

Kickstart your JavaScript skills

and Fuel your Creativity with Awesome Embedding Projects

Jackson Huang

Senior Software Developer
Tableau Palo Alto

Timo Tautenhahn

Senior Solution Consultant
Tableau Germany

#data19

14th

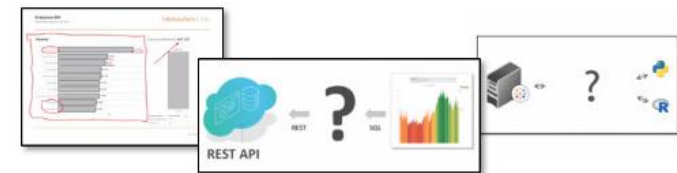
Tableau Conference

10⁺ years

Software Industry

tableaufans.com

Tutorials, Ideas, Hacks



Timo Tautenhahn

Senior Solution Consultant



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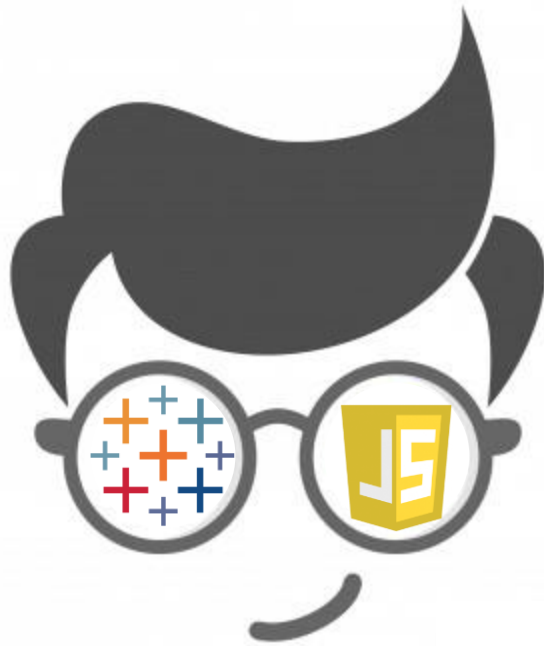
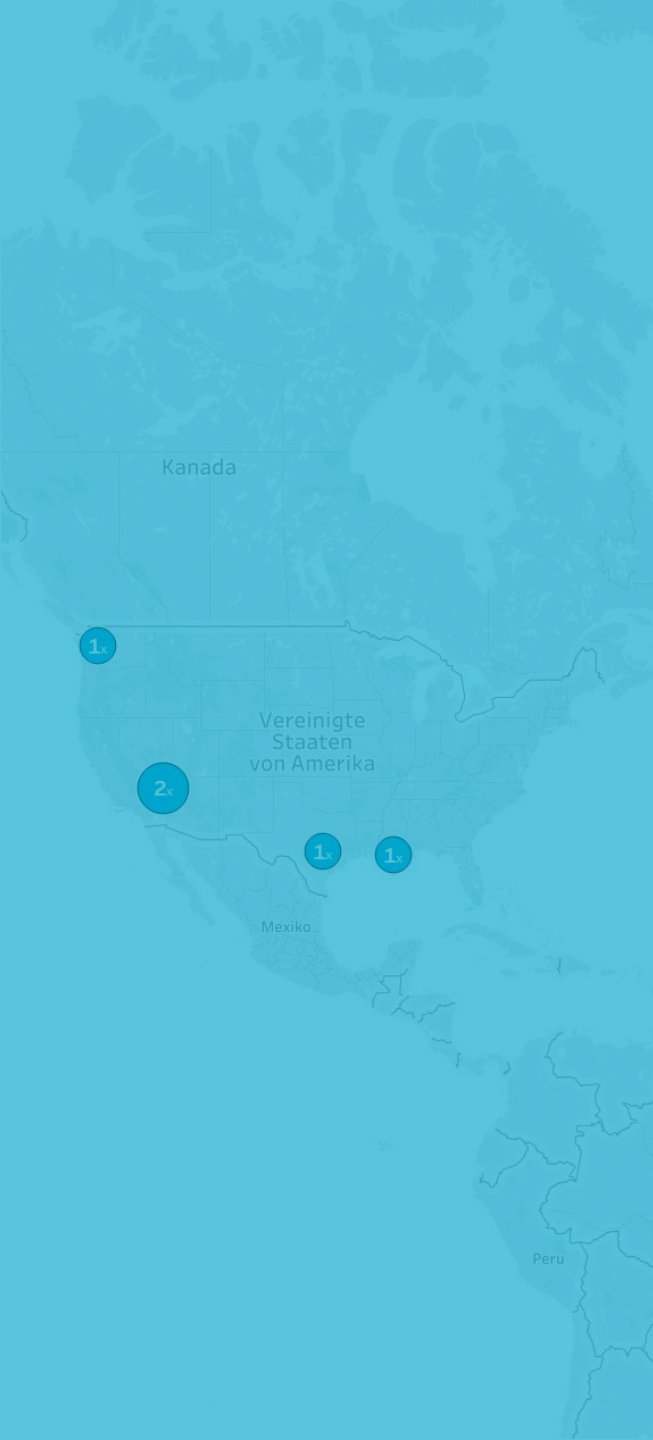
4 years

at Tableau

4th

Tableau Conference





Data Geeks


```
require 'spec/rails'
require 'capybara/rspec'
require 'capybara/rails'

Capybara.javascript_driver = :webkit
Category.delete_all; Category.create
Shoulda::Matchers.configure do |config|
  config.integrate do |with|
    with.test_framework :rspec
    with.library :rails
  end
end

# Add additional requires below this line
# Requires supporting ruby files in
# spec/support/ and its subdirectories
# run as spec files by default.
# in _spec.rb will both be required
# run twice. It is recommended to
# end with _spec.rb. You can
# option on the command line to
No results found for 'mongoid'
mongoid
buffer
```



Your Software

 + a b l e a u[®]



Your Software



 **tableau®**

Session Flow



Getting Started

Embedding



Part 1



Common Scenarios

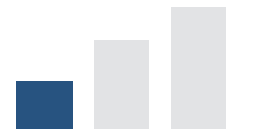


Call to
ACTION



More Examples

Customers & Partners



Part 3

Nerd Level



By the end of this session you will...



feel **confident** in getting started with our JavaScript API



be **equipped** with comonly requested code snippets
for your next embedded project!



be **eager** to build your own data product

CROWD PARTICIPATION REQUIRED!!!



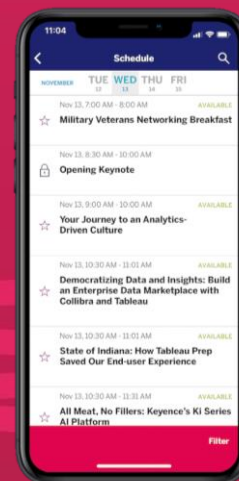
RELATED SESSIONS

Embedding Tableau and Ask Data: A Deep Dive into the JavaScript API



Thu 10:30am | Thu & Fri 1:15pm

Search for Embedded



Session Flow




Getting Started

Embedding

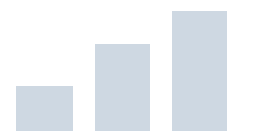


Part 1



Common Scenarios

Code Snippets



Part 2



More Examples

Customers & Partners



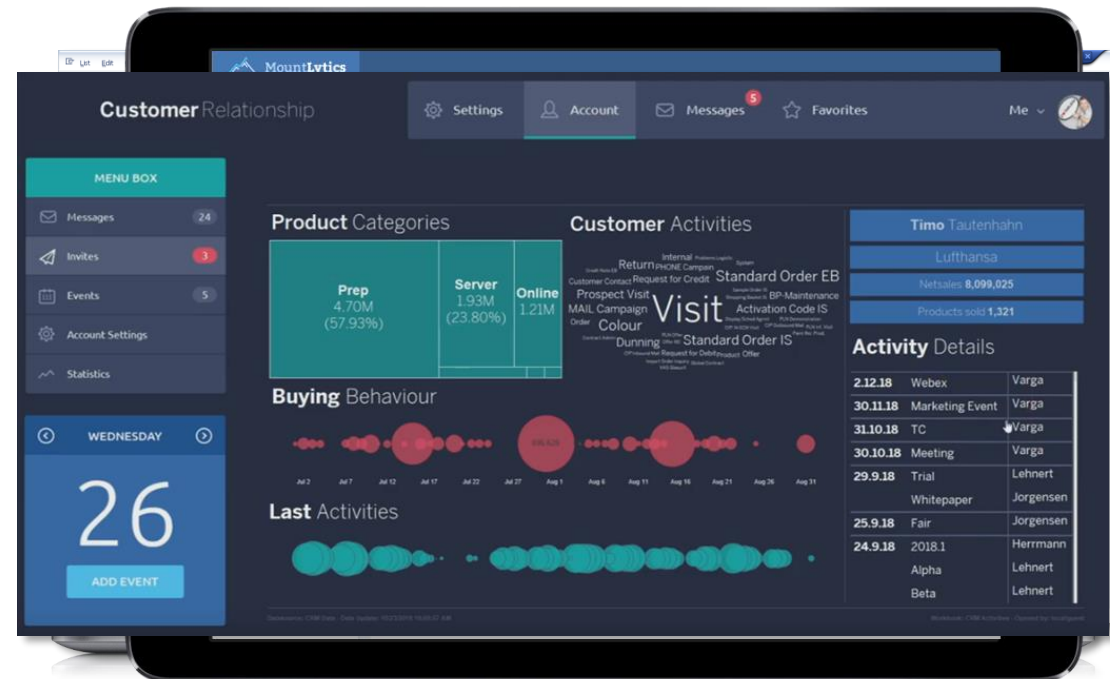
Part 3

Nerd Level



What is embedded analytics?

Data/Analytics seamlessly integrated within the context of end users



HOW?



Software



 + a b l e a u[®]

Tableau Developer Tools

Automation / Integration

Automate tedious tasks, create custom workflows and manage Tableau content

Extensibility

Give dashboards new capabilities, and integrate them with other applications

Advanced Analytics

Integrate Tableau with advanced models in R, Python, and Matlab

Embedding

Embed Tableau content into other applications

Data Connectivity

Get any data into Tableau via custom connector or extract

Tableau Developer Tools

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Automate tedious tasks, create custom workflows and manage Tableau content

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Give dashboards new capabilities, and integrate them with other applications

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Embedding

Embed Tableau content into other applications

JavaScript API = Embedding API

Mobile App Bootstrap

REST API

Data Connectivity

Get any data into Tableau via custom connector or extract



Minodes

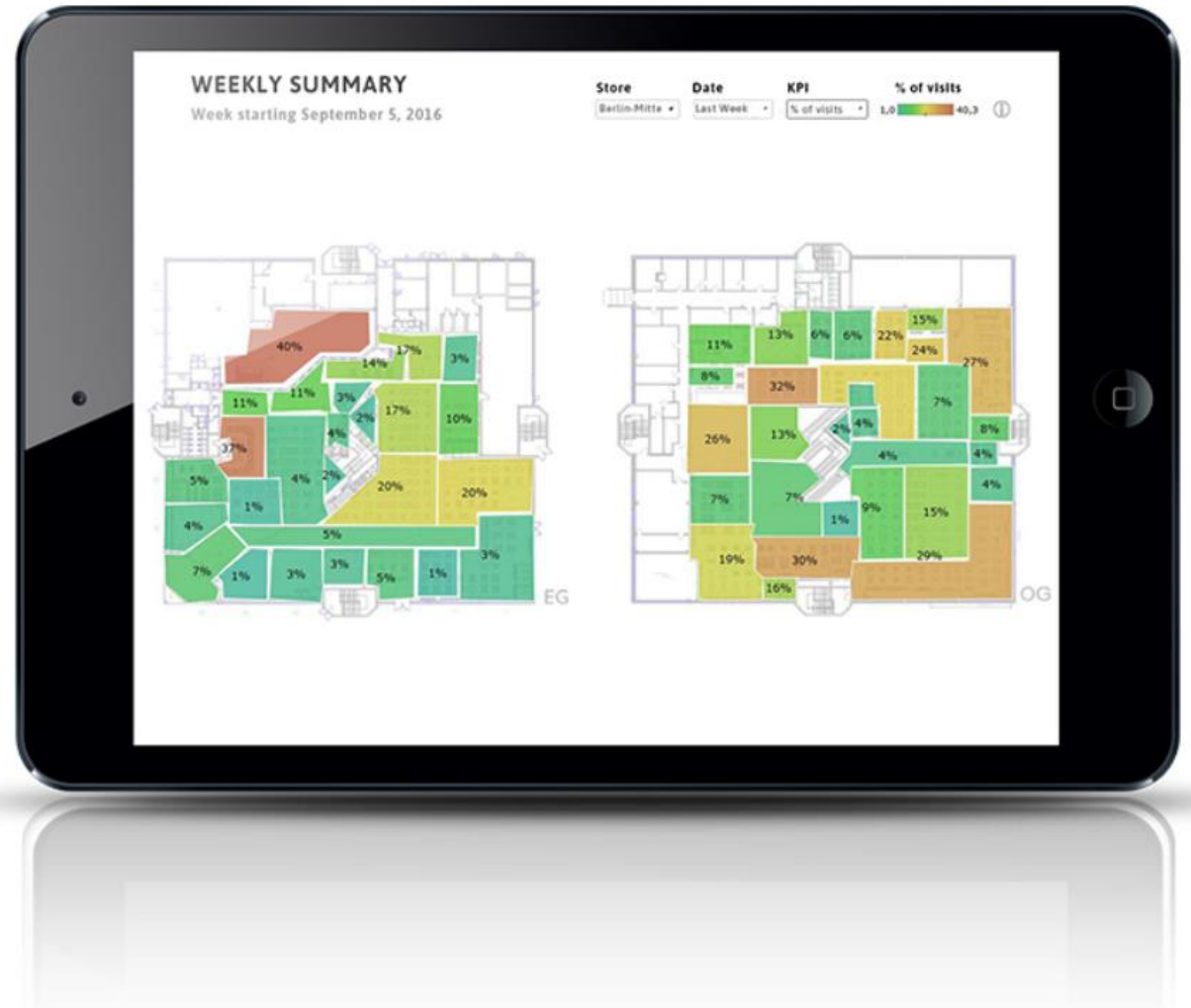




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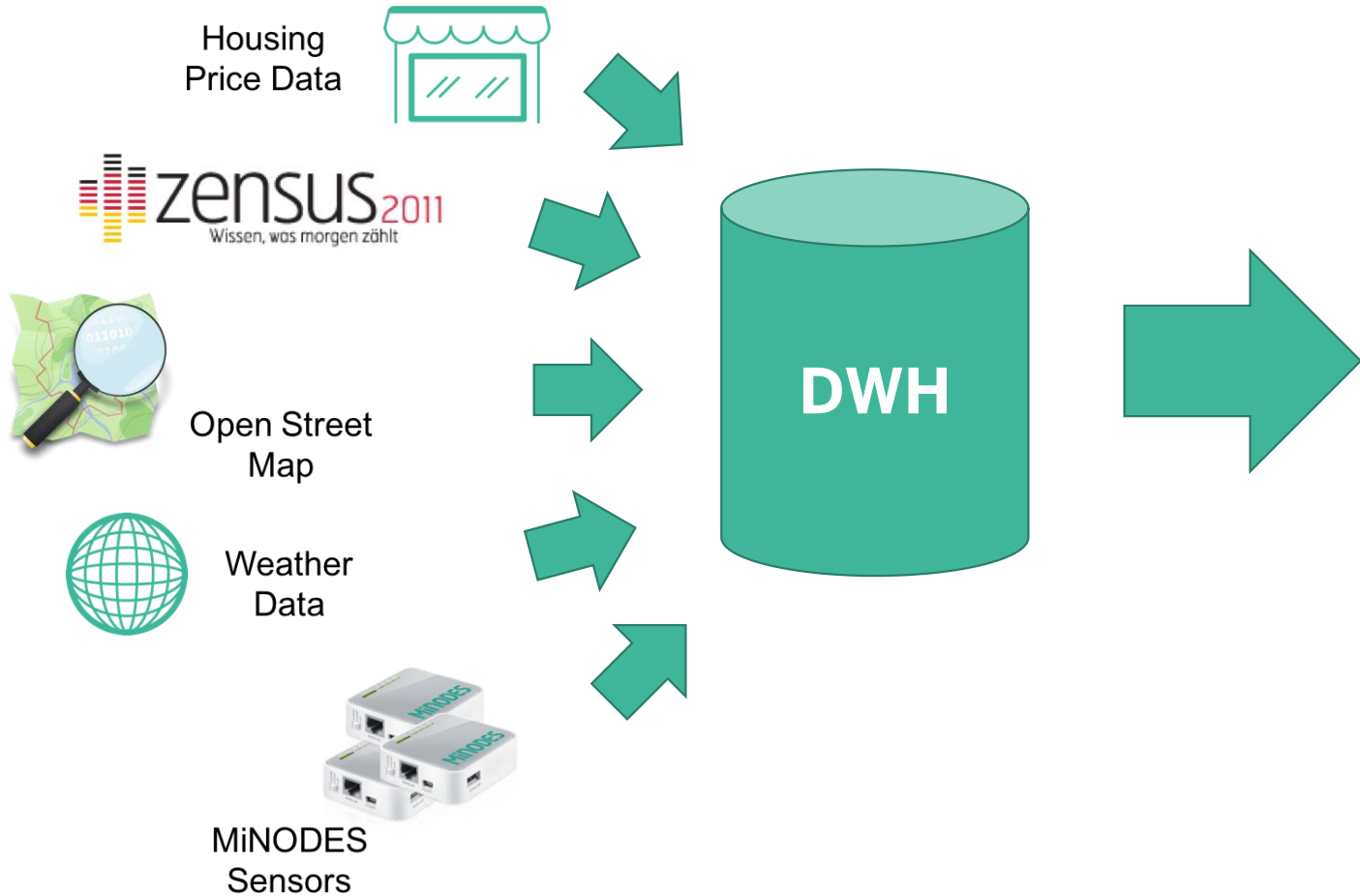
Minodes saves **high-end retailers**
five hours a week with Tableau

<https://www.tableau.com/solutions/customer/minodes-saving-high-end-retailers-5-hours-week-tableau>

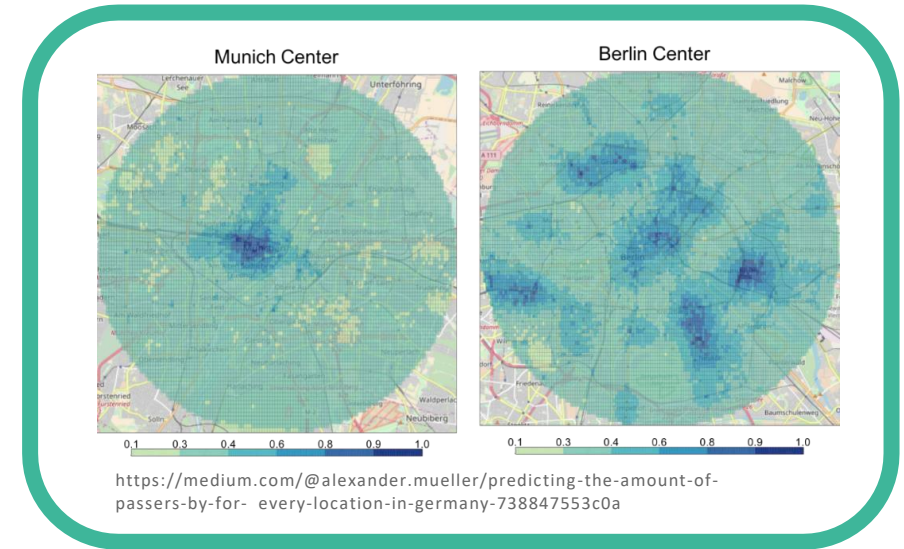
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A *Telefónica* NEXT COMPANY

Minodes



Location Planning



Session Flow




Getting Started

Embedding

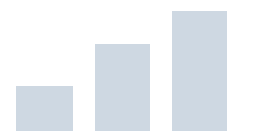


Part 1



Common Scenarios

Code Snippets



Part 2



More Examples

Customers & Partners




Part 3

Nerd Level

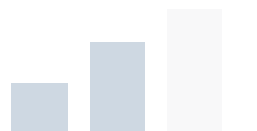


Session Flow




Getting
Started

Embedding

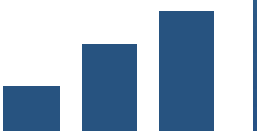


Part 1



Common
Scenarios

Code Snippets



Part 2



More
Examples

Customers
& Partners



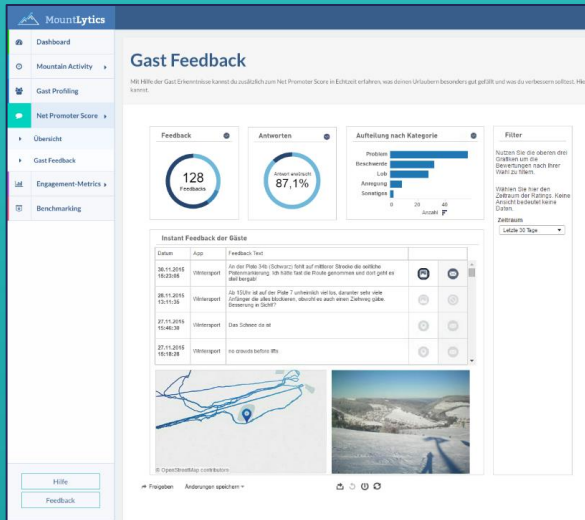
Part 3

Nerd Level



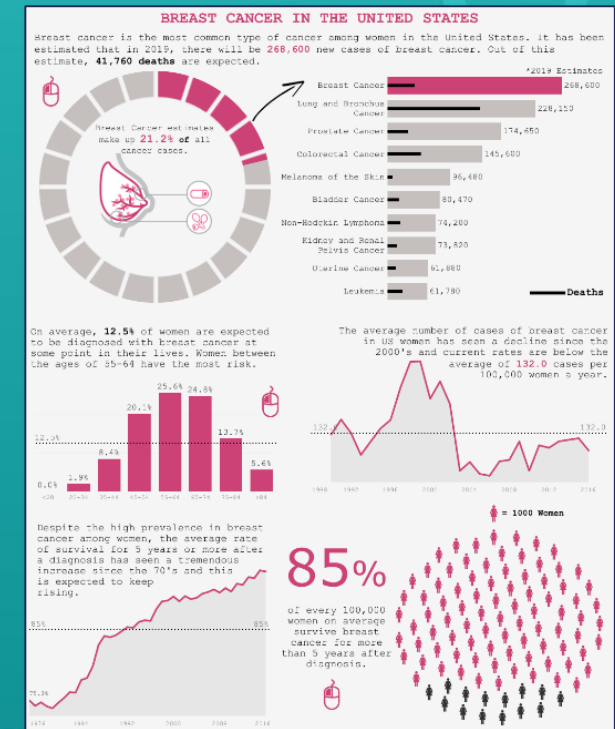
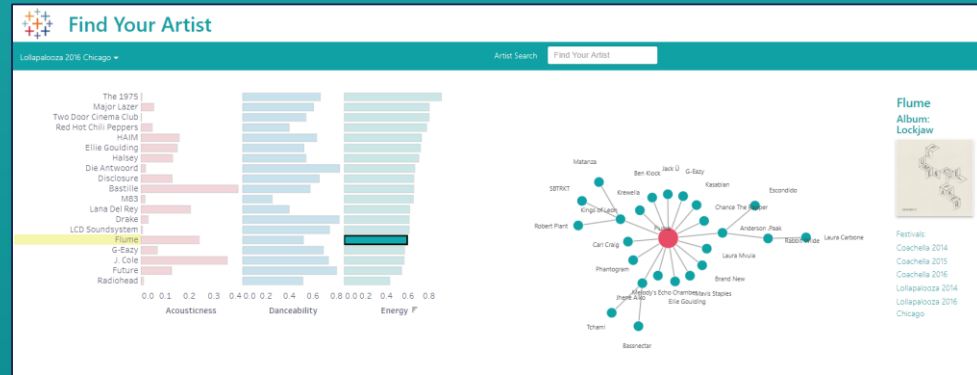
Common Use Cases

TABLEAU
CONFERENCE



Write Back

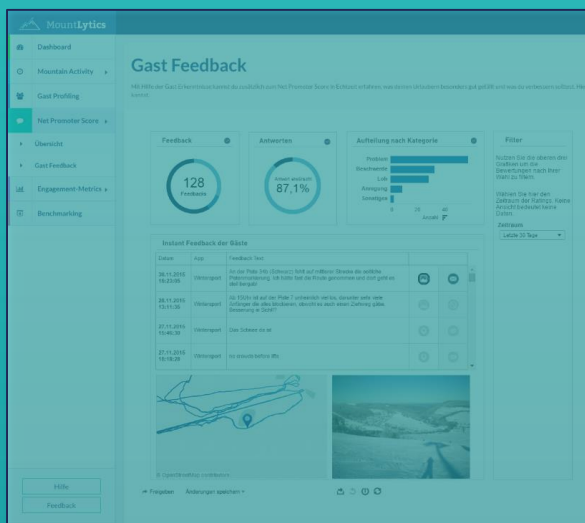
Commenting



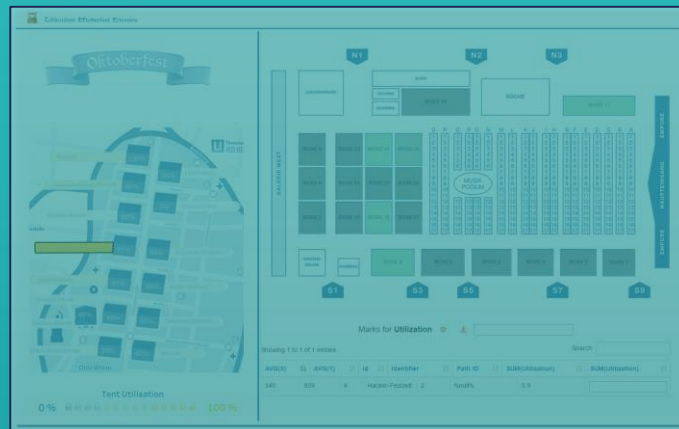
Filter Dashboards

Interact with 3rd Party Software

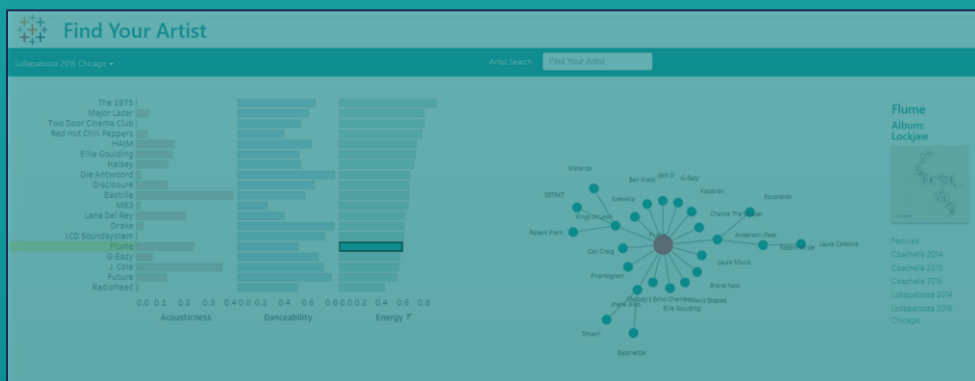
Common Use Cases



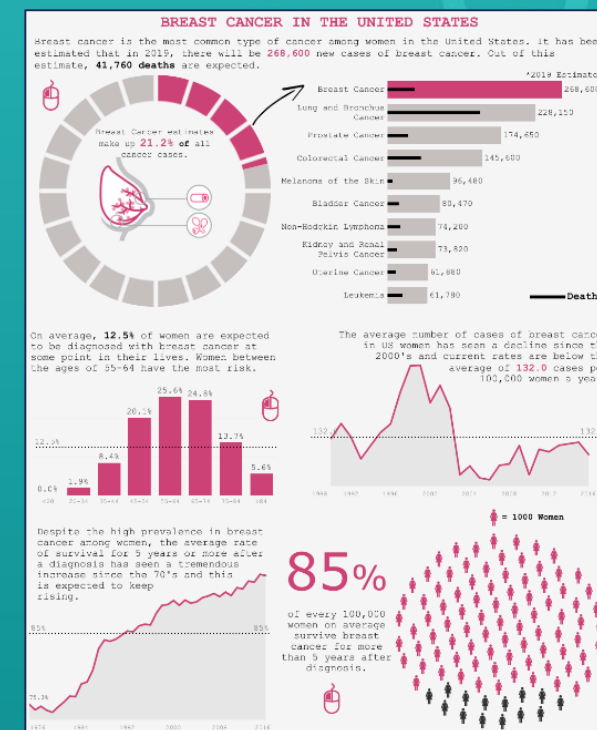
Commenting



Write Back

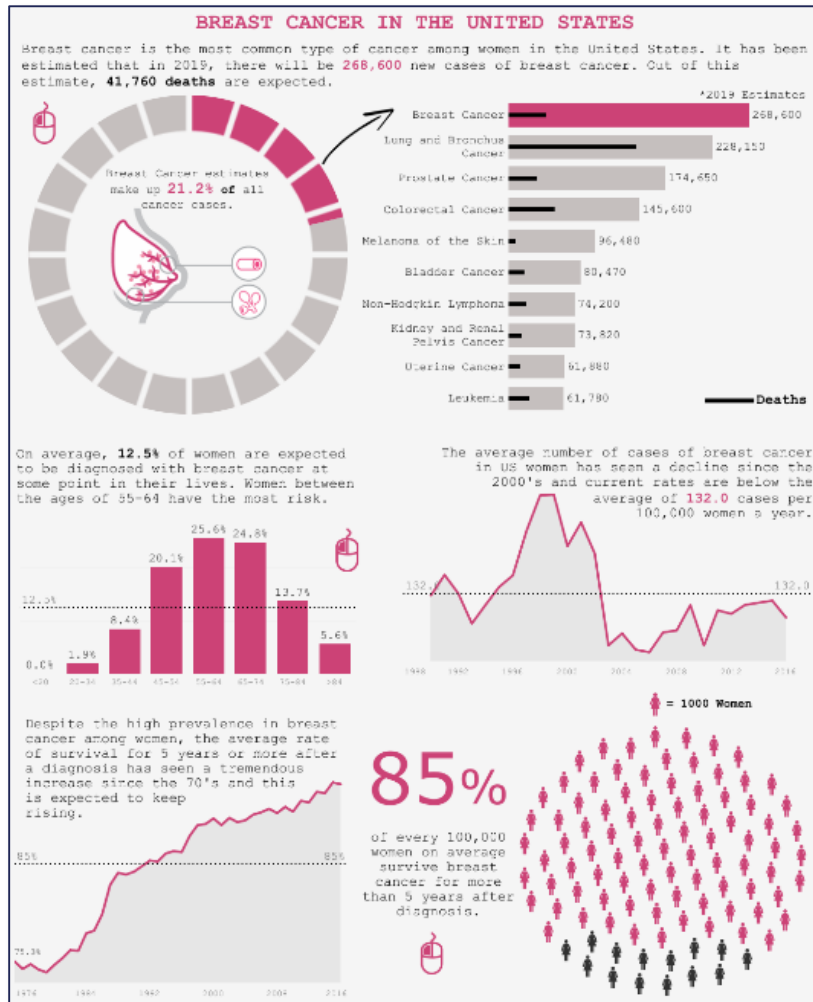


Interact with 3rd Party Software

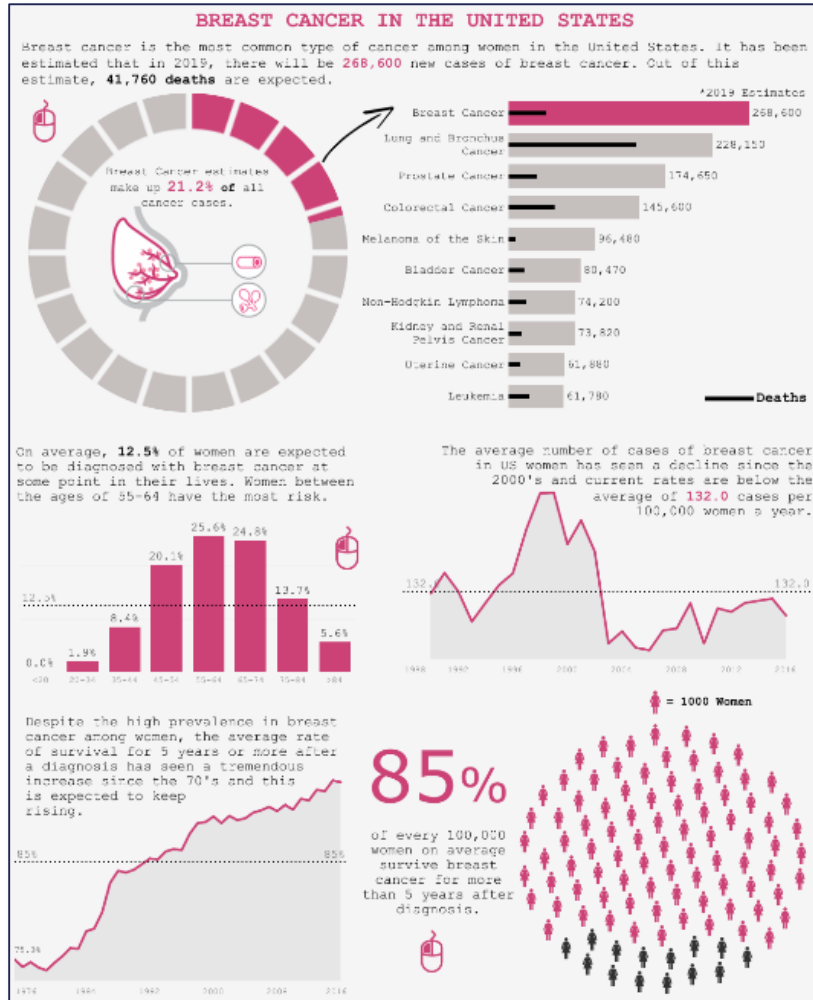


Filter Dashboards

Filter Dashboards



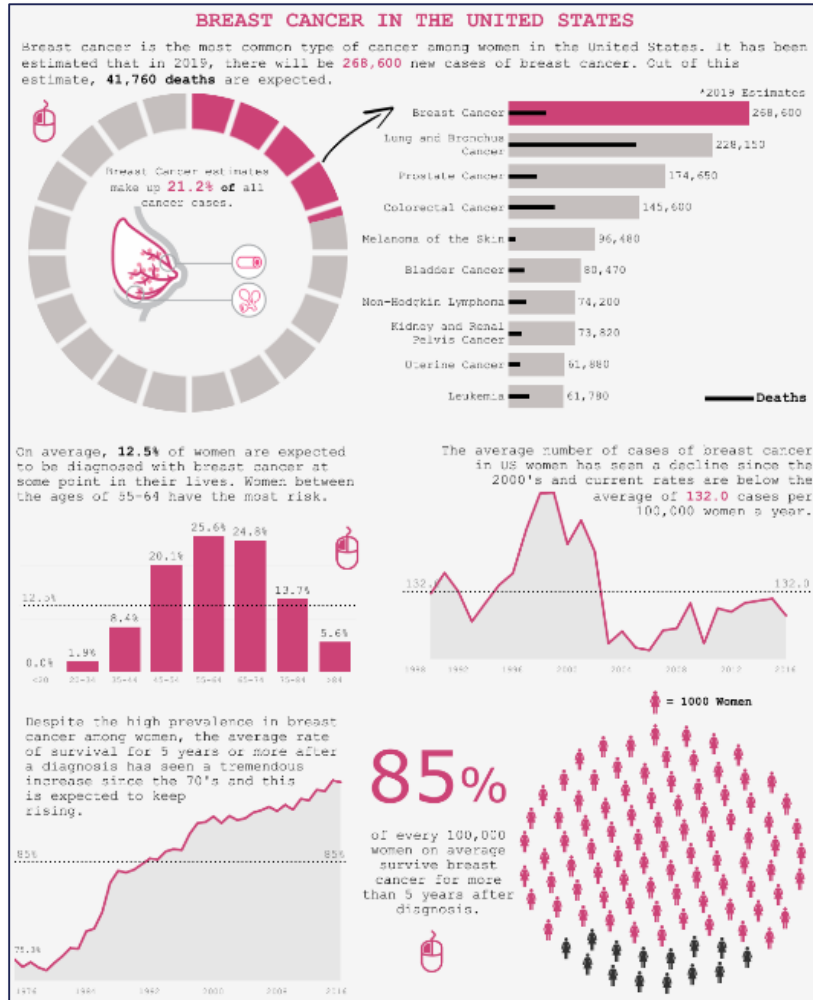
Filter Dashboards



```
// get the dashboard from the viz
var dashboard = viz.getWorkbook().getActiveSheet();

// iterate through each worksheet
dashboard.getWorksheets().forEach((worksheet) => {
  // apply a filter on the worksheet
  worksheet.applyFilterAsync(
    "State",
    "Nevada",
    tableau.FilterUpdateType.REPLACE);
});
```

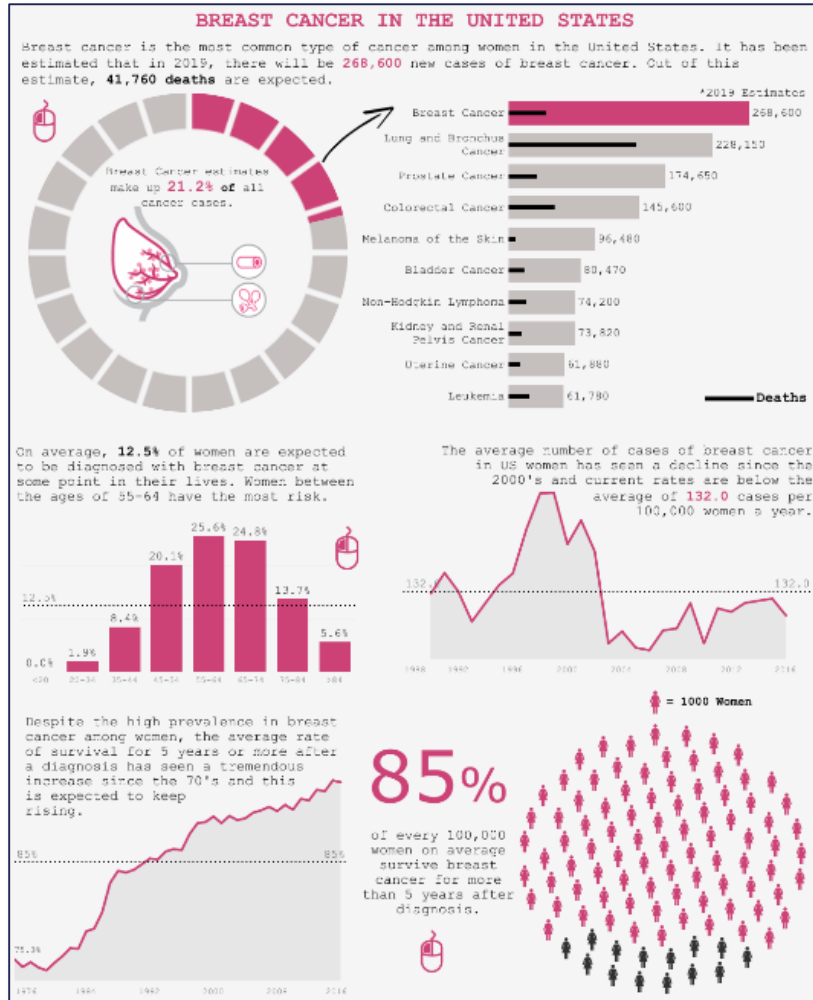
Filter Dashboards



```
// get the dashboard from the viz
```

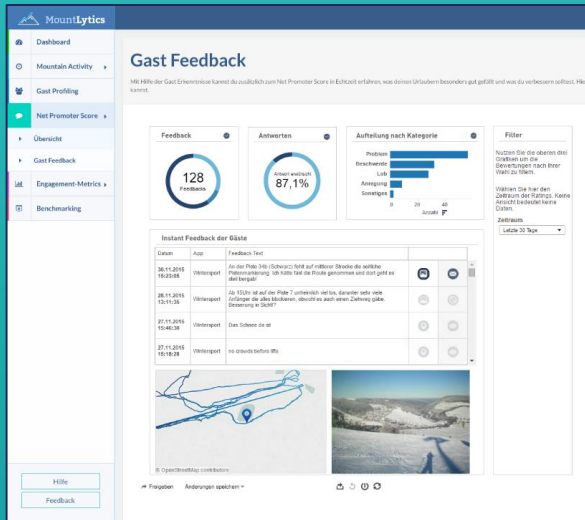
```
var dashboard = viz.getWorkbook().getActiveSheet();
```

