

# Calliope·Data: An Intelligent Visual Data Story Generation Platform for Mass

Nan Cao, Danqing Shi, Yanqiu Wu, Xinyue Xu, Fuling Sun, Yi Guo, Nan Chen, Mengdi Sun, Xingyu Lan, Pei Liu, Siji Chen, Ligan Cai, Yang Shi, Qing Chen

Intelligent Big Data Visualization Lab, Tongji University, Shanghai, China

TONGJI UNIVERSITY  
COLLEGE OF DESIGN AND  
INNOVATION

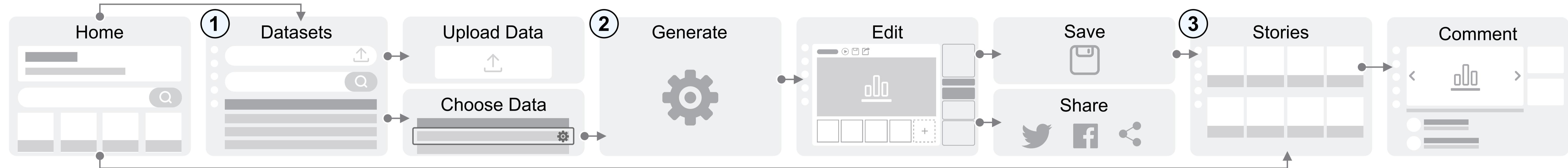
IDV  
智能大数据可视化实验室

## Introduction

A visual data story is a series of meaningfully connected story pieces, known as data facts, represented in the form of narrative visualization. To generate a visual data story, one needs to master three key techniques: data analysis, visualization, and scripting.

To lower the technique barrier, we introduce Calliope·Data, an online intelligent visual data story generation platform that employs advanced AI techniques to automatically analyze data and represent insights in form of a narrative visualization.

## UX Design



## Calliope·Data

[datacalliope.com](http://datacalliope.com)

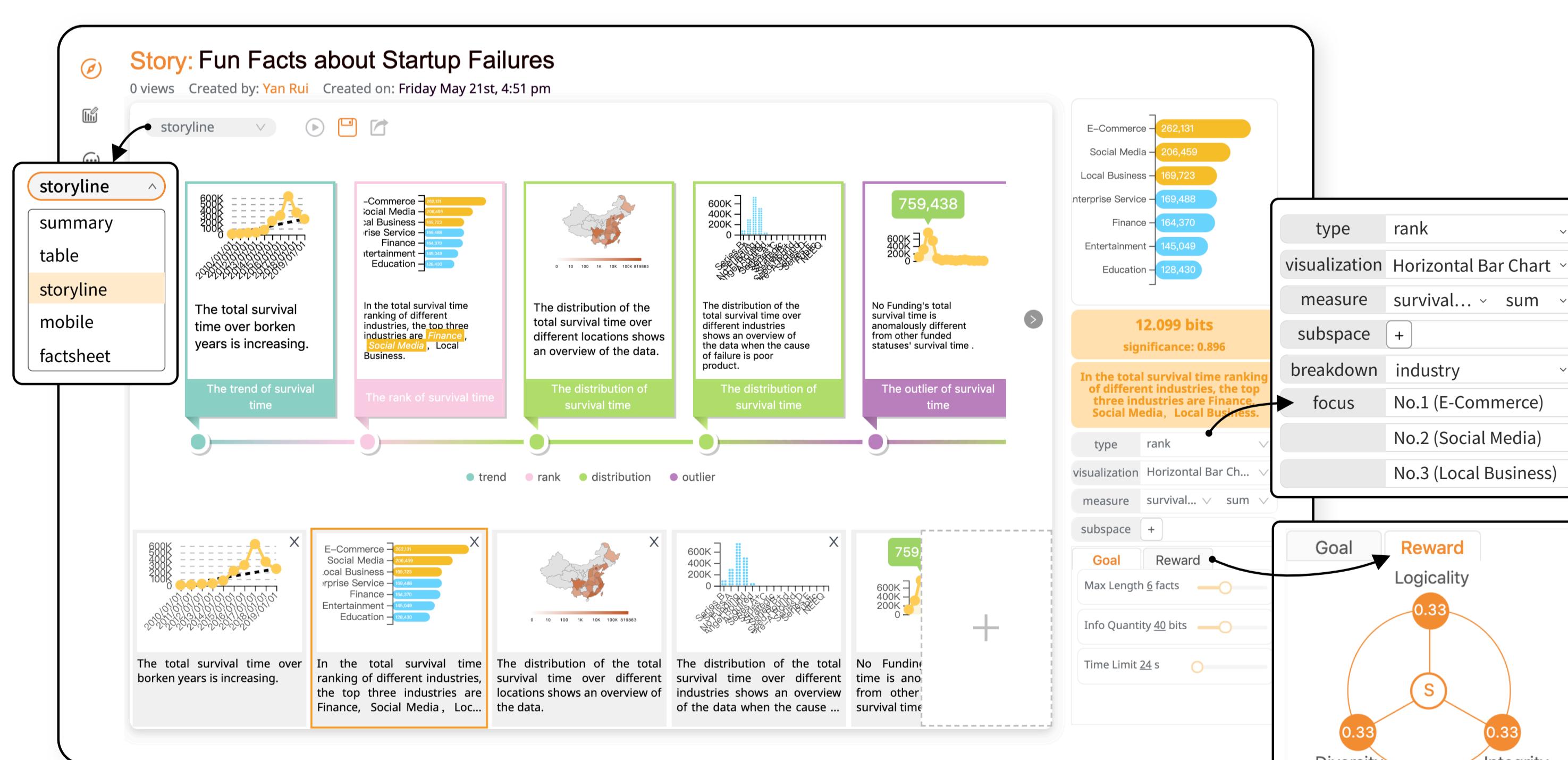
### 1. Data Management

- To create a data story, users upload spreadsheet via an HTML form. The upload form contains several text fields where the user can input the data title, keywords, and source. All uploaded datasets are listed in the data browser page.

Published datasets								My datasets	
Data	Keywords	Source	Contributor	Size	Added	Existing Stories	Generate		
FilmAwards	Film;Awards;Oscars	Kaggle	Fan Yuan	793k	2021-6-21 15:24				
AndriodApp	App;Andriod;Rating	Github	Lin Luoying	837k	2021-6-20 15:27				
CarSales	Car;Sales;Vehicle	Internet	David Wu	137k	2021-6-16 17:55				
DeadStartup	Dead;Startup;Com...	Internet	Yan Rui	70.9k	2021-6-15 11:24				
Laptops	Laptop;Brands;Sal...	Kaggle	Yan Rui	29.3k	2021-6-12 22:04				

### 2. Visualization

- A data story can be generated by clicking the generation button. Then it will be visualized as a series of captioned visualization charts.
- The generated story can be further edited in the story editor, which consists of three major views: the storyline view, the configuration view, and story visualization view. When a fact in the storyline view is selected, the data details on each of its fact fields and visual and textual representations can be edited in the configuration view. The user can also set the story generation goal and adjust the reward function in a group of configuration panels for the story regeneration.



## Calliope·Lite

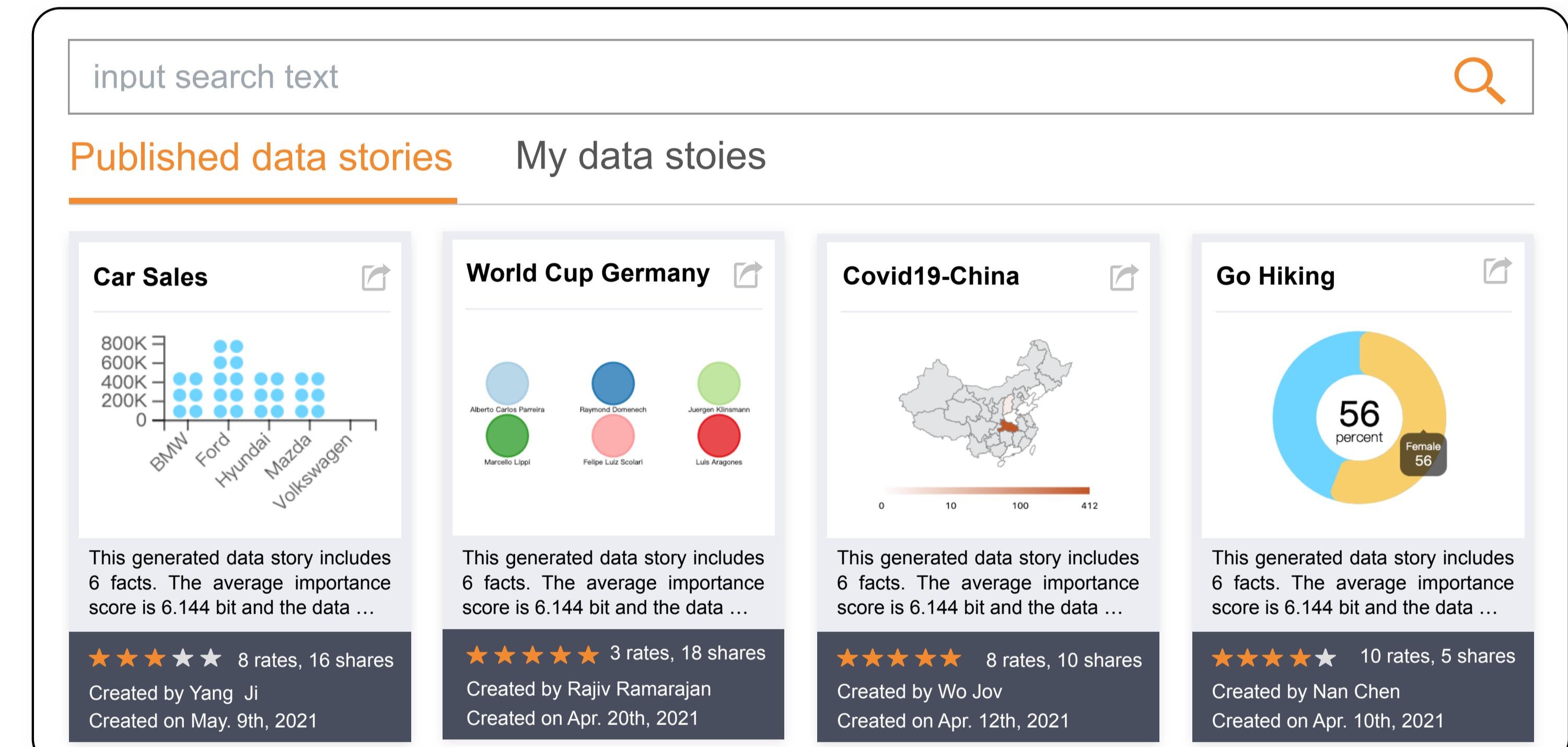
[lite.datacalliope.com](http://lite.datacalliope.com)



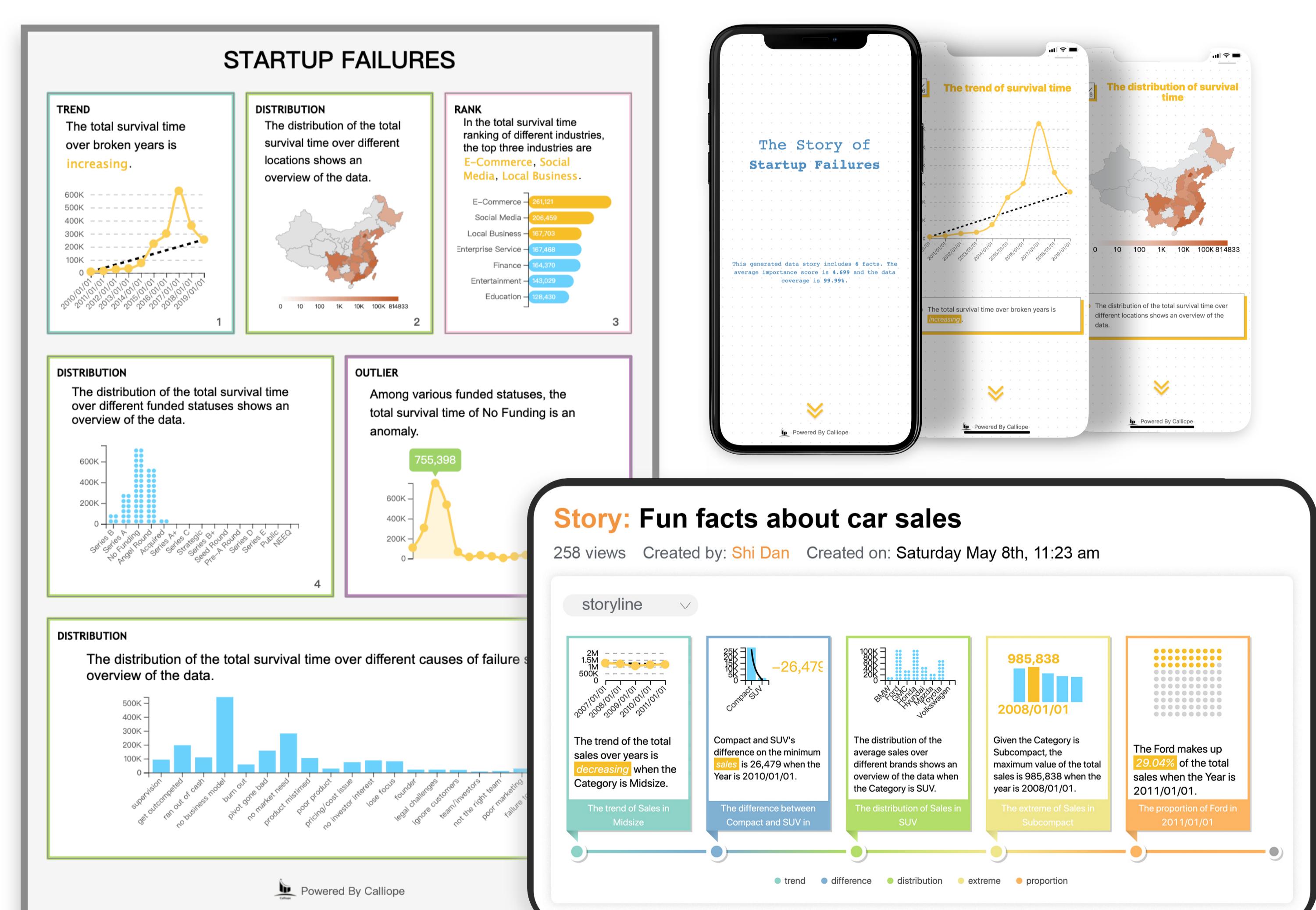
As a user uploads the data file, Calliope·Lite will instantly analyze the data file and show the results in a chosen visual narrative form. Then, the user can further edit the result or directly download it as a PDF file to support off-site communication. After generation, Calliope·Lite automatically destroys all uploaded files from our servers.

### 3. Social Features

- A data story gallery is integrated in the Calliope·Data platform to showcase the data stories created by various users based on different datasets. Users can click an item and enter the data story page to view and comment the visual data story. For users who are interested in a specific topic, Calliope·Data provides a text-based search box for searching published data stories.



- Data stories can be easily shared via clicking the "share" button in the data story page. They can be presented in three modes: factsheet, storyline and swiper.



## Evaluation

Since the launch of Calliope·Data, it has received 3750 views and collected 1893 user activities every month. One hundred twenty-eight registered users have uploaded 233 datasets and create 175 various visual data stories, which are shared 337 times in all. Users made 90 comments on the platform. About 45% of the comments give positive feedbacks on stories, and other comments lead to the discussion about the story. Several authors commented that with the help of the platform they can quickly create a story by first automatic generation and then revising it accordingly. These results indicate that Calliope·Data can ensure the quality of generated stories and support easy communication on the platform.