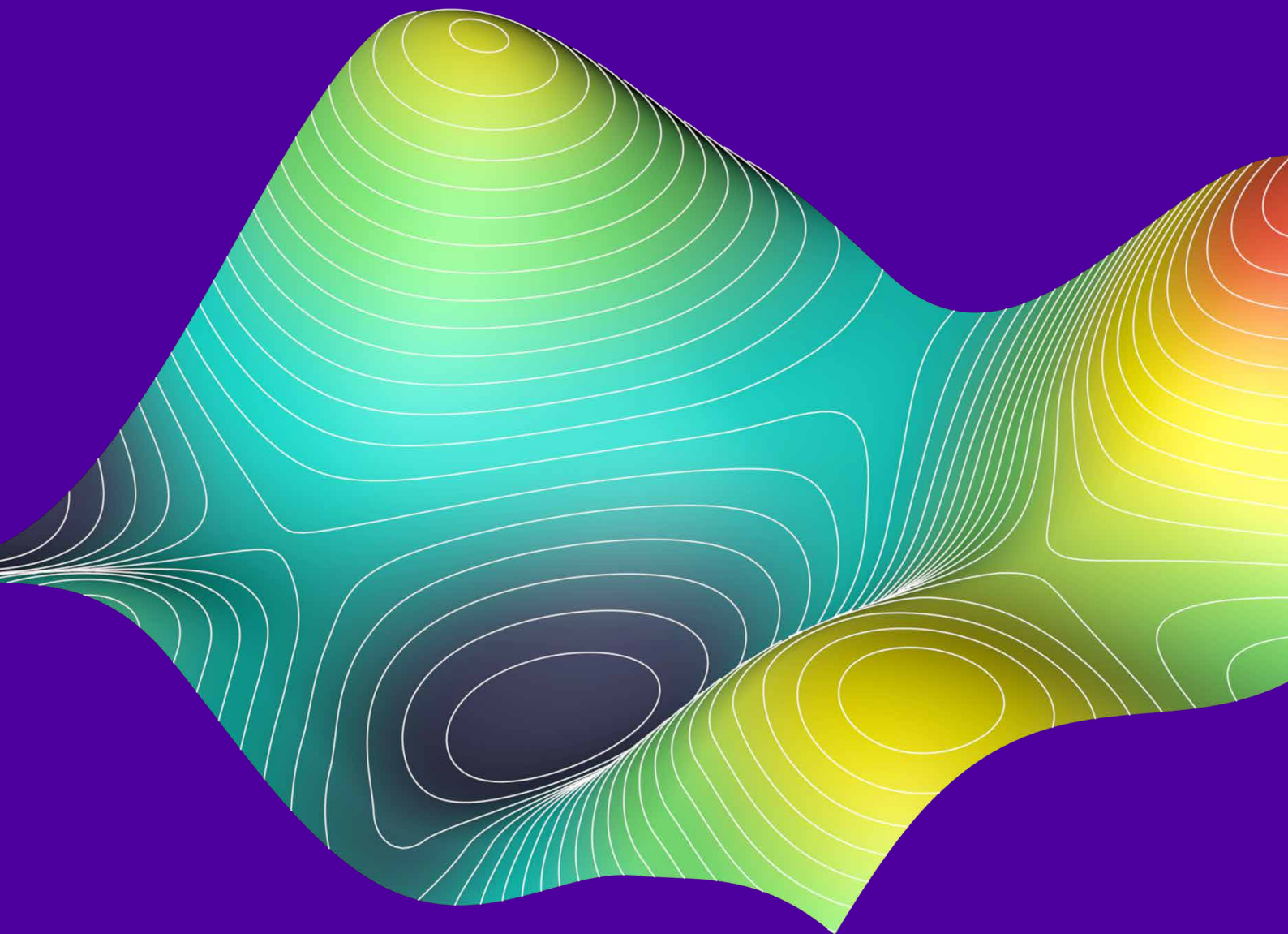


 Time is Ltd.

# Data-Driven Change Management

Measuring Agile Transformation Using Passive Data





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Today, People Analytics provides companies with very useful insights to effectively manage change within their organizations. This tool is thus no longer just a mechanism to assist the HR function, but rather a vital tool to monitor and effectively steer organizational change. In this whitepaper, we present a case study of one of our clients and describe an example of how People Analytics can be used for better informed management of agile transformation.

### How can People Analytics Support Change Management?

Companies today have to navigate the challenges of uncertainty, instability in the markets, digitalization, and globalization. In this complex and constantly changing environment, the traditional organizational hierarchy is no longer the optimal way to function. As a result, companies worldwide are switching to agile organizational structures so that they can better respond to and benefit from these changes (Perkin, 2020). The main goal of these agile transformations are to build organizational structures and cultures that allow iterative development, fosters cross-functional collaboration, and is focused on the outcome and their customers.

The nature of such transformation is neatly captured in infographics from Aghina et al. (January 2018) in Fig. 1. It shows the difference between a “traditional”, static, siloed and hierarchical organization on the left-hand side compared to a new, flexible, agile organization with its network of teams, rapid learning and fast decision cycles on the right-hand side.

#### Traditional vs. Agile Organizations

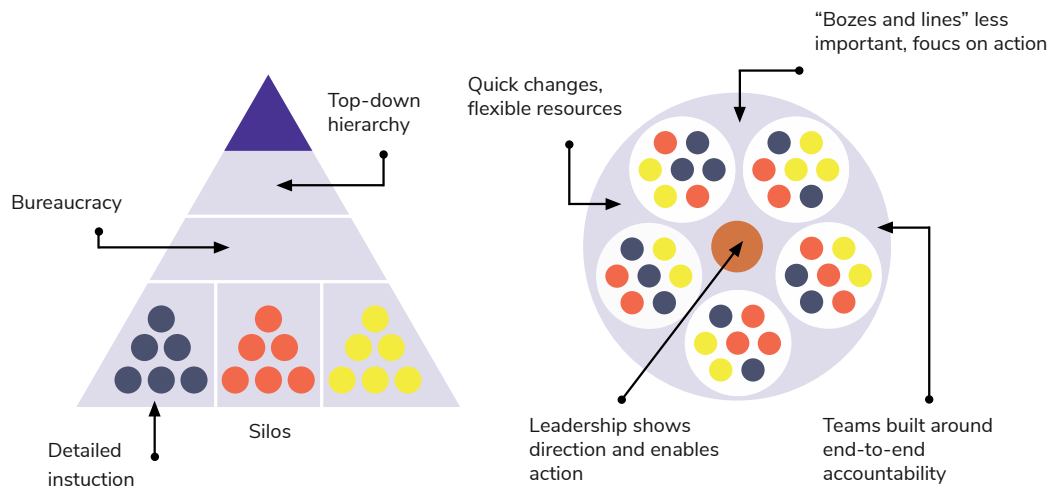


Fig. 1: illustration of the transition from a hierarchical compared to an agile organization. (Aghina et al., January 2018)



But agile environments face the same barriers as any other large scale organizational change: rigid company culture, inadequate management support, and inconsistent processes and practices. **Only over a fourth of organizations that have undergone a transformation say their company has been very or completely successful** at both improving performance and equipping the organization to sustain improvements over time (Jacquemont, Maor, & Reich, April 2015). With regards to agile, companies cite organizational culture, **resistance to change, inadequate management support, training and inconsistent processes and practices** as the most common barriers to change (13th Annual State Of Agile Report, May 2019).

## The Solution Lies within People Analytics

Today People Analytics brings business value to organizations in two main ways (Andersen, January 2018; Guenole, Ferrar, & Feinzig, 2017; Marler & Boudreau, 2017). First, it helps making HR processes and decisions more efficient and effective by utilizing various data products, be it automated reporting and dashboarding, pdf and web parsers, statistical and predictive modeling, NLP models, chatbots etc. Second, it uses people data for solving business problems that also involve some people components, e.g., issues related to sales, customer service or safety and health at work. Nevertheless, besides these two ways there is also a third one that is currently very underutilized - and that in fact can bring even bigger business value to organizations than the former two.

This one is about **helping organizations with the implementation of strategic projects that usually require change in behavior with large volumes of employees** (Tushman et al., October 2017). To be successful, such projects require proper Change Management that, among other things, needs to be able to **accurately assess risks, identify both locus of resistance and ambassadors of change, monitor progress, predict and check adoption and usage of new tools and procedures**. Here People Analytics can be of help due to its ability to bring in relevant data that will enable Change Management to answer many questions that are crucial for the strategic projects' success (Tushman et al., October 2017).

## Case Study: Agile Transformation in a Large Banking Company

Our client, a large banking company (10K+ employees) with a nation-wide distribution network, decided to undergo an agile transformation in 2019. The motivation was to replace the old organizational structure that was perceived as rigid and inefficient. The client decided to implement the agile working environment according to the Spotify agile methodology that works with **Tribes, Squads, Chapters, and Guilds** (Kniberg, March 2014).

*“The foundation of the framework is the Squad [...] that self organizes, and determines the best way to work, from Scrum Sprints to Kanban to a hybrid approach. The Squad is single-product, single-project focused. A product owner prioritizes and manages the backlog for the Squad while an Agile coach works with them to accelerate transformation. A Tribe is a group of Squads that is working on a common area. [...] The Chapters are part of a Squad and are a group of team members working together. Last is the Guild, a group of people with shared interests.” (Enterprise Agility At Startup Speed: Jira Align, n.d.).*

## Spotify's Agile Transformation Methodology

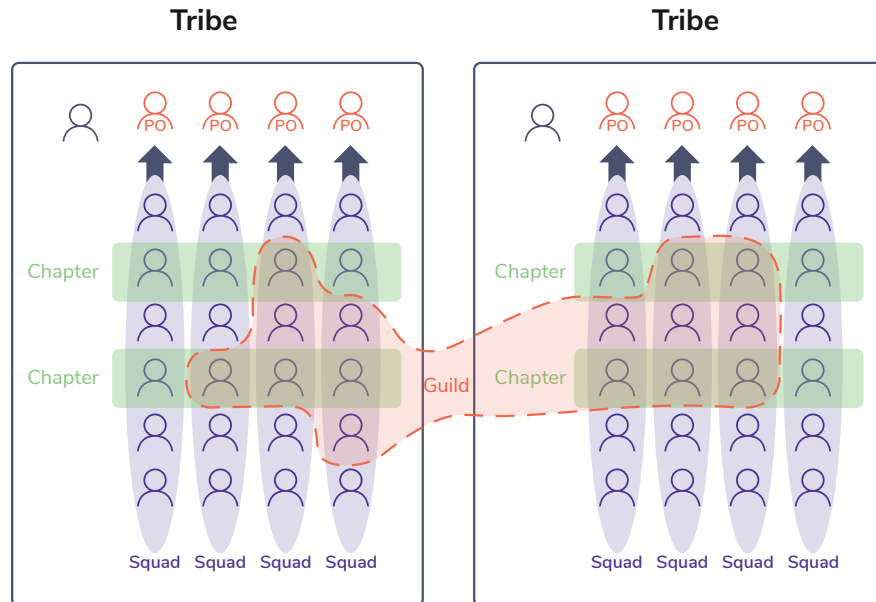


Fig. 2: Graphic illustration of the Spotify agile methodology. (Kniberg & Ivarson, October 2012)