Filter Dashboards



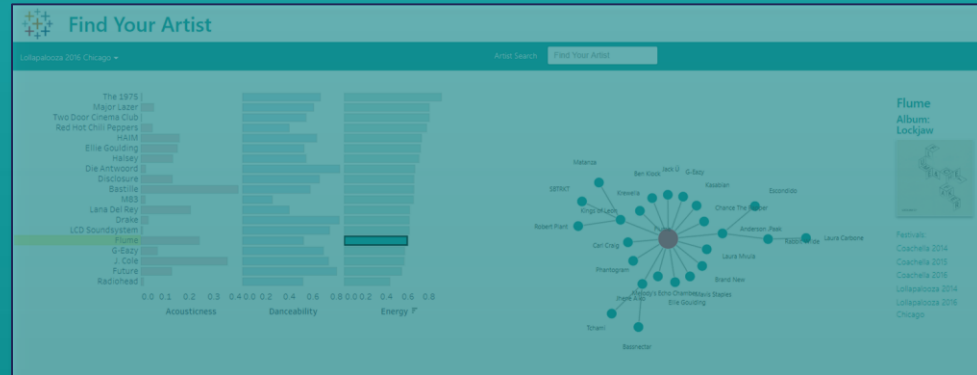
```
// iterate through each worksheet  
dashboard.getWorksheets().forEach((worksheet) => {  
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```

Common Use Cases

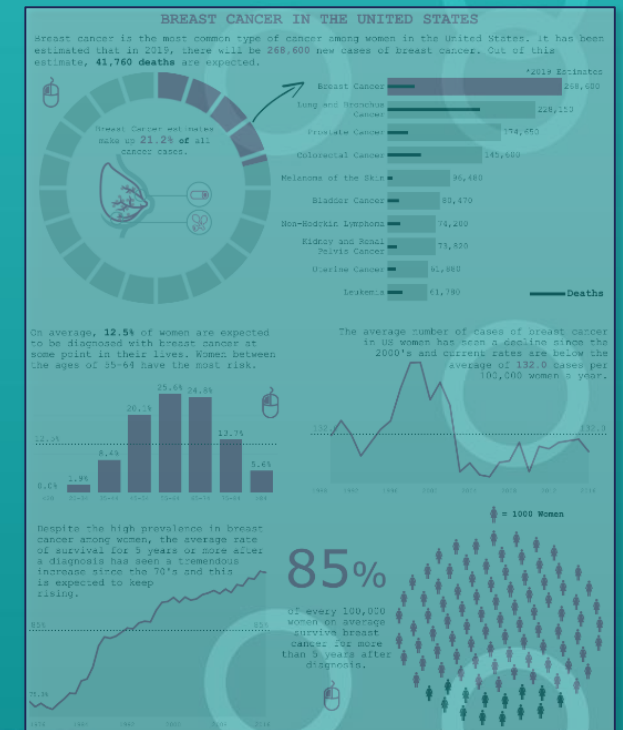


Write Back

Commenting

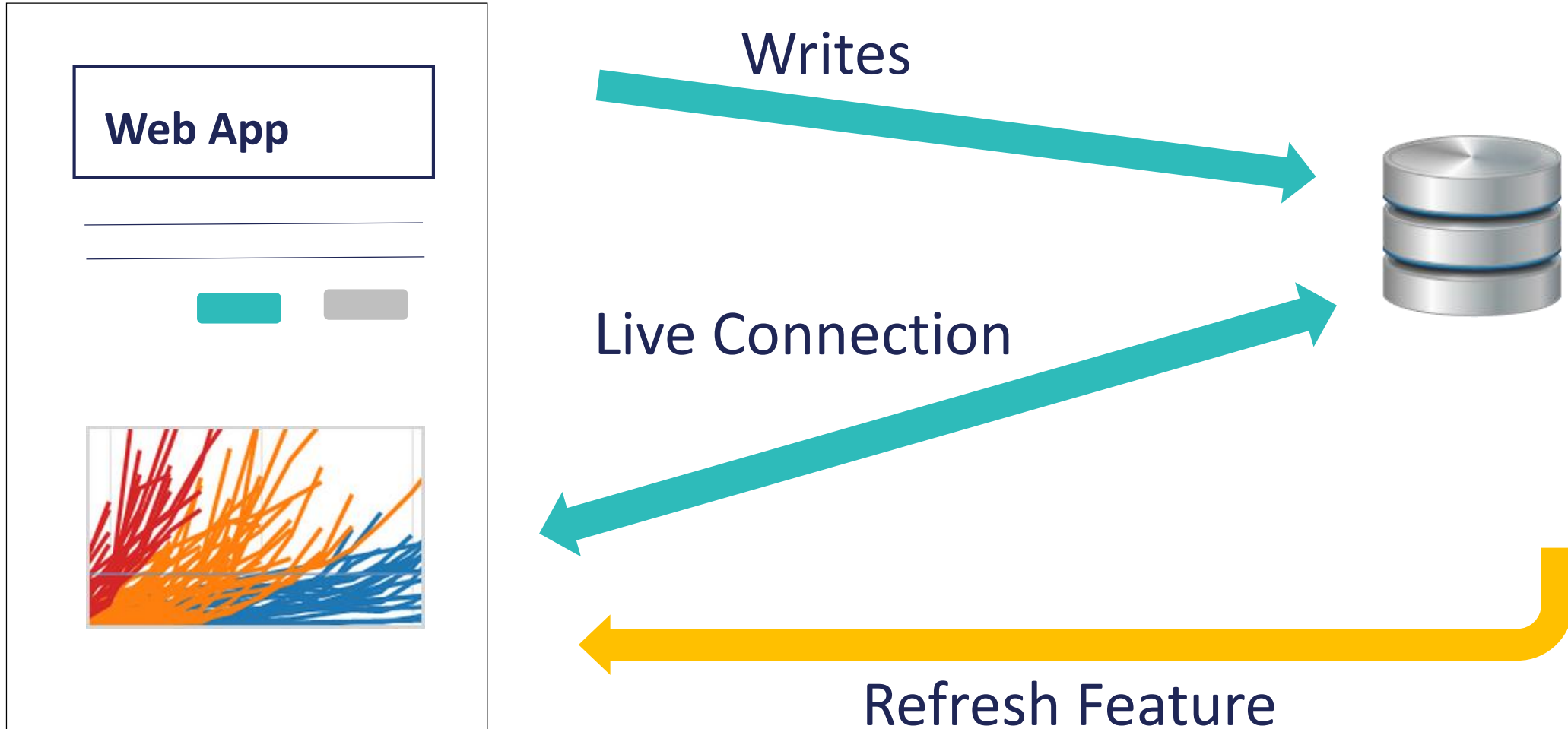


Interact with 3rd Party Software



Filter Dashboards


Write Back Concept



Commenting

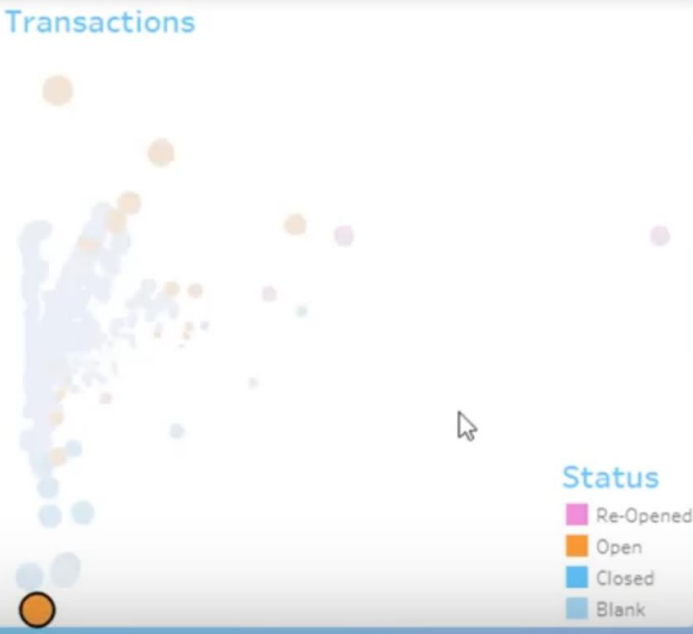
Hi Timo T

Click on **Transactions** to make & see comments



Re-Opened	Open	Closed	Blank
239.773	285.596	295.279	7.003.818
5	17	14	0

Transactions



Status

- Re-Opened
- Open
- Closed
- Blank

Re-Opened

Write a Comment

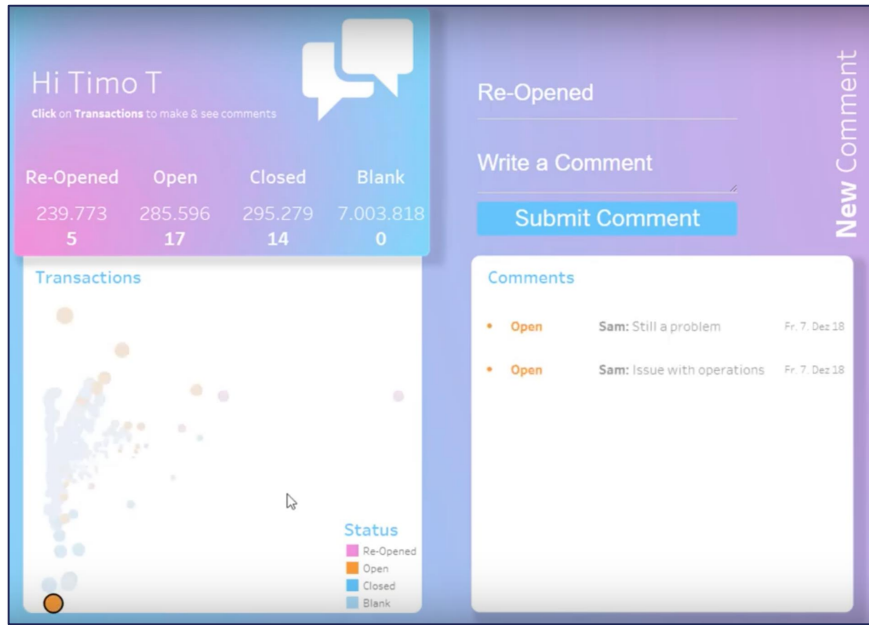
Submit Comment

Comments

- **Open** Sam: Still a problem Fr. 7. Dez 18
- **Open** Sam: Issue with operations Fr. 7. Dez 18

New Comment

Commenting

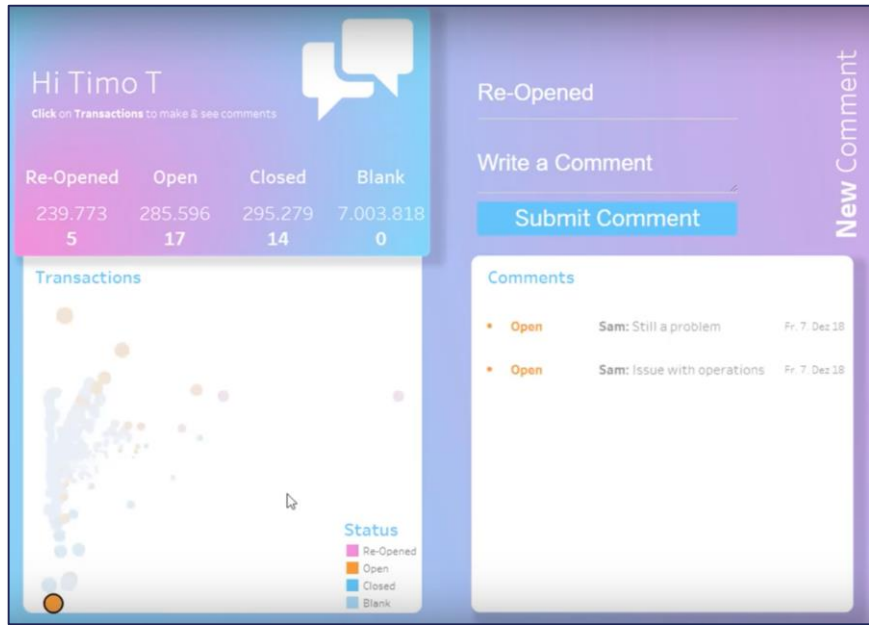


```
// triggered when user hits submit from the UI
function onSubmitComment(comment) {
    worksheet.getSelectedMarksAsync().then((marks) => {
        addCommentToMarks(comment, marks);

        // refresh the viz to show new data
        viz.refreshDataAsync();
    });
}

function addCommentToMarks(marks, comment) {
    // iterate through each mark
    marks.forEach((mark) => {
        //write the mark and comment back to your database
        yourCustomWriteFunction(mark, comment);
    });
}
```

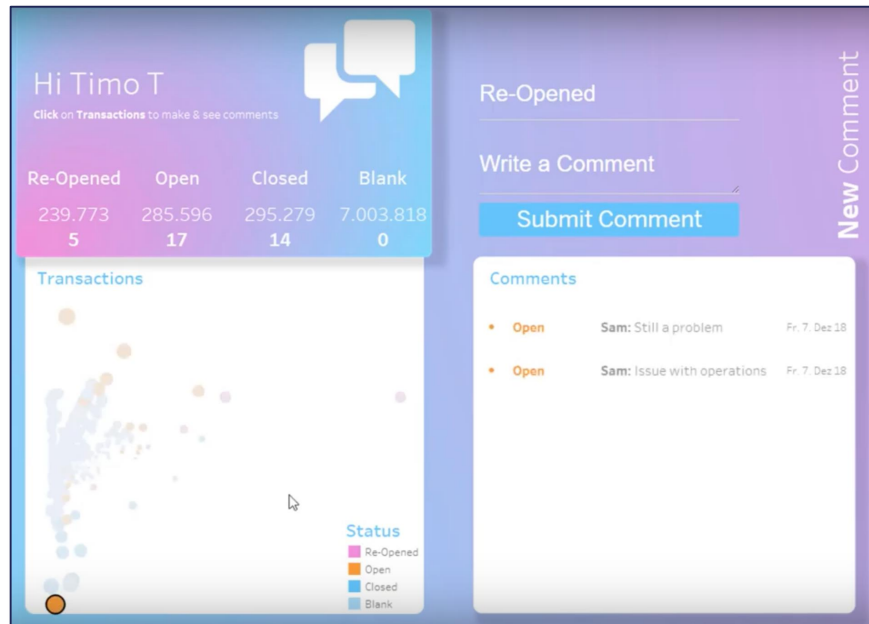
Commenting



