Telegram Sales Report

Exploratory Data Analysis:

Let's get an idea of possible Customer Journey Map (CJM). Let's make several queries to the events table for different user id. This detected possible duplicates (rows with the same values). It is unlikely that the user performed several actions at the same time (example below, the user answered the call twice at the same time). There are 4 003 such lines and all of them were deleted.

event_id	user_id	happened_at	happened_date
4	12272783	2021-07-08 21:02:59	2021-07-08
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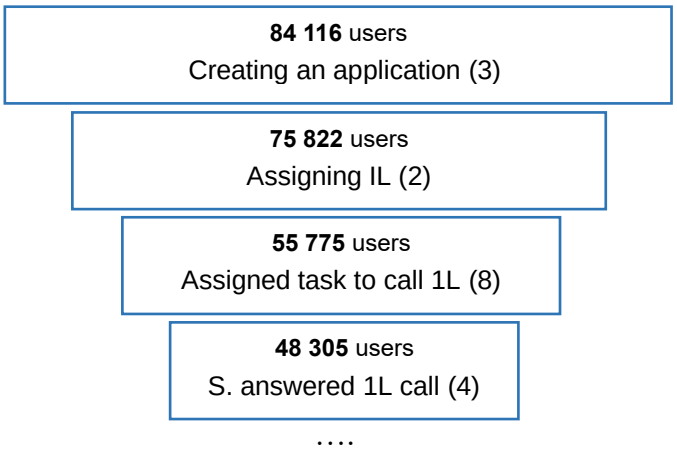
Based on the results of the queries, it became clear that CJMs are quite different. In some cases, it is *7* events, in other cases it is *3*. Different order of events. Different duration in days. There are situations where the same event is repeated within a CJM. For example, several introductory lessons were scheduled (there was a rescheduling of dates) and the person ended up not taking that lesson. Or a call was scheduled, but the potential student did not answer it.

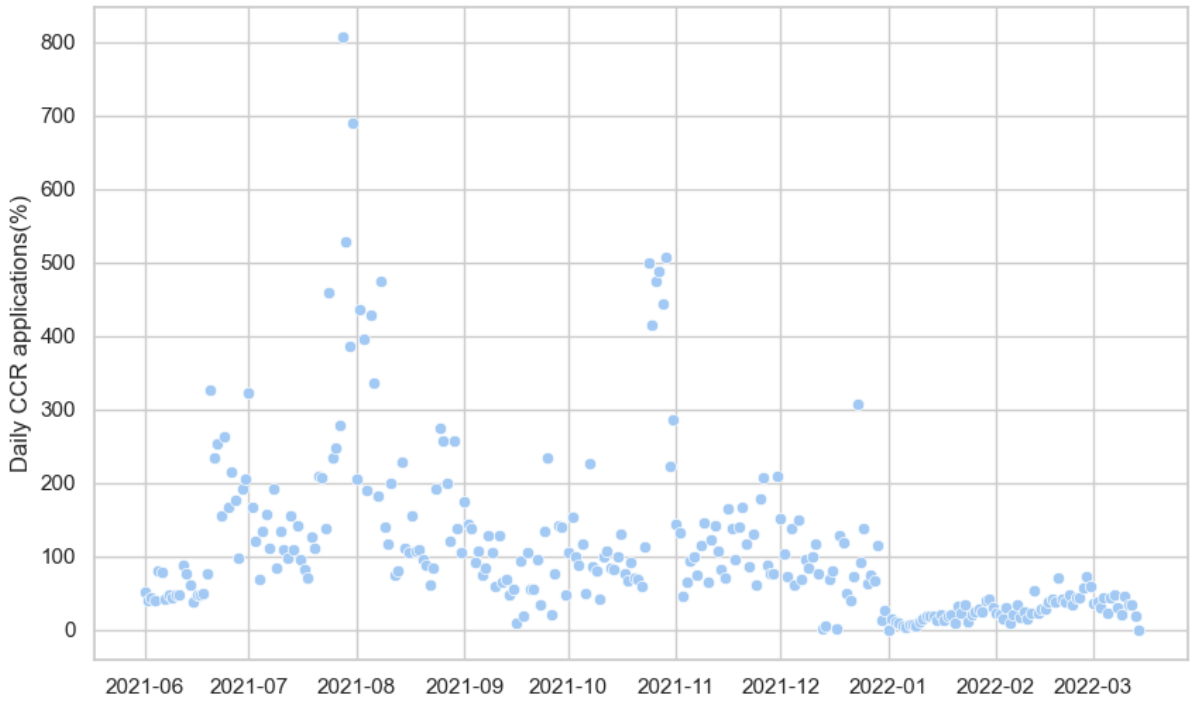


The obtained data coincide quite well with the information about a typical sales funnel. The following events can be distinguished: user request (*3*), answering a call (*4*) or whatsapp message (*13*), successful introductory (*7*) and demonstration lesson (*11*).

Selecting metrics:

One useful metric is conversion. I think it's interesting to understand how many website submissions end up converting into paid lessons, starting to make the company money.
However, daily conversions are not very informative as CJM can take several days. Based on this, daily conversion would be difficult to estimate. As you can see in the charts below, on many days the daily exceeds 100%. However, recently the situation is starting to change and the time between applying and a successful call (or message) has decreased.

Excluding the reluctance of customers to answer calls, I can conclude that the processing of applications has been faster lately (provided that other indicators are increasing).



1. I will calculate three **Conversion Rates** for applications, first-line calls, and introductory lessons. I will use data on the number of unique users who created these events, cumulatively up to the reporting date. Let's show the dynamics of CCR for the last week on one chart (although this value can be changed based on specific needs) In our example, March 7 through March 13. This will be the first metric.

2. We can also get the number of unique users who left requests (**DAU**). We will show the dynamics for a week, so that we have something to compare the data for the last day. Let's highlight the current day in blue.

3. In conclusion, we would like to propose a metric related to cash flow - **Daily Revenue** and it will be also compared with last days. Graph will include relative change on daily basis. And the current day is blue as well. The metric is calculated in Rubles and the *is_gift* attribute was not considered in the calculations, as the number of "is gift = true" lines is very small.

Technical part:

Jupiter notebook called "Analysis" contains data loading, transformation, cleaning, and exploration. It also contains function metrics which creates data frame for metrics and calculates them. It saves it in METRICS.csv file in Data output folder (in reality, I would like to have a table in the database, where a new value will be added every day).

Graphs.py contains functions to create graphs for the report and Report.py filters the METRICS.csv for only specific range (7 days is default value) and saves graphs to Data output folder.

Finally, Bot.py file will handle Telegram bot and send all the graphs with metrics on request of the user. More details: