On the part of the json document entitled id: 18, type: adjustments, we see that the sales value for the period comprised of "start\_time": "2018-10-15T03:00:00.000Z" to "end\_time": "2018-10-16T03:00:00.000Z" was changed from 8303.009199999999 to 8812.

This last value matches the sales value, for the same period on the “snapshots” section of the document. This is probably due to the fact that the real sales value for the period became know and the forecasts for the period were them corrected to the true value of sales.

So, if we have already observed the sales that really occurred omn the period comprised of "start\_time": "2018-10-15T03:00:00.000Z" and "end\_time": "2018-10-16T03:00:00.000Z", it means all the planning regarding an optimal team to be assembled has to focus on the next periods for witch we have forecasts for sales: that is, the following periods:

D+1:

|  |
| --- |
| start\_time: "2018-10-16T03:00:00.000Z" |
| end\_time": "2018-10-17T03:00:00.000Z" |

D+2:

|  |
| --- |
| start\_time": "2018-10-17T03:00:00.000Z" |
| end\_time": "2018-10-18T03:00:00.000Z" |

D+3:

|  |
| --- |
| start\_time": "2018-10-18T03:00:00.000Z" |
| end\_time": "2018-10-19T03:00:00.000Z" |

D+4:

|  |
| --- |
| start\_time": "2018-1019T03:00:00.000Z" |
| end\_time": "2018-10-20T03:00:00.000Z" |

D+5:

|  |
| --- |
| start\_time": "2018-10-20T03:00:00.000Z" |
| end\_time": "2018-10-21T03:00:00.000Z" |

D+6

|  |
| --- |
| start\_time": "2018-10-21T03:00:00.000Z" |
| end\_time": "2018-10-22T03:00:00.000Z" |

So the optimization will take place on the forecasted values for these dates.

We need to classify each role within a given predominant Skill, according t the given skills: Assembler, cash, frying, order taking, servicing.

Relations between ROLE\_NAME and predominant skill:

DT RUNNER -> servicing

FC RUNNER -> servicing

COOK -> frying

ASSEMBLER -> assembler

OT CASH -> cash

PRESENTER -> servicing

OT1 (Order Taker 1) -> order taking

OT2(Order Taker 2) -> order taking

FRYER -> frying

We will assume that the distribution of Total sales along the different timestamps along any given day will follow what we observed on the snapshot period.

FAZER UM QUADRO ENTRE CADA ROLE E O MAIN SKILL DELA

Key Hypothesis:

A Resource/ individual that is allocated to a role within a specific time-range, will be kept working on this role, on the same time-range (corresponding to a given day-part), for all six days and cannot change of role or day-parts along these six days.

We have, 16 different roles, without a specified role ID, on the JSON data, originally.

The are:

We have 5 day-part periods for each day.

Conceiving each position as a specific combination of a day-part and a role (for the roles that do present a forecasted demand greater than zero), once allocated on a given role, on a given day-part, the person will remain allocated on this role. On the same day-part, for all the 6 days of work considered.

We have a total of 88 persons to be allocated on these “spots”.

-According to the table below, if a person is allocated to day-part 1, he/she will work 8 hours per day.

-If he/she is allocated to day-parts 2, 3 or 4, he/he wwil work 3 hours per day.

If a person is allocated on the last day-part he/she will work 7 hours a day.

|  |  |  |  |
| --- | --- | --- | --- |
| day-parts time-ranges index | timestamps: | day\_parts | number of hours comprised |
| 1 | "2018-10-15T03:00:00.000Z" | Breakfast | 8 |
| 2 | "2018-10-15T11:00:00.000Z" | Lunch | 3 |
| 3 | "2018-10-15T14:00:00.000Z" | Snack | 3 |
| 4 | "2018-10-15T17:00:00.000Z" | Dinner | 3 |
| 5 | "2018-10-15T20:00:00.000Z" | Late Night | 7 |
|  |  |  |  |

This is to avoid additional complexities, that would lead to a much complex model and probably to a much higher time to solve the problem such as (or at least to find a good feasible solution for it):

* A person can change roles along the same day or along different days.
* If a person is allocated to day-parts 2, 3 or 4 he/she could still work on other day-parts as long as the total amount of hours work do not exceed 8 hours.

Proceeding with this simplification, there will be no need to check the total amount of time each employee has worked or has to satisfy a limit for maximum worked hours.