```
worksheet.getSelectedMarksAsync().then((marks) => {  
    addCommentToMarks(comment, marks);  
});
```

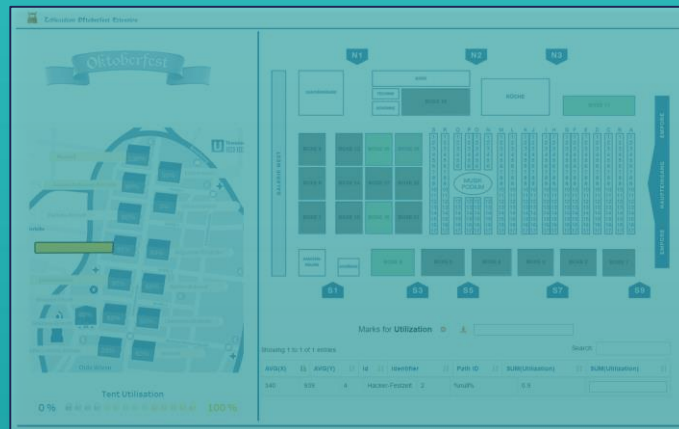
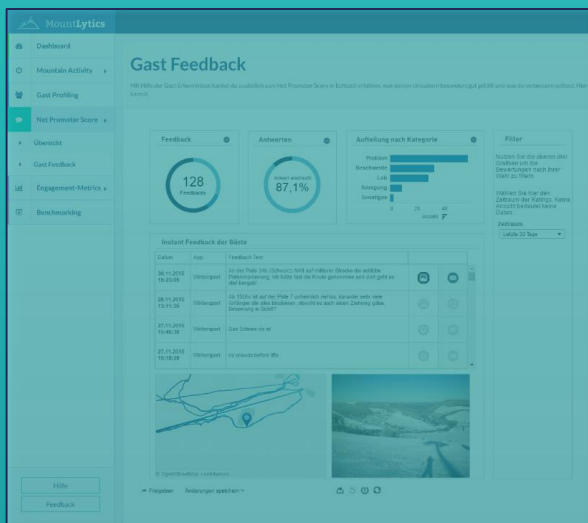
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```

Commenting



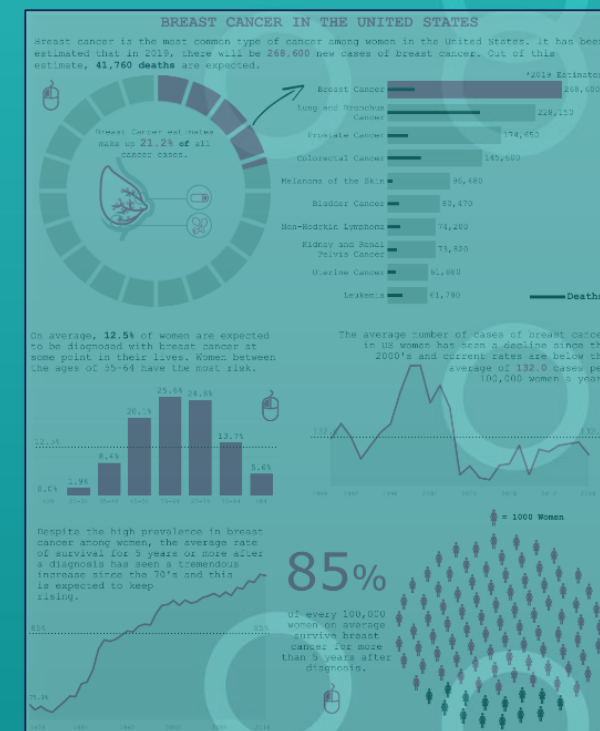
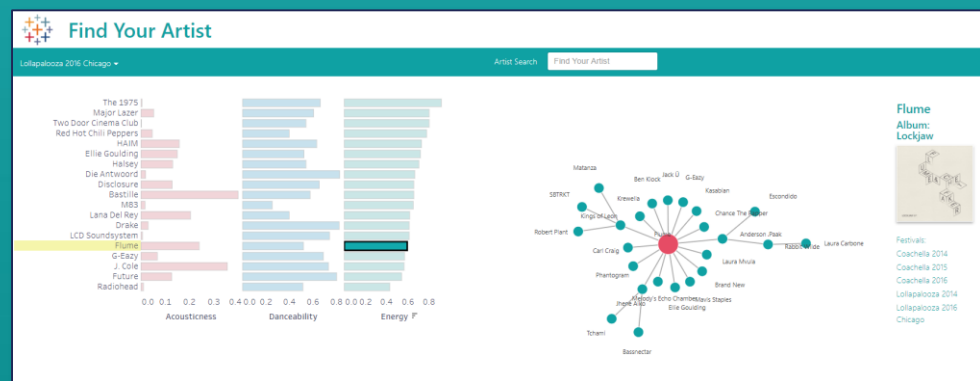
```
// refresh the viz to show new data  
viz.refreshDataAsync();
```

Common Use Cases



Write Back

Commenting



Filter Dashboards

Interact with 3rd Party Software

Demo

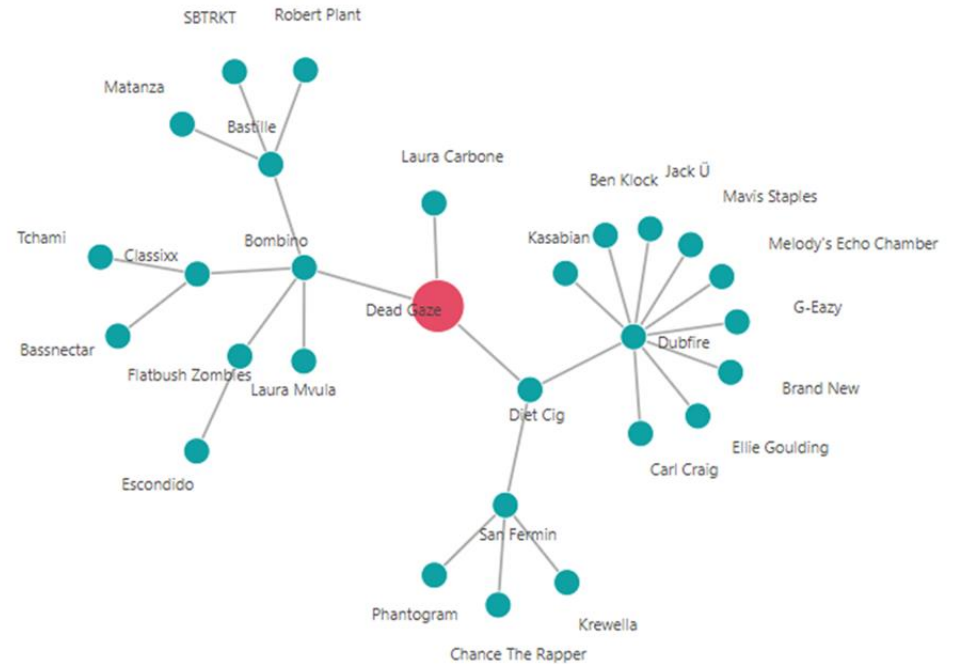
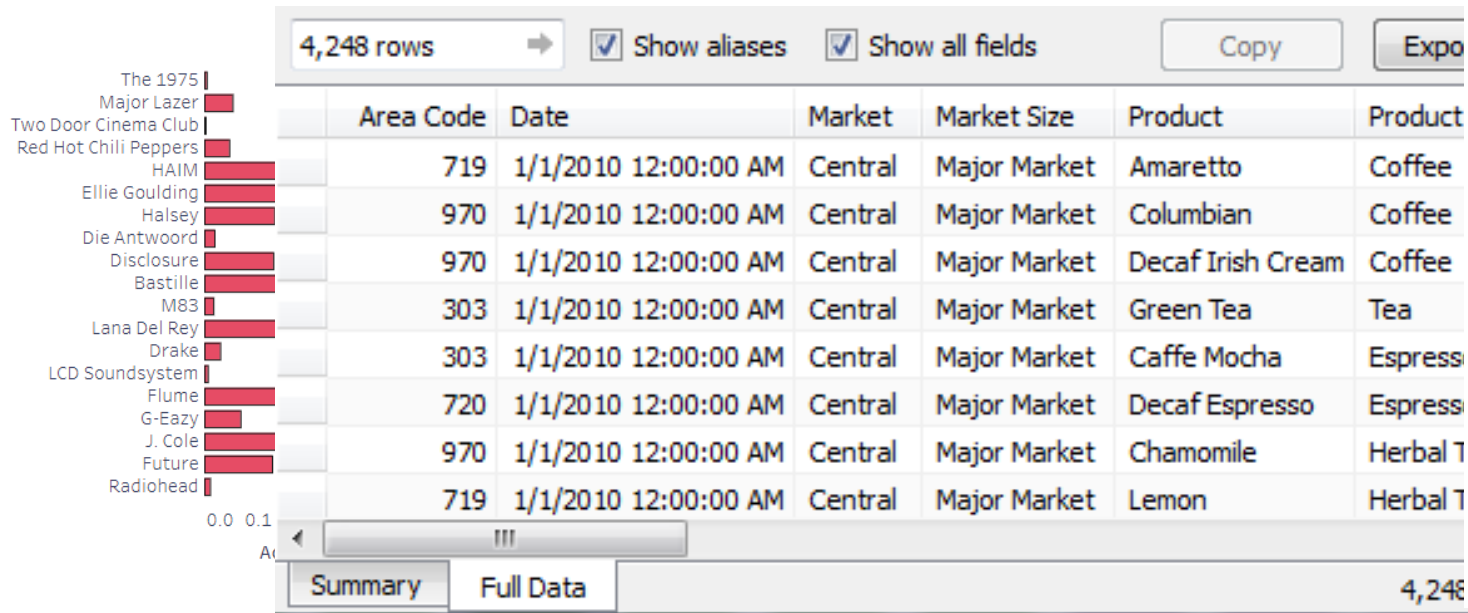


Get Data APIs – What are they?

- Modeled after *View Data* in Tableau Desktop
- `getSummaryDataAsync()`: returns the aggregated data for fields used in worksheet
- `getUnderlyingDataAsync()`: returns the data for all the fields that are used from the datasource

Area Code	Date	Market	Market Size	Product	Product Type
719	1/1/2010 12:00:00 AM	Central	Major Market	Amaretto	Coffee
970	1/1/2010 12:00:00 AM	Central	Major Market	Columbian	Coffee
970	1/1/2010 12:00:00 AM	Central	Major Market	Decaf Irish Cream	Coffee
303	1/1/2010 12:00:00 AM	Central	Major Market	Green Tea	Tea
303	1/1/2010 12:00:00 AM	Central	Major Market	Caffe Mocha	Espresso
720	1/1/2010 12:00:00 AM	Central	Major Market	Decaf Espresso	Espresso
970	1/1/2010 12:00:00 AM	Central	Major Market	Chamomile	Herbal Tea
719	1/1/2010 12:00:00 AM	Central	Major Market	Lemon	Herbal Tea

Powering Custom D3 Chart with Get Data



Making Get Data API Calls

//Uses the Get Data API to extract Data from Viz, parse Data and Construct D3 Diagram

```
function getDataAndConstructGraph() {  
  getDataOptions = {  
    maxRows: 0,  
    ignoreAliases: false,  
    ignoreSelection: true,  
    includeAllColumns: true  
  };  
  worksheet.getUnderlyingDataAsync(getDataOptions).then(function(dataTable){  
    setupFestivalFilterValues(dataTable);  
    setupSearchBox(dataTable);  
    var artists = parseTableauData(dataTable);  
    constructGraph(artists);  
  }, function(error) {console.log(error);});  
}
```


Making Get Data API Calls

//Uses the Get Data API to extract data from Viz, parse data and construct JS Diagram

```
function getdataAndConstructGraph() {
```

```
  getDataOptions = {
```

```
    maxRows: 0,
```

```
    ignoreAliases: false,
```

```
    ignoreSelection: true,
```

```
    includeAllColumns: true
```

```
  };
```

```
  worksheet.getUnderlyingDataAsync(getDataOptions).then(function(dataTable){
```

```
    setupFestivalFilterValues(dataTable);
```

```
    setupSearchBox(dataTable);
```

```
    var artists = parseTableauData(dataTable);
```

```
    constructGraph(artists);
```

```
  }, function(error) {console.log(error)});
```

```
}
```

Making Get Data API Calls

//Uses the Get Data API to extract data from viz, parse data and construct DB Diagram

```
function getDataAndConstructGraph() {  
  getDataOptions = {  
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    includeAllColumns: true  
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  worksheet.getUnderlyingDataAsync(getDataOptions).then(function(dataTable){  
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    setupSearchBox(dataTable);  
    var artists = parseTableauData(dataTable);  
    constructGraph(artists);  
  }, function(error) {console.log(error);});  
}
```

Parsing Get Data Results

```
// Common util function that extracts the data values in the specified column
function getColumnValues(dataTable, fieldName) {
    var columns = dataTable.getColumns(); // All the column meta data in the DataTable
    var data = dataTable.getData(); // The actual data values

    // Find the specified column
    var column = columns.find(function(column) {
        return column.getFieldName() === fieldName;
    });

    // Get the corresponding data value from each row of data,
    // based on the column index.
    var results = data.map(function(row) {
        return row[column.getIndex()].value;
    });

    return results;
}
```

Parsing Get Data Results

```
// Common util function that extracts the data values in the specified column
```

```
function getColumnValues(dataTable, fieldName) {
```

```
    // Returns a JavaScript array of all the data rows in the specified
```

```
    // data table for the specified column
```

```
    // Step 1: Get the data table
```

```
    // Step 2: Get the column values
```

```
    return getColumnValues(dataTable, fieldName);
```

```
}
```

```
// Step 3: Get the column values from the data table
```

```
// Step 4: Get the column values
```

```
    // Step 5: Get the column values
```

```
    return getColumnValues(dataTable, fieldName);
```

```
}
```

```
return values;
```

Parsing Get Data Results – Code Explanation

```
var columns = dataTable.getColumns(); // All the column meta data in the DataTable
```

Parsing Get Data Results – Code Explanation

```
var columns = dataTable.getColumns(); // All the column meta data in the DataTable
```



Artist Name	Festival	Track Name
Still Parade	SXSW 2016	07:41
AFI	Lollapalooza 2014	17 Crimes
Bad Religion	Coachella 2015	21st Century [Digi
RATKING	Lollapalooza 2014	100
Mike Real	SXSW 2016	100 Bandz
The Motet	Bumbershoot 2016	123
Azealia Banks	Coachella 2015	212
The Smashing Pumpkins	Lollapalooza 2015 Argentina	1979

Parsing Get Data Results

```
var data = dataTable.getData(); // The actual data values
```

Artist Name	Festival	Track Name
Still Parade	SXSW 2016	07:41
AFI	Lollapalooza 2014	17 Crimes
Bad Religion	Coachella 2015	21st Century [Digi
RATKING	Lollapalooza 2014	100
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Parsing Get Data Results

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Parsing Get Data Results

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Parsing Get Data Results

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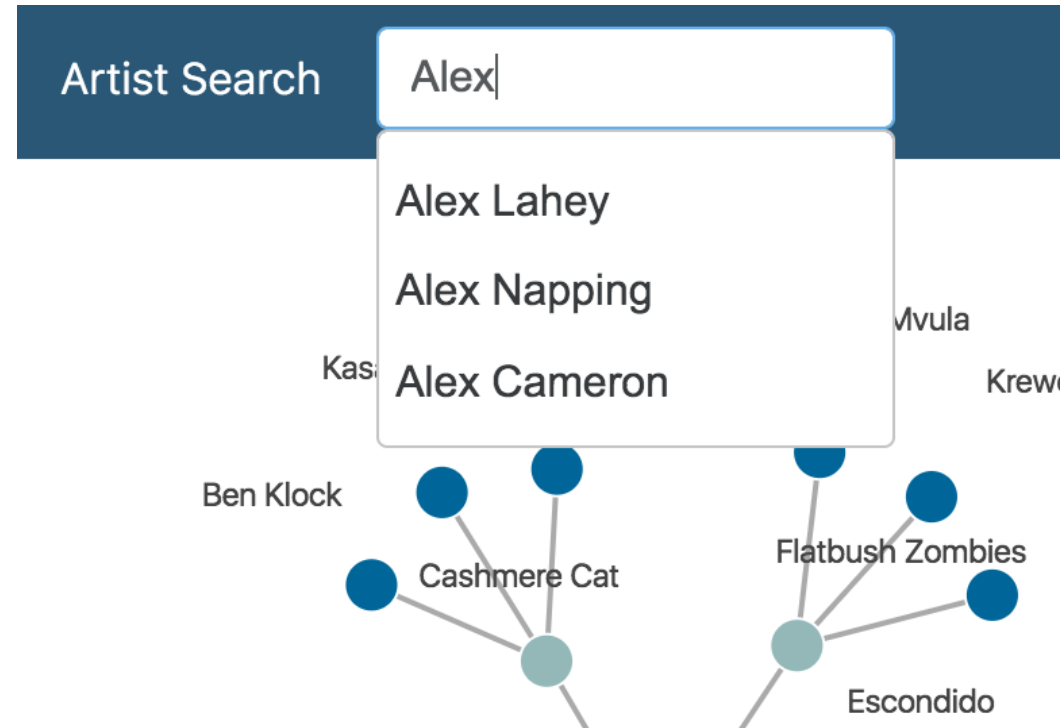
