

# V-ASK: A Visual Analytics of Spending and Kinematics Application to Explore and Identify Suspicious Activities

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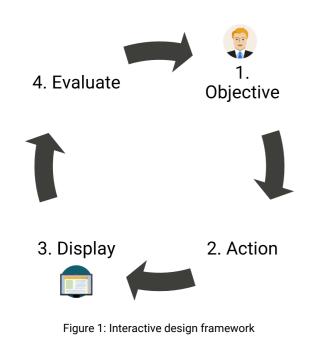
## Objective

To use interactive visual analytic techniques on financial and movement data to assist law enforcement with their investigation into the mysterious disappearance of several GAStech employees.

Using interactivity, we're able to bring together disparate data together to extract insights such as linking location with transaction information to identify credit card owners or mapping unofficial relationships using transaction patterns.

# Approach

We apply a simplified interactive design framework - see Figure 1. With our users' objectives in mind, we incorporate the following interactive dynamics: navigating, filtering and sorting, and selecting. After the user takes any one of these actions, the data is displayed for evaluation.



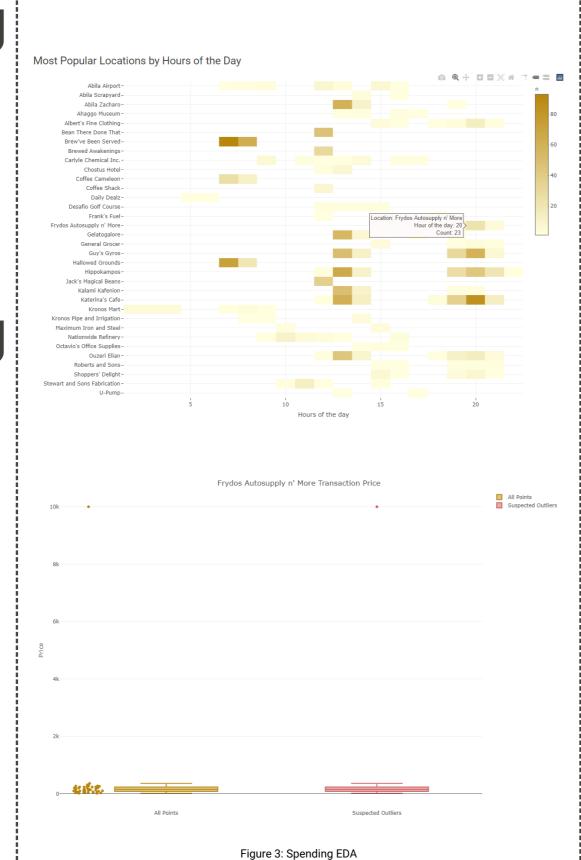
In addition to the packages in Figure 2, we use several geospatial R packages for handling the movement data: sf, raster, and tmap. We also use visNetwork and collapsibleTree for visualizing networks. For interactivity, Plotly is invaluable given its compatibility with applot.



# Results

Spending

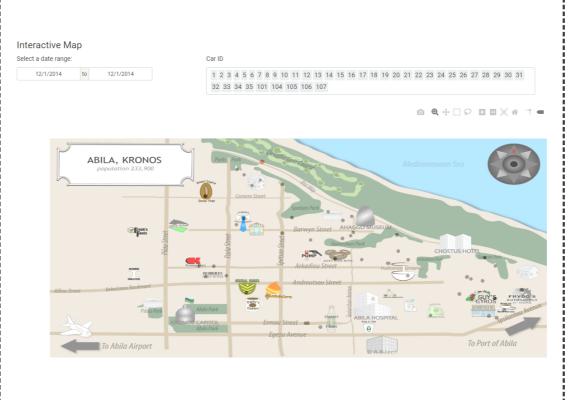
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### Geo

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Car ID	Arrival Timestamp	Departure Timestamp	Name	Department	Title 11
All	All	All	All	All	All
35	1/12/2014, 12:49:17 PM	1/12/2014, 4:22:01 PM	Willem Vasco-Pais	Executive	Environmental Safety Advisor
4	1/12/2014, 1:06:05 PM	1/12/2014, 4:05:01 PM	Ingrid Barranco	Executive	SVP/CFO
10	1/12/2014, 1:13:34 PM	1/12/2014, 1:26:35 PM	Ada Campo-Corrente	Executive	SVP/CIO
10	1/12/2014, 1:26:35 PM	1/12/2014, 4:12:01 PM	Ada Campo-Corrente	Executive	SVP/CIO
ing 1 to 4 of 4 entries					PREVIOUS 1 NEXT

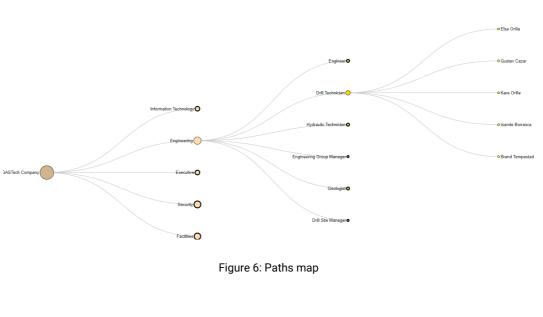
### Network

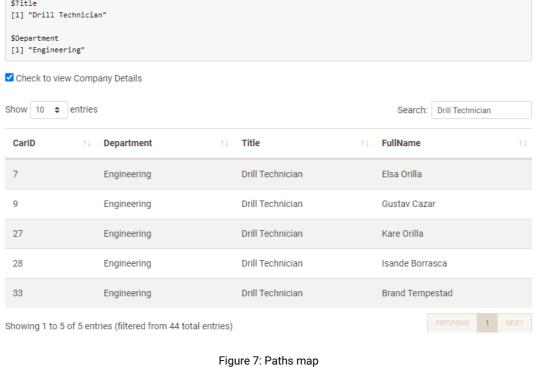
Selected Nodes:

Click the nodes to select

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Official Relationships of GASTech Employees based on Company Organization Chart





Show 10 e entries Search: Kalami Kafenion states according to Purchase Location states of Last 4 CC Numbers 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Stands Borrasca Drill 1/11/2014, 2:09:00 Sat Kalami 7117 35:56 Mare 1 Technician PM Kafenion 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Price 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Price 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Price 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Price 1 Title 1 Timestamp 1 Day 1 Location 1 Numbers 1 Price 1 Numbers 1 Numbers 1 Price 1 Numbers 1 Numbers 1 Numbers 1 Price 1 Numbers 1 Numbe

Future Work

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Thorne, Brent. 2019. *Posterdown: Generate Pdf Conference Posters Using R Markdown.* https://github.com/brentthorne/posterdown.