THE STORIES OF ARTIS

Stories from the perspective of data

TEAM ARTIS ANALYTICS

ARTIS can be seen as a small city with its own remarkable inhabitants. It is a dynamic entity that has its own flows and operations. From these processes, useful data is collected and stored, but not used to its full potential. This data is capable of revealing patterns and telling stories. Patterns and stories that can help ARTIS develop.

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Co-creating ARTIS' challenges

When you think of ARTIS you think of animals, Amsterdam and a wonderful day out. What you might not directly think of is data. However, even ARTIS is generating it. Examples of these are the ticket sales, food sales and daily weather. Most of this data is not used to its full potential. Behind the screens in ARTIS, a variety of processes are going on that are constantly under development to optimize the visitor experience. Think of cleaning routes, security routines, ticket sales and much more. These processes can be improved by learning about visitor behavior through data analysis, resulting in the best visitor experience.

Our team gathered, combined and used the data to improve the processes in the park, ultimately leading to a better visitor experience. We did not do this alone or without purpose: we co-created our project scope and our project outcomes with multiple stakeholders representing various departments at ARTIS along with members of the Park Management team. These are the cleaners, the guareds, the volunteers and many more. By involving these people in our project, we ensure that the outcomes suit the needs of those that will use it in the end.

The results from this co-created project are two-fold: A visitor prediction model that can accurately predict the number of visitors for the days to come and numerous insights in the behavior of the park's visitors.

From need to solution

Visitor prediction model

For an attraction like ARTIS the number of visitors is fluctuating significantly. On a warm and sunny summer day the park attracts **many times more visitors** than on a rainy winter day. This has a serious impact on the allocation of employees and resources. Knowing beforehand how many visitors the park can expect improves the **planning of employees**, the more accurate, the better.

You need data from the past to predict the future: ticket sales, weather, holidays and more. All this **data is already out there**, so all there is to do is to properly collect it.
The historic data of visitor numbers is **anonymous**, which means it is untraceable to an individual. In this way, privacy is secured!

We built a model that **predicts the number of visitors** using this data from the past. By providing data from the present, such as the weather and the day of the week, the model can produce a trustworthy prediction. The historic data is updated regularly, so the model will **adapt itself** to future trends. In this way, ARTIS can make use of the data it already possesses to improve the experience for the visitors!

a need

a means

a solution

Insights in visitor behavior

Knowing how much employees ARTIS should schedule is one thing, but **optimizing their workflow** is another. Should a cleaner make his round going clockwise through the park? Or would counter-clockwise be better? And would the answer depend on the type of visitors in the park? Should a guard position itself differently depending on the weather? **Insights in visitor behavior** in the park will allow the staff to optimizes their routines.

The data that is used to predict the future is not only able to produce raw numbers, it can also tell stories. **Correlations between variables** such as the weather and day of the week gives interesting insights in the behavior of the park's visitors. This especially has value since the **type of visitor** can be estimated from its ticket type: A tourist might respond differently to the weather conditions than one of ARTIS' members.

Insights in visitor behavior are gathered in this booklet and illustrated with short stories. It helps to **extract meaning** from the data. This goes two ways: in one page we tell the stories that we gathered from the analysis of the data, the numbers. Thereafter, the insights gathered from a GPS experiment are illustrated: How does someone walk through the park, and what does that mean?

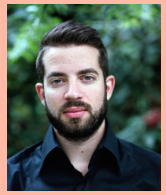
Data tells…

The data about visitor numbers itself does not say a lot. Though if you look for correlations, it tells a lot of interesting stories. Here, some of the stories behind the numbers are illustrated. All numbers and stories are fictional.

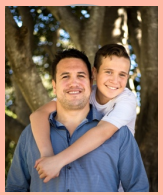
STORIES OF ARTIS

February 7th, 860 visitors
It is a dreary day, not the perfect day for an outdoor activity. On our walk to the office we meet Thomas. He is a tourist from the UK. *"I only got four days in the city so I want to make the most out of it.* ***The weather is not great, but I do not want to miss out on anything*** *I had planned. I love the sea lions by the way, lucky for me they are visible from inside."*

June 11th, 6419 visitors
A new elephant is born! **ARTIS' newest inhabitant attracts a lot of people**, including ourselves. We recognize caretaker Emily. *"I am so lucky to have experienced the birth of an elephant from this close! I notice that the visitors are super curious about the newbie and there are a lot more people with questions about the elephants than usually. I am happy to answer all of them!"*



September 27th, 2822 visitors
It is a Monday, a normal working day for most people. On or walk during lunch we run into Simon, one of ARTIS' guards. *"It is busy indeed. It is the start of the school year, you know.* ***Schools plan their trip to ARTIS now the weather is still nice.*** *As such I have plenty to do on this Monday. I've got to go, see you around!"*



April 21st, 4608 visitors
Spring has begun! The sun is out on this lovely Saturday morning, and that is visible in the visitor numbers. We meet a family of four from Alkmaar. *"The weather is lovely, right? We saw that* ***great weather*** *was expected, so we planned a day out during the* ***weekend****, when we don't have to work. I think we were not the only ones with that thought!"*

October 18th, 1156 visitors
It is a very normal Tuesday morning when we meet Ria, a pensionada who lives two blocks away. *"I always enjoyed coming here as a kid. When I retired, I got myself a membership pass.* ***I love to go to the park on the quiet morning****, gives me time to myself. Did you know that the penguins… "*

STORIES OF ARTIS

Routes of ARTIS

Not only the number are a great storyteller. Also the routes that ARTIS' visitors take tell a story about their behavior. Walk with us! All stories are fictional.

Dutch Day Visitor (green)

Suzan (17) & Pierre (18)
These two lovebirds have the first anniversary of their relationship and thought there would be no better place to celebrate than ARTIS. *''We are together for a year now, so we could afford to go on a more expensive date.* ***We do want to make sure to see every animal!*** *We make a circle starting on the rights and have lunch at the restaurant. We might get back to the elephants in the end though!'*

Tourist (Purple)

Francesca, Kim, Marco & Tim
On our way to a meeting we see a group of people that seems to be unsure where they should go. *'We've been walking through the city without a plan for the past days. This morning we decided to go to the zoo, hoping to see some cool animals. We''ll see for how long we will stay.* ***Hey, that bird looks nice, let's go there!"***

Member (Orange)

Albert (56)
At the helmet casuaris we meet Albert. Albert has a membership of ARTIS and comes here at least three times a week. *"Yes I love the helmet casuaris! It is such a gracious animal. It is often not showing itself, that's why most people don't even notice it. When I get here,* ***I always go straight to the pheasants*** *and then here. I don't usually stay much longer than an hour."*

STORIES OF ARTIS

From ARTIS to the city

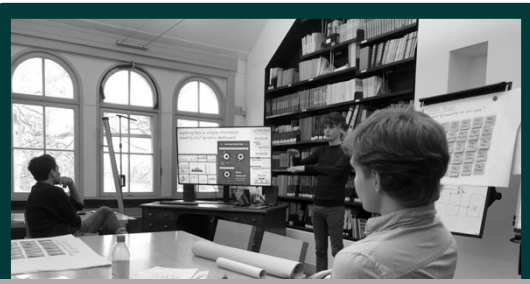
ARTIS → Urgency → Transferability → The City

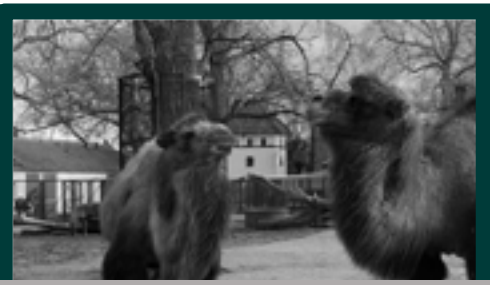
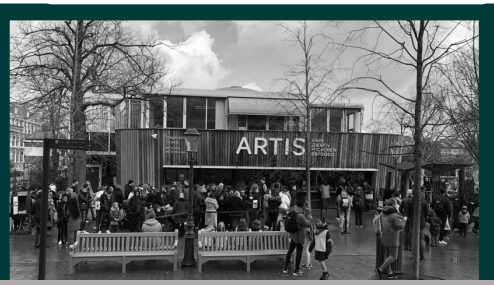
The **data tells stories**. Stories that help the zoo to get insights in the behavior of its visitors. This has proven to be useful for its **day-to-day operations**. In addition, the visitor prediction model helps ARTIS to **plan resources** more efficiently for the days and weeks to come. Both the products have the potential to make an impact on ARTIS, but it does not stop there. The project has great **transferability** potential and there is an **urgency** at similar attractions and locations in the city.

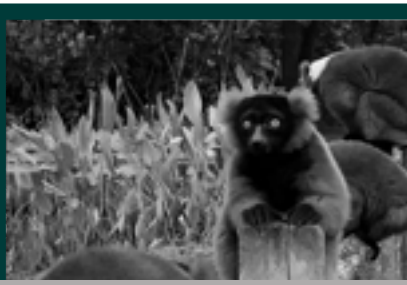
Crowded locations are increasingly becoming a societal debate in Amsterdam and many other metropolitan areas. They can **cause disturbance** in numerous ways: noise nuisance, traffic congestion, several types of pollution or an excessive demand on the cities' resources and services. With proper **allocation of human and natural resources** these negative impacts can be mitigated or even resolved. The first step to this proper allocation is a reliable and accurate **visitor prediction model**.

People have different reasons for going to different attractions: some attractions may be more popular during winter or on a rainy day. However, taking this into account in the visitor prediction model is just a matter of **tweaking the variables**. The only necessity for transferring a product like this is the availability of a dataset with visitor numbers of the past years. The more years of data, the better the predictions. This makes the visitor prediction model a very **scalable and transferable product**.

The rapidly changing and modernizing city demands **data-driven decision-making**. The number of urban attractions or events that could benefit from a visitor prediction model is endless. Attractions that are influenced by the weather or have distinct seasonal peaks could find great value for planning using a visitor prediction model. Examples of such attractions are popular museums and theme parks. Even attractions that are not closed off, like parks or the Red Light District, could reduce crowdedness issues by better allocation of government officials or other staff. In end, the **visitor experience** can only benefit!





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