



## M A D S I I

Management and Data Science

A practical example nothing breathtaking but useful for many

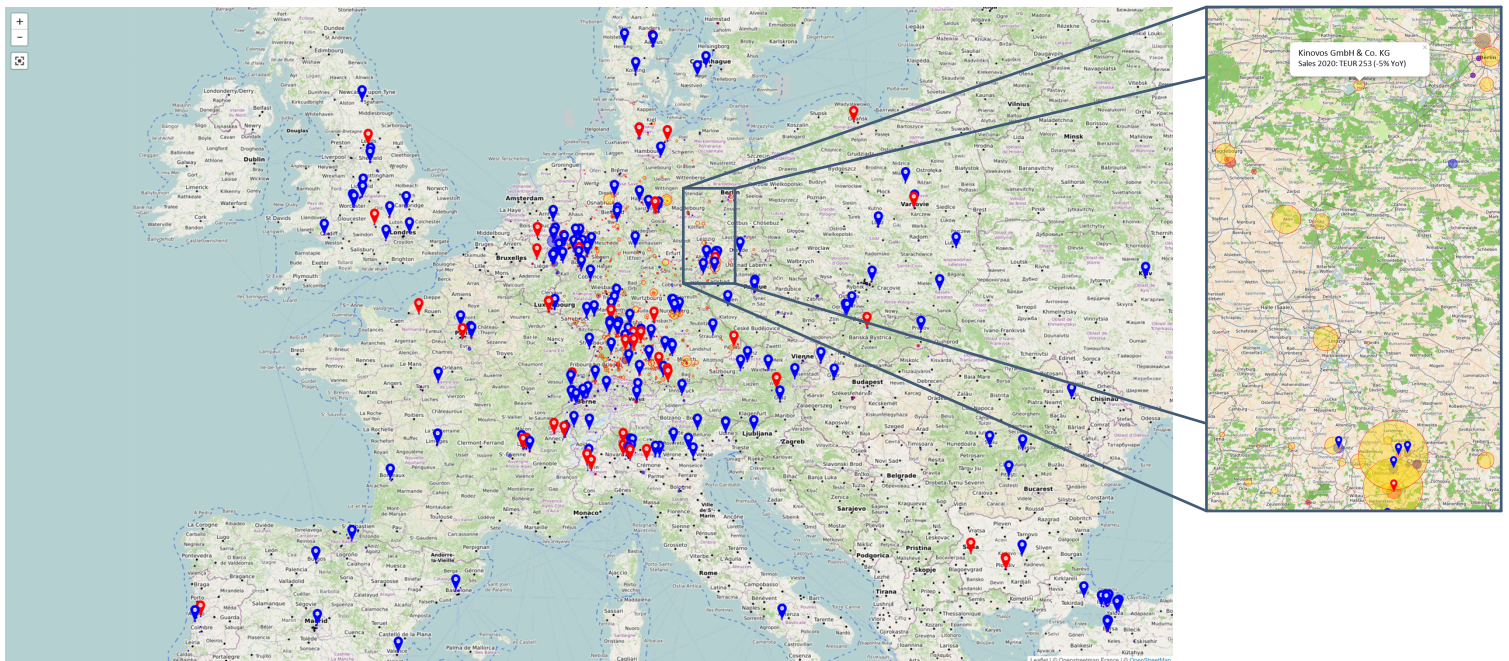


After explaining the fundamentals of Data science for Management in December 2020, now I like to show a plain vanilla application.

The question at hand is to translate the data from the Customer Relationship Management System into a geographical representation of the customer or even competitor base and deliver an overview. I regard this as helpful and insightful for many companies.

If you been there, done this, typically you can still go further and/or deeper into market views or perform network analysis like with Eigenvector centrality to find the most important nodes in your network.

## OVERVIEW



Translating the data with geographical information (most often address) into a zoom-able Map can be done with standard tools (Excel, Tableau) but reaches a higher quality and more features if done with programming using the Data Scientist Standard arsenal (Python, Jupyter Notebook, Google Maps or ipyLeaflet, and Google API for geocoding).



# MAJOR STEPS

You can depict different classes (own sites, competitor sites, customer base, potential customers, etc.) into one map with symbols as to your liking. With zooming you can have a detail look into a smaller area. With the mouse hovering over a symbol more specific information (Site: Name, FTE, Revenue, etc.; Customer: Name, Industry, Sales, Loyalty, etc.) could be shown on the fly.

You can show this data also as Market layers, where are you Aerospace customers, competitors, where is Power Generation?

You could throw the data into Tableau or other software and get immediately an impression. As to my experience these representation contain many errors (incomplete geocoding in the background). Thus to gain an impression it is good, however in order to arrive at a correct representation some more work is required:

- Cleaning the data from CRM
- Write a program (e.g Python) which connects to the Google map API (or any other service. Based on my experience the Google API is the most precise at the moment).
- Translate some addresses (Chinese, Korean, etc.)

- Rectify wrong addresses (improving the CRM data quality “en passant”)
- Representing the data on a map

The dedication and extra effort from a data scientist or alike makes a difference. In addition you are quite free if you go into further analysis steps. Play with the data, get creative!

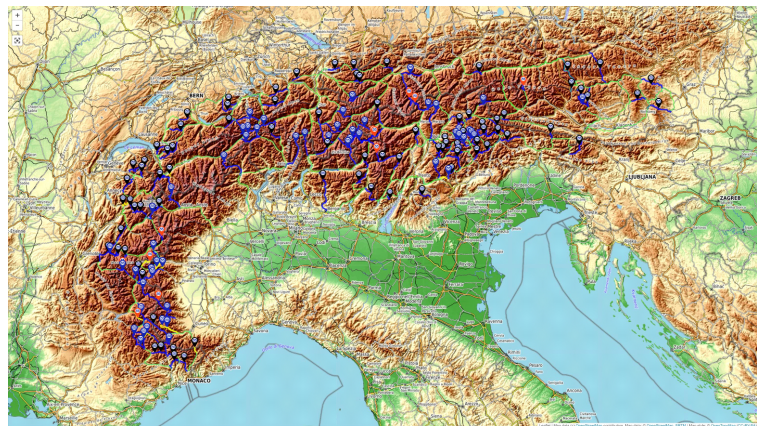
The heat map of Sales actions (visits, call, ) could be blended in and see if it is balanced in relation to the market place.

Once you have establish the base, you can add new features one by one and gain every time more insight while looking at different combinations of various layers.

What might be the next steps in analyzing?

So far we have not yet used any machine learning. One application could be the question, where to place new sites to cover a certain geographical area for customer-relations where distance to your company site is important.

**Check out:**  
[Google Maps APIs](#),  
[Mapbox](#), [Mapquest](#), [ESRI](#)



You would need to know where your potential customers are and add the potential revenue for each. With that information an algorithm could determine the best locations for x sites.

The same you could use, if you need to reduce the number of sites from x to y. You get the optimum solution by distance and then blend that information with others to come to a practical solution.

So with data science you can go further than with standard tools and that could be a competitive edge and a differentiation.

Once you reached the market understanding level of knowing your branches, your customers, your competitors sites, your share of wallet, major competitors share of wallets you can represent this as network and apply network analysis tools to it, like Eigenvector centrality in order to find the most important nodes in the network.

Once you started this path into geographical analysis and representation, new ideas and new questions will arise bringing you further into a better market understanding. After you collected such data over time you can get hold of the dynamics within your market and produce animations of it, which can be very enlightening.

# DEEPEN MARKET UNDERSTANDING

No matter if you are just starting up to conquer a market or you are the Lion king in yours already, there is always a new insight to gain from translating your CRM data into geospatial information. Enrich the data with other sources and generate various views into the data. This will lead you to new questions and actions to improve your business. Show your industrial networks and perform network analysis to even go deeper in your understanding of the markets you are serving.