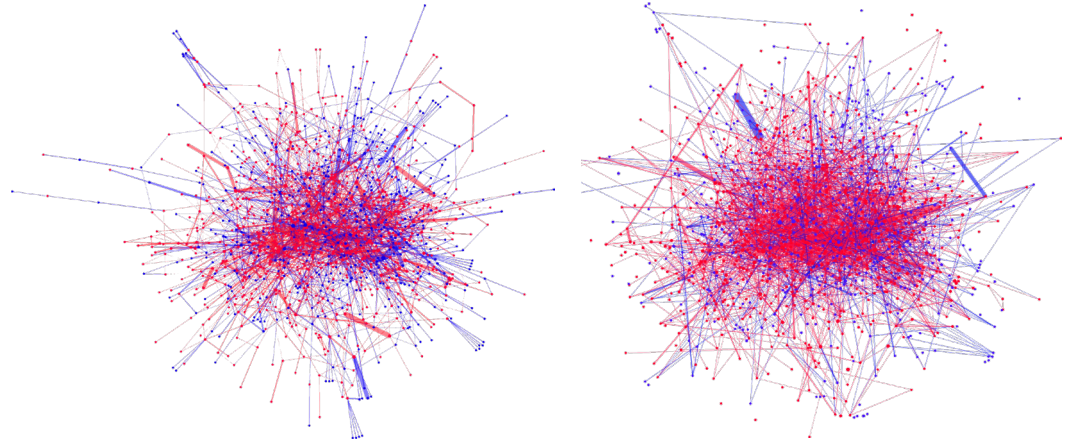
Given the size of the client's organization, the transformation did not happen at once, but gradually in several independent waves with a selected subset of departments and functions that started to adopt new, agile organizational structures. This whitepaper focuses primarily on the first few months of this transformation.

## The Major KPIs to Monitor During Agile Transformation

When undergoing such a complex, large scale and long-term transformation, it is crucial to be able to **continuously monitor whether implemented structures are reflected also in employees' day-to-day collaboration behavior**. For such purposes, one could be tempted to use traditional ONA (Organizational Network Analysis) visualizations. Unfortunately, when applied to large volumes of employees, these visualizations usually do not provide a high degree of insight and are not very actionable.

The two ONA visualizations in Graph 1 capturing change in patterns of collaboration between Agile (red) and Non-Agile (blue) employees in the first four months of the transformation illustrate this problem.

## Collaboration Patterns Amongst Agile vs. Non-Agile Employees Over Time



**Graph 1:** These graphs show the connections (edges) between individual Agile (red nodes) and Non-Agile (blue nodes) employees, and the strength of these connections (width of the edges between individual nodes). The graphs were computed based on frequency of meetings where individual pairs of employees have met. The graph on the left-hand side shows the structure of the network at the very beginning of the agile transformation, and the graph on the right-hand side shows the same network after four months of ongoing transformation.

While it is clear from the visualization that there is more collaboration traffic and more employees involved within new agile structures after four months of ongoing transformation, it is difficult or impossible to infer additional and specific insights that management could act on. Therefore, when defining the KPIs for agile transformation, we first focused primarily on what management really needed in order to properly choose and target their interventions, i.e., on **simple and actionable KPIs** that would tell the client what the current situation is and how far the company is from their target (Eckerson, 2009).

To identify the right KPIs to successfully measure an agile transformation, a company needs to draw **hypotheses regarding what changes one should observe in employees' day-to-day collaboration behavior in case implemented structural changes have been (or started to be) successfully adopted.** In the case of our client, we have identified several key hypotheses they wanted to be tested and used these as indicators while monitoring the progress the organization would be making during its agile transformation. Here are three of the major hypotheses we chose to test:

**Hypothesis 1:** The number of people who carry their business-as-usual behavior from the old organizational structure should decrease.

**Hypothesis 2:** People in Squad teams should spend less time across the bank and more time with their own squads and teams.

**Hypothesis 3a-g:** People within the agile structure should show increased agile behavior, e.g., there should be fewer meetings per person, shorter and smaller meetings, relatively more recurring and one-to-one meetings, non-recurring meetings should be shorter than recurring meetings on average, and employees should improve their time management and thus not to be afraid of rejecting unnecessary meetings.

## The Process of Obtaining Data

When testing the hypotheses and measuring changes in employees' behavior, one can use **active or passive data** - both have their own pros and cons. Passive data can be defined as data that already exists within the company, such as calendar events, email logs or chat logs. The major advantage of passive data is that it doesn't require employees to submit their own - and very often unreliable - data inputs, which also burdens them with additional work. The major disadvantage is that passive data often misses contextual information and the need to gain consent from employees about the way their data is used. In order to obtain active data, employees need to be surveyed and explicitly provide information about their patterns of collaboration with others. Its major advantage is the possibility to gain more nuanced information about employees' relationships and interactions, but it requires a lot of extra work, as well as ensuring a high response rate among employees to get a valid dataset for analysis.

In the case of our client we have worked only with passive data, specifically with (approximately 5,200 employees). That data was obtained through an aggregate of **O-365 calendar data** that captured a significant part of collaboration activity within the client's organization. To make the analysis more precise, we were prepared to process other types of communication data, e.g., from email, Google Chat, Jira, Slack or Google Docs, but because client did not have specified procedures for handling these types of data at that time, we only had the ability to use calendar data. Beside calendar data, we also gathered HR data to get insight into who belongs where within both the new and old company structure. Using these two data sources, we were able to track the progress the organization made in its transition from the old to new structures.

When working with collaboration data, it is imperative to respect its personal nature and proceed in a fully GDPR compliant way. Within all our analyses, we have processed only data that was internal company public knowledge and above that the data were fully anonymized on the client's side and aggregated at a team level before any analysis was conducted with this data set.

## Data Analysis

The available data was examined within our proprietary platform that supports, among other things, analysis of collaboration patterns using **frequency analysis**, and **Sociomapping** (Bahbouh, 2004, 2012; Höschl, 2006; Rozehnalová, 2008). Frequency analysis is based on measuring the amount of interactions between individual organizational units; in this case this consists of tribes, squads, and chapters. Sociomapping is then an ONA tool that provides a specific graphical interface for interpreting team relationships based on the number of interactions and how they change over time.

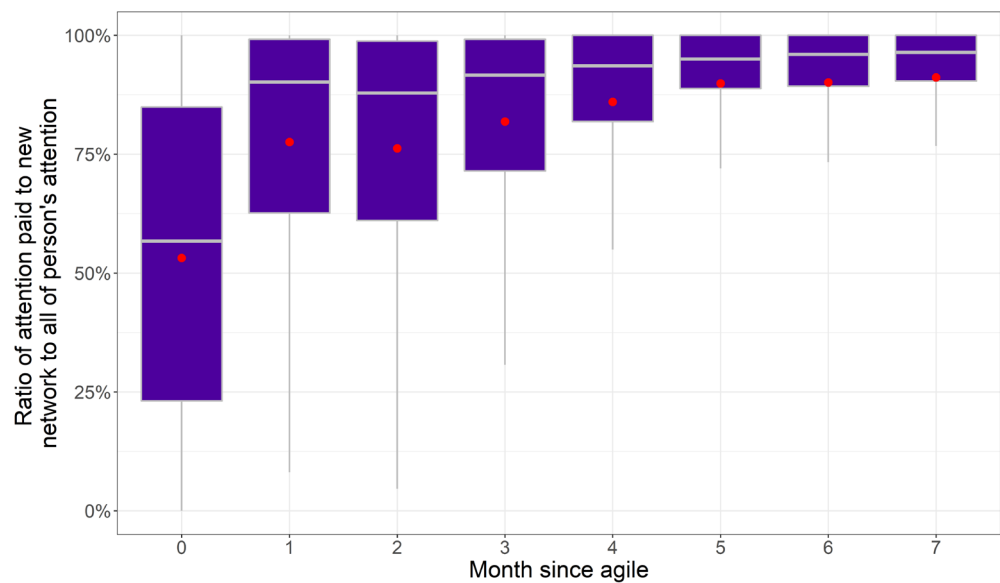
To demonstrate the usage of these methods, we can look at the analyses outputs that are relevant for testing hypotheses mentioned above. It can also provide an executive level view, while still providing an actionable view on the ongoing transformation.

**Hypothesis 1:** The number of people who carry their business-as-usual behavior from the old organizational structure should decrease.

Graph 2 shows **change in interaction frequency between the original network of employees and the new agile designed network**. Launching one month before the agile transformation started at the company, we measured the ratio of attention paid to people from the new network to all attention paid in a month. We define attention as the hypothetical time people paid attention to one another in meetings, i.e., if there are more than two people at a meeting, their attention is divided to each participant equally. This metric effectively weighs small meetings as contributing more to the importance of relationships built, than large meetings with many participants and hence reflects the relationships more accurately.

It is apparent from the graph that as the agile transformation went on, people spent more and more time with people from their new organizational unit (e.g., Squad) and increasingly less time with people from their old collaboration network that were not part of their current organizational unit. This change was quite fast as it took just three months for the average ratio of communication with the old structure to fall below 20%.

### Ratio of Attention Paid to New Network to All of Person's Attention in Case of Agile Employees

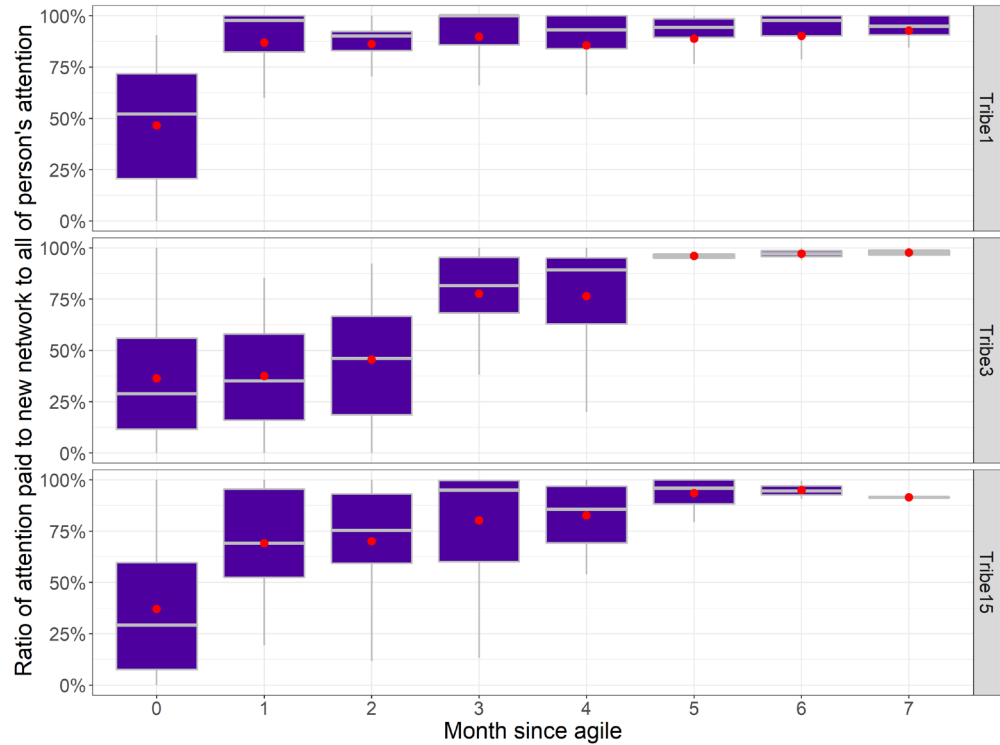


**Graph 2:** This graph visualizes the development of the proportion of attention agile employees paid to people from their new organizational unit during the month before and during the first 7 months of agile transformation. For the definition of attention refer to the main text. The data is represented by box plots here - to understand the meaning of the graph, one can focus just on the boxes that capture the middle 50% of the data.

It is important that **management can segment this metric by individual Tribes**. Using a similar visualization as shown in Graph 3, management was able to see that some Tribes were still highly connected to old networks, probably due to a quite common and widespread practice of internal “body-shopping” (especially of IT experts) and due to unfinished ongoing projects inherited from the past.



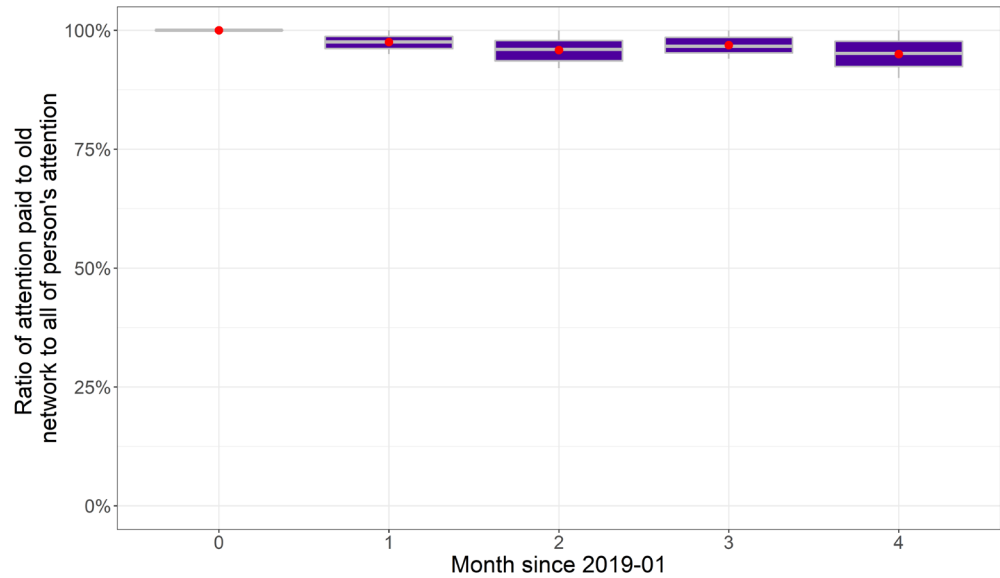
### Ratio of Attention Paid to New Network to All of Person's Attention in Case of Agile Employees by Tribes



**Graph 3:** This graph visualizes the development of the proportion of attention agile employees paid to people from their new organizational unit over time segmented by individual Tribes. For the definition of attention refer to the main text. The data is represented by box plots here - to understand the meaning of the graph one can focus just on the boxes that capture the middle 50% of the data.

When measuring transformation success, it is important to conduct a **benchmark or A/B type of analysis**. Such analysis enables one to assess whether the behavioral change that is observable in the data is related to the specific effect of transformation or rather to the non-specific effect of time. As an illustration see Graph 4 that shows distribution of employees' attention as defined above in departments that did not undergo agile transformation. It is apparent from the graph that there is no upward trend that was present in the previous graphs. This pattern supports the claim that implemented structural changes really had an intended effect on employees' day-to-day collaboration behavior.

### Ratio of Attention Paid to Old Network to All of Person's Attention in Case of Non-Agile Employees

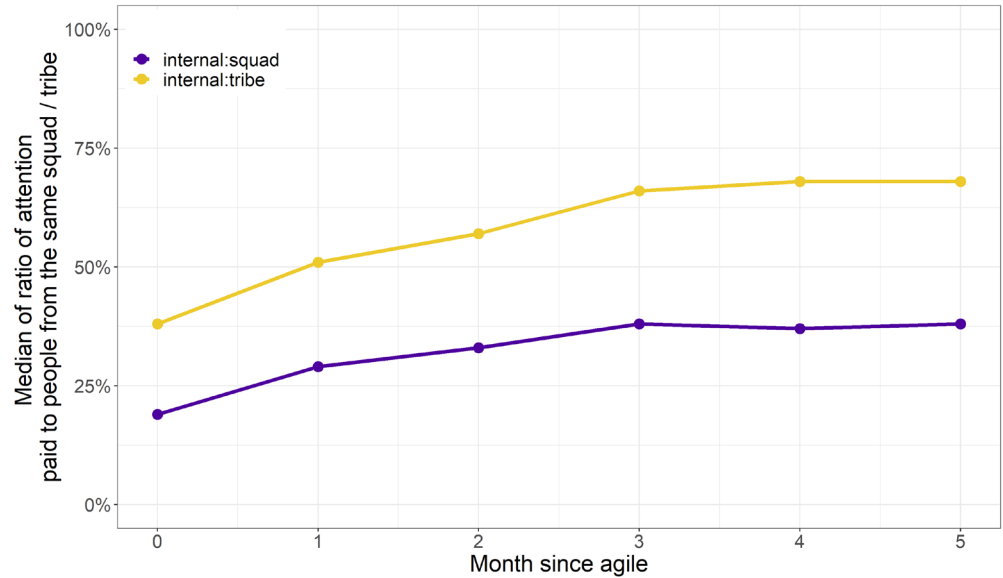


**Graph 4:** This graph visualizes the development of proportion of attention non-agile employees paid to their respective collaboration network during the time when other units were undergoing agile transformation. For the definition of attention refer to the main text. The data is represented by box plots here - to understand the meaning of the graph one can simply focus on the boxes that capture the middle 50% of the data.

**Hypothesis 2:** People in Squad teams should spend less time across the bank and more time with their own squads and teams.

Graph 5 shows the **proportion of attention-time that agile people spend inside their respective squad and tribe over time**. The upward shape of the lines in the graph represents an evidence of the agile transformation progress that stopped around the fourth month after going agile. One positive trend found at the end of the plotted period was that only 30% of Tribe time was spent outside their network. A less fortunate finding was that agile leaders discovered that agile leads was the finding that approximately 60% of squad time was spent out of their own squad which goes against the philosophy of the Spotify agile methodology.

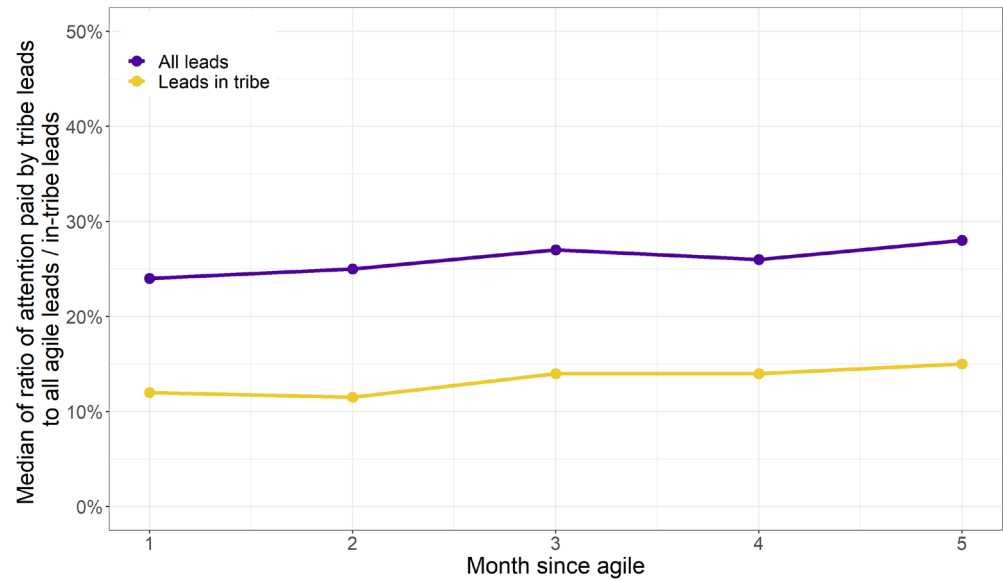
### Median of Ratio of Attention Paid to People From the Same Squad and Tribe



