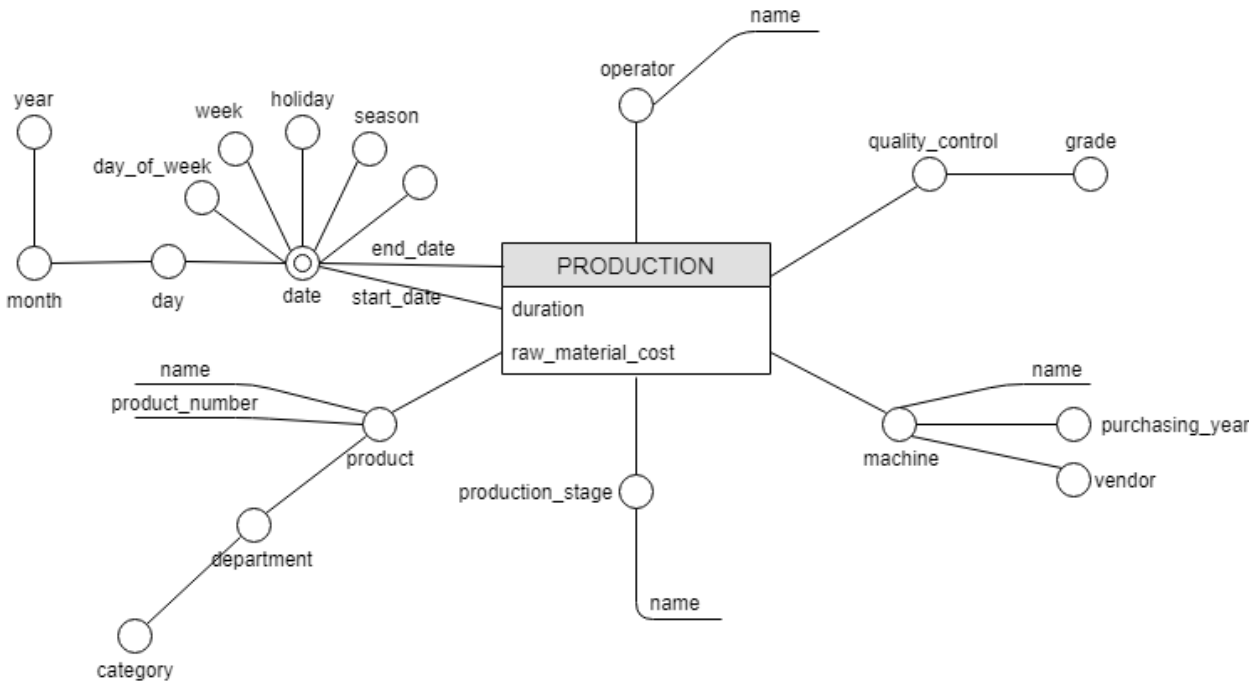


Figure 4: DFM of the production with attributes

# 3 Logical Design

## 3.1 Star schemas

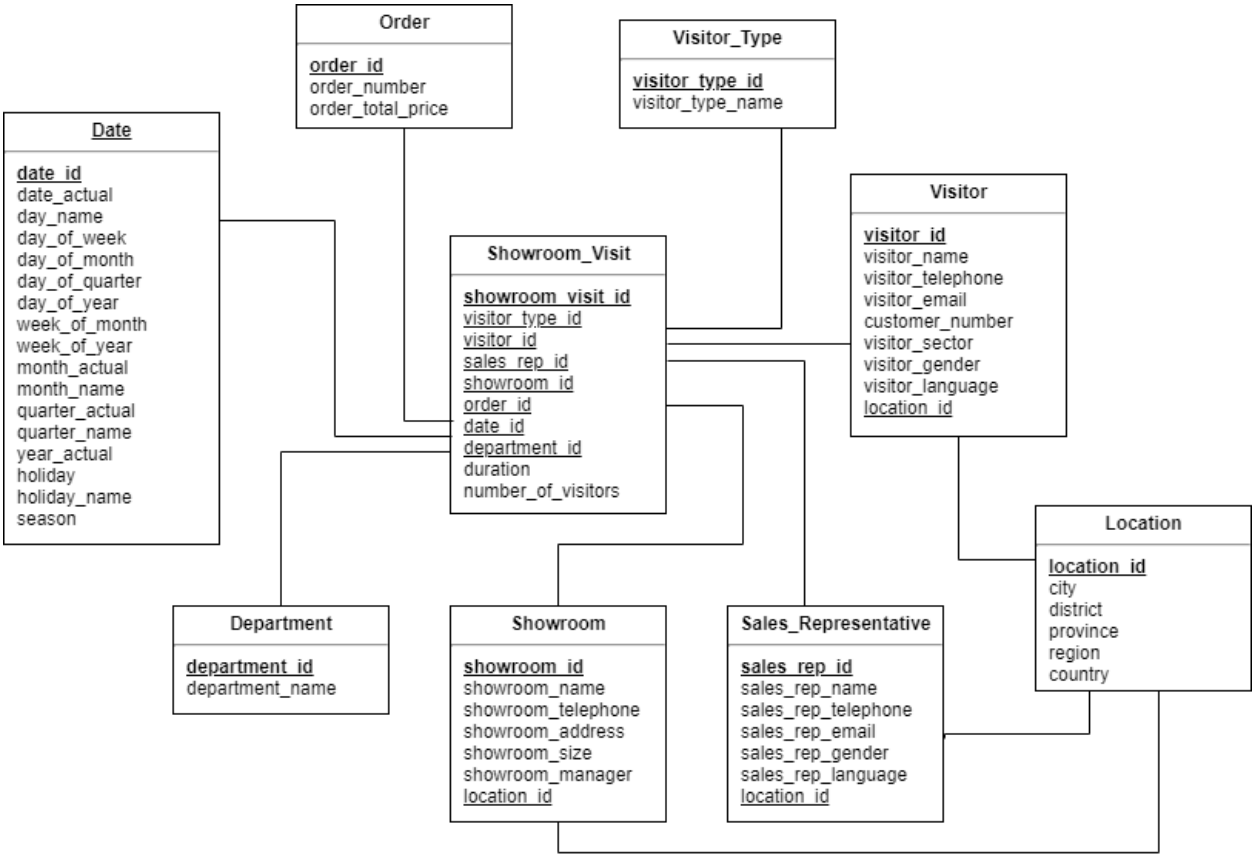


Figure 5: Star schema of the showroom visit

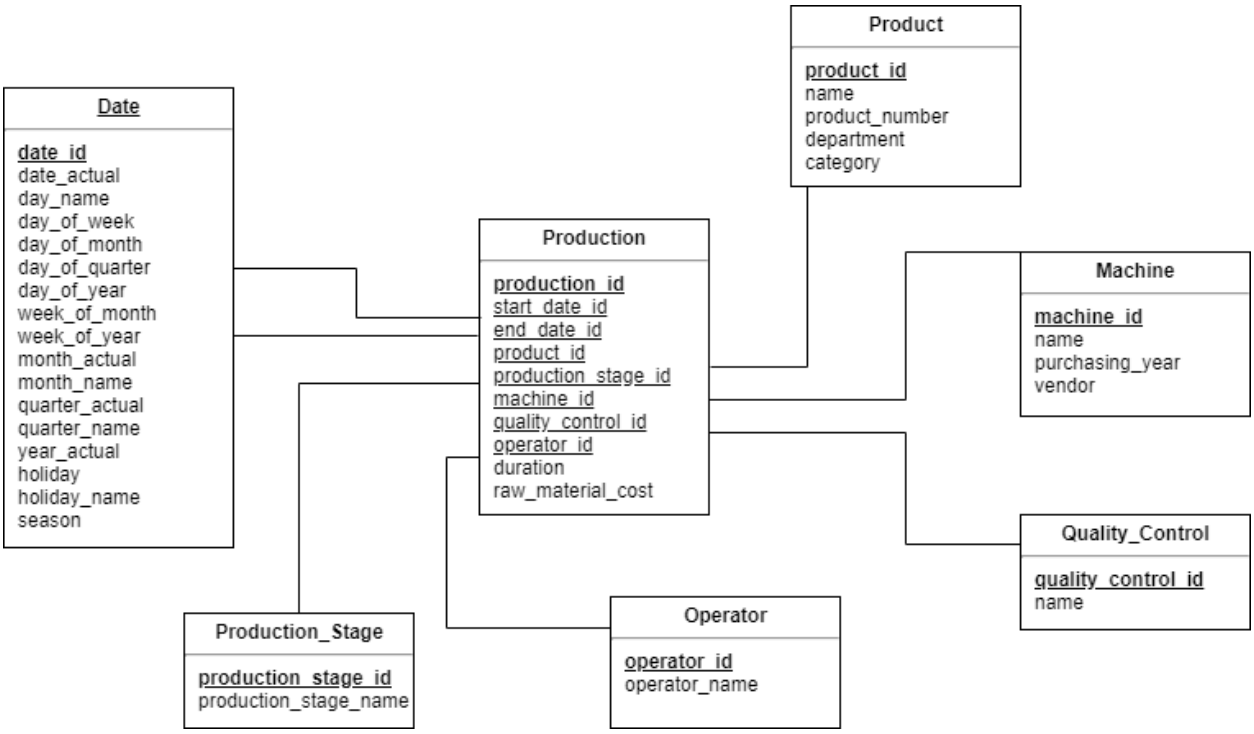


Figure 6: Star schema of the production

## 3.2 Two business questions

### 3.2.1 Fact: Showroom visit

In order to be able to make the right marketing decisions, it is very important for the management to know from which sector the various customers or interested parties of a particular showroom come from. So, for example the management wants to know, from which sectors the various customers of showroom "Showroom-Bozen" were coming in the last year.

SQL query:

```
SELECT v.visitor_sector, count(*)
FROM warehouse.visitor v
INNER JOIN warehouse.showroom_visit sv on v.visitor_id = sv.visitor_id
INNER JOIN warehouse.showroom s on sv.showroom_id = s.showroom_id
INNER JOIN warehouse.date d on sv.date_id = d.date_id
WHERE s.showroom_name = 'Showroom-BOZEN'
AND d.date_actual >= '2018-01-01' AND d.date_actual <= '2018-12-31'
GROUP by v.visitor_sector
```

Table 4: Showroom visit

| ID | Visitor_id | Sales_rep_id | Showr._id | Depart._id | Date_id | Type_id | Duration | Nr._of_visit. |
|---|---|---|---|---|---|---|---|---|
| 1282369 | 570822 | 6 | 5 | 4 | 20180323 | 2 | 90 | 2 |
| 1282370 | 570823 | 5 | 5 | 2 | 20160107 | 4 | 167 | 4 |
| 1282371 | 570823 | 7 | 5 | 1 | 20130526 | 3 | 173 | 6 |
| 1282372 | 570823 | 11 | 5 | 6 | 20150806 | 3 | 100 | 10 |
| 1282373 | 570823 | 7 | 5 | 1 | 20121116 | 4 | 169 | 5 |
| 1282374 | 570824 | 7 | 5 | 1 | 20171210 | 3 | 57 | 3 |
| 1282375 | 570824 | 18 | 5 | 2 | 20110212 | 3 | 166 | 7 |
| 1282376 | 570824 | 9 | 5 | 4 | 20130811 | 3 | 84 | 5 |
| 1282377 | 570825 | 11 | 5 | 6 | 20170507 | 3 | 184 | 10 |
| 1282378 | 570825 | 12 | 5 | 2 | 20111127 | 2 | 26 | 2 |
| 1282379 | 570825 | 7 | 5 | 1 | 20150425 | 3 | 141 | 10 |
| 1282380 | 570826 | 11 | 5 | 6 | 20130208 | 2 | 8 | 2 |
| 1282381 | 570826 | 12 | 5 | 1 | 20111214 | 3 | 61 | 8 |
| 1282382 | 570827 | 12 | 5 | 1 | 20170202 | 3 | 139 | 9 |
| 1282383 | 570827 | 12 | 5 | 2 | 20121012 | 3 | 71 | 7 |

Table 5: Visitor

| ID | Name | Telephone | E-Mail | Sector | Sex | Lang. | Loc._id |
|---|---|---|---|---|---|---|---|
| 570822 | Melanie Eder | | | Gastronomy | F | german | 9 |
| 570823 | Julian Schmidt | | j.schmidt@email.com | Private | M | german | 9 |
| 570824 | Marcel Schwarz | 306 9579783 | m.schwarz@email.com | Hotel | M | german | 9 |
| 570825 | Denise Fuchs | 396 5305260 | d.fuchs@email.com | Public | F | german | 9 |
| 570826 | Sophie Wimmer | 322 7641804 | s.wimmer@email.com | Private | F | german | 9 |

Table 6: Showroom

| ID | Name | Telephone | Address | Size | Manager | Loc._id |
|---|---|---|---|---|---|---|
| 1 | Showroom-LATSCH | 0477 069655 | Herrengasse 8 | 581 | Paul Wolf | 42 |
| 2 | Showroom-MÜHLBACH | 0474 039227 | Platzerstr. 58 | 349 | Christoph Steiner | 54 |
| 3 | Showroom-MÖLTEN | 0470 429676 | Vernag 97 | 857 | Christoph Steiner | 51 |
| 4 | Showroom-SALURN | 0475 248487 | Gewerbezone 44 | 198 | Johannes Egger | 77 |
| 5 | Showroom-BOZEN | 0473 723301 | St. Urban 73 | 447 | Sabine Schneider | 9 |

Table 7: Date

| ID | Date | Day_week | Day | Month | Quartal | Year | Holiday | Season |
|---|---|---|---|---|---|---|---|---|
| 20160102 | 2010-01-02 | 6 | Saturday | January | First | 2016 | false | Winter |
| 20170103 | 2010-01-03 | 7 | Sunday | January | First | 2017 | false | Winter |
| 20180108 | 2018-01-08 | 5 | Friday | January | First | 2018 | false | Winter |
| 20190109 | 2010-01-09 | 6 | Saturday | January | First | 2019 | false | Winter |
| 20200110 | 2010-01-10 | 7 | Sunday | January | First | 2020 | false | Winter |

Table 8: Result of the query

| Sector | Number of visitors |
|---|---|
| Gastronomy | 2985 |
| Hotel | 4223 |
| Private | 5629 |
| Public | 1371 |

### 3.2.2 Fact: Production