Graph 5: This graph visualizes the development of the proportion of attention agile employees paid to people from their own squad and tribe during the first 5 months of agile transformation. The graph shows specifically the median value of the given metric. For the definition of attention refer to the main text.

The numbers were even less positive in the case of agile leads - people who are in agile transformation that have any of the following positions: “agile lead”, “tribe lead”, “squad lead”, “product owner” or “service owner”. Graph 6 shows that **the share of attention that leads are paying to other agile leads** is rather stable - around 25% even after several months of transformation. It is also worth noting how much time is spent with agile leads from one’s own tribe compared to all others; the client’s management considered the time agile leads spend outside their own tribe as unproductive. We can see that over time the proportion of time spent with in-tribe agile leads is slowly increasing - from 12% to 15%. However, the split between in-tribe leads and out-tribe leads is relatively stable around 55% to 45%. Given management’s expectation described above the message is quite clear here - agile leads should spend more time inside of their respective tribes.

## Median of Ratio of Attention Paid by Tribe Leads to All Agile Leads and In-Tribe Leads



Graph 6: This graph visualizes the development of the proportion of attention agile leads paid to all agile leads (blue line) and to agile leads from their own respective tribe (green line) during the first 5 months of agile transformation. The latter is a subset of the former. The graph shows specifically the median value of a given metric.

**Hypothesis 3a-g:** Within an agile structure, people should show more agile behavior, e.g., there should be fewer meetings per person, shorter and smaller meetings, relatively more recurring and one-to-one meetings, non-recurring meetings should be shorter than recurring meetings on average and employees should better manage their own working time and thus not to be afraid of rejecting the unnecessary meetings.

Graphs 7-12 show rather **mixed results that indicate that in some areas the employees' behavior started to reflect new agile structures and in some other areas this was exhibited less.** Starting with expected changes, we can see that:

- average number of attendees decreased from 10 people per meeting to around 6 people per meeting (Graph 7);
- the proportion of recurring meetings has increased from 33% to 41% (Graph 8); and
- the meeting invitation decline rate has increased from the company average of 8% to 11% (Graph 9).

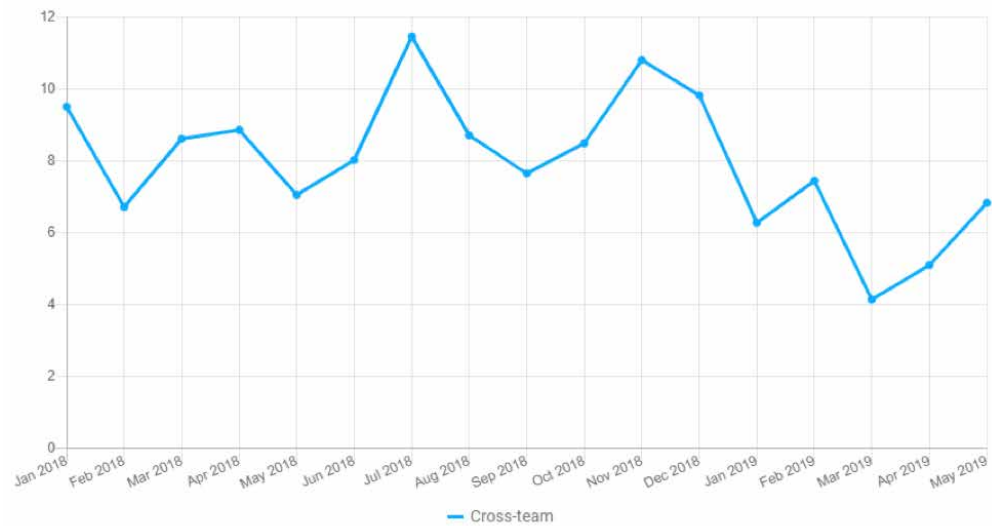
Contrary to the original expectations, the data showed that:

- meeting length did not change a lot both in case of recurring and non-recurring meetings (Graph 10);
- the average number of meetings per month and person has increased from 25% to 35% (Graph 11);

- the proportion of one-to-one meetings stayed more or less the same (Graph 12); and
- non-recurring meetings stayed longer than recurring ones (Graph 7), but this can be just a statistical artifact caused by the fact that very long events, e.g., offsite meetings, are classified as non-recurring meetings which in turn lead to a higher average length of this category of meetings.

Using these metrics, management was able to assess whether progress being made was sufficient given the original expectations. They were also able to make a deeper dive into those areas where employees' behavior apparently deviated from the desired direction.

### Average Number of Invited Meeting Attendees Over Time



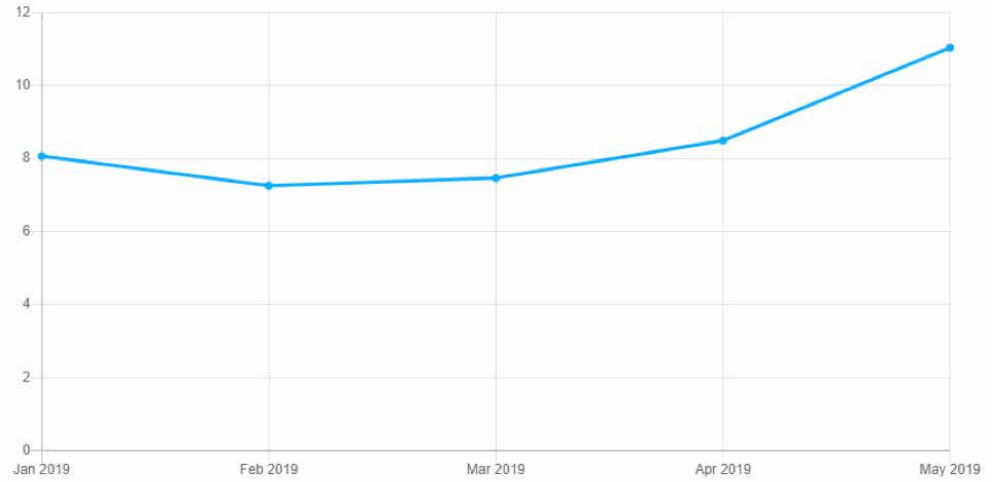
**Graph 7:** This graph visualizes the development of the average number of cross-team meeting attendees over time. Relevant months are from January 2019 to May 2019 when the agile transformation took place.

### Proportion of Recurring and Non-Recurring Meetings



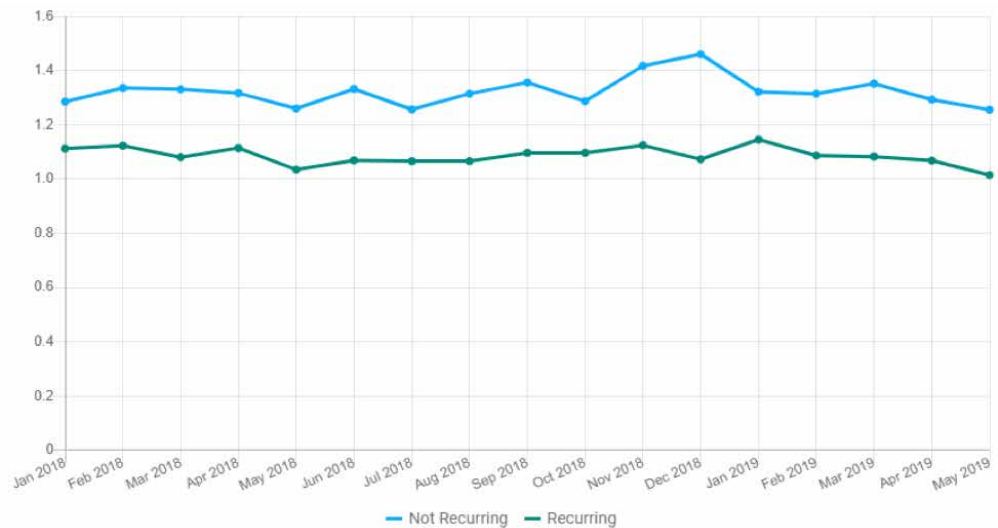
**Graph 8:** These pie charts show snapshots of the proportion of recurring and non-recurring meetings at the very beginning of the transformation (pie chart on the left), as well as after 5 months of ongoing transformation (pie chart on the right).

### Meeting Invitation Decline Rate Over Time (in %)



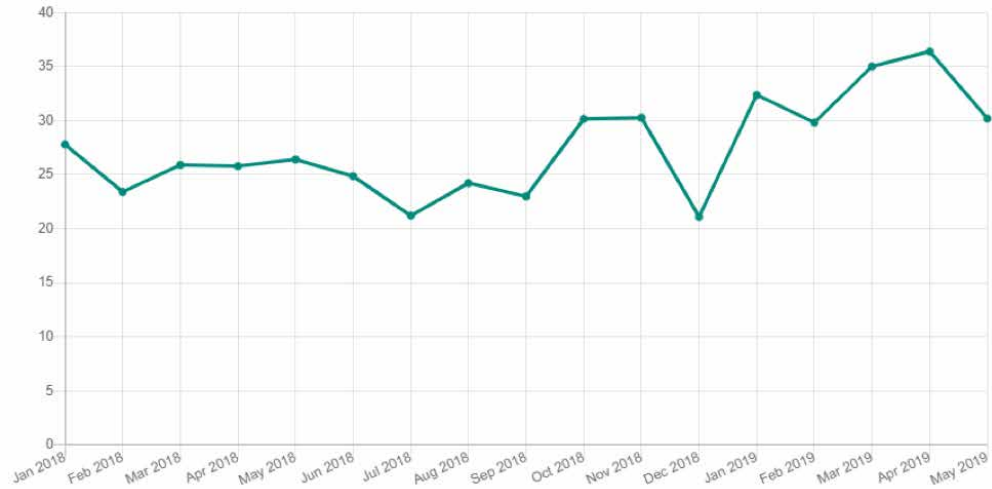
Graph 9: This graph visualizes the development of the decline rate over time (in %). Relevant months are from January 2019 to May 2019 when the agile transformation took place..

### Meeting Length Over Time (in hours)



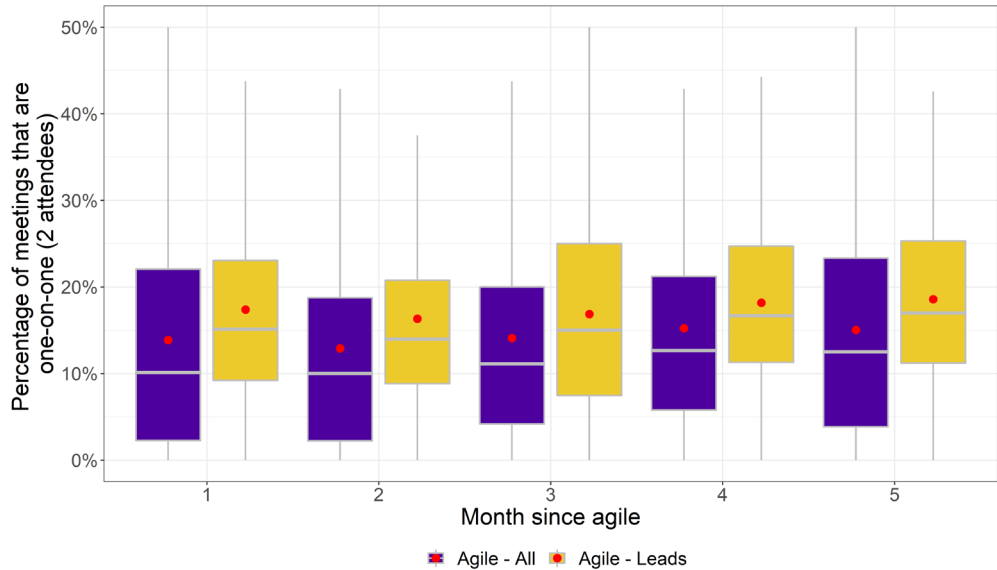
Graph 10: This graph visualizes the development of the average length of non-recurring (blue line) and recurring meetings (green line) in hours over time. Relevant months are from January 2019 to May 2019 when the agile transformation took place.

### Average Number of Meetings per Month and Capita



**Graph 11:** This graph visualizes the development of the average number of meetings per month and person over time. Relevant months are from January 2019 to May 2019 when the agile transformation took place.

### Percentage of One-to-One Meetings



**Graph 12:** This graph visualizes the development of the proportion of one-to-one meetings all agile people (orange box-plots) and agile leads (purple boxplots) had during the first 5 months of agile transformation. The data is represented by box plots here - to understand the meaning of the graph, one can simply focus on the boxes that capture the middle 50% of the data.

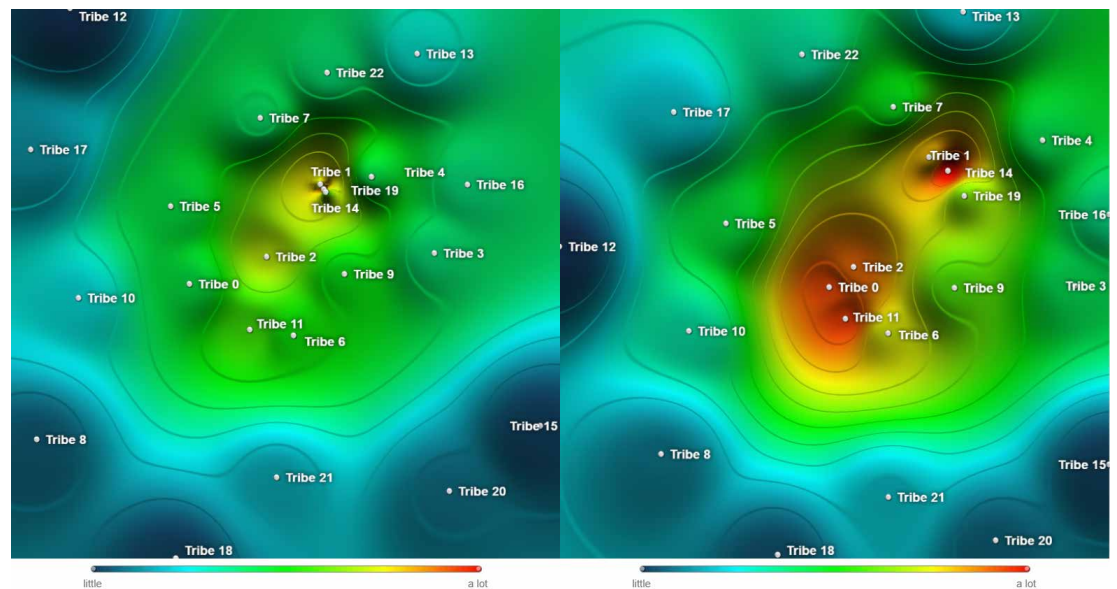
### Additional findings

Besides validating our original hypotheses related to unit interaction data with the means of frequency analysis, we have also **analyzed the agile transformation progress on a company-wide level** in order to enable management to **make strategic decisions related to organization design** (Morrison, 2015) as the transformation evolved.

Sociomapping was used in this case as it is a useful analytical method for **tracking patterns of collaboration between various types of organizational units**. In a Sociomap, this information is represented by distances between organizational units that correspond to the frequency with which these units meet and by the height (color coded) that corresponds to the number of meetings overall. Both of these metrics can be shown as they develop over time.

In our client's case, one of the Sociomaps (see Graph 13 for illustration) was a catalyst for organizational redesign, leading to a decision to merge two specific Tribes. These units collaborated over time on such a close basis - and so frequently - that it made better business sense to merge them in the new organizational structure.

### Patterns of Collaboration Between Individual Tribes



**Graph 13:** The sociomaps visualize patterns of collaboration between individual Tribes as measured by their co-meeting activity at the very beginning of the agile transformation (Sociomap on the left) and after four months of ongoing transformation (Sociomap on the right). The closer the Tribes are on the map, the more intensive was their collaboration and vice versa. The height (color coded) shows the level overall of collaboration activity, be it in-Tribe or cross-Tribe collaboration. Similar Sociomaps helped the client to identify Tribes that should be merged in the new organizational structure.

### Acting on the Data

As each People Analytics practitioner would confirm, **“data without insights is meaningless, and insights without action are pointless”** (Chamorro-Premuzic, February 2020). With this in mind we have provided our client's management with the tool that enabled them to **utilize already existing (calendar) data and identify new KPIs that can be used for more efficient and effective management of ongoing agile transformation.**

In the beginning, the tool was provided to only a few members of top management; even under these rather limited circumstances **it provided insights that facilitated some key decisions about some corrective actions and about broader organization design.** Nevertheless, to fully utilize its transformative potential, the tool should also be provided



to employees that are the closest to the ongoing agile transformation. These include agile lead positions, such as tribe leads, squad leads, product owners or service owners, as well as the HR department. This step would ensure that key employees would be empowered to carefully watch for agile signals and behaviours and quickly translate identified insights into corresponding actions.

That's why we are working today with the client on a plan on how to **roll out the continuous measurement of agile transformation throughout the organization**. Besides that we also think a lot about **how to define appropriate levels of detail of information that would be available to individual stakeholders** through their monthly updated dashboards. Data can be invaluable if leveraged correctly. We want to ensure that our tool empowers our clients to make informed decisions throughout their agile transformation journey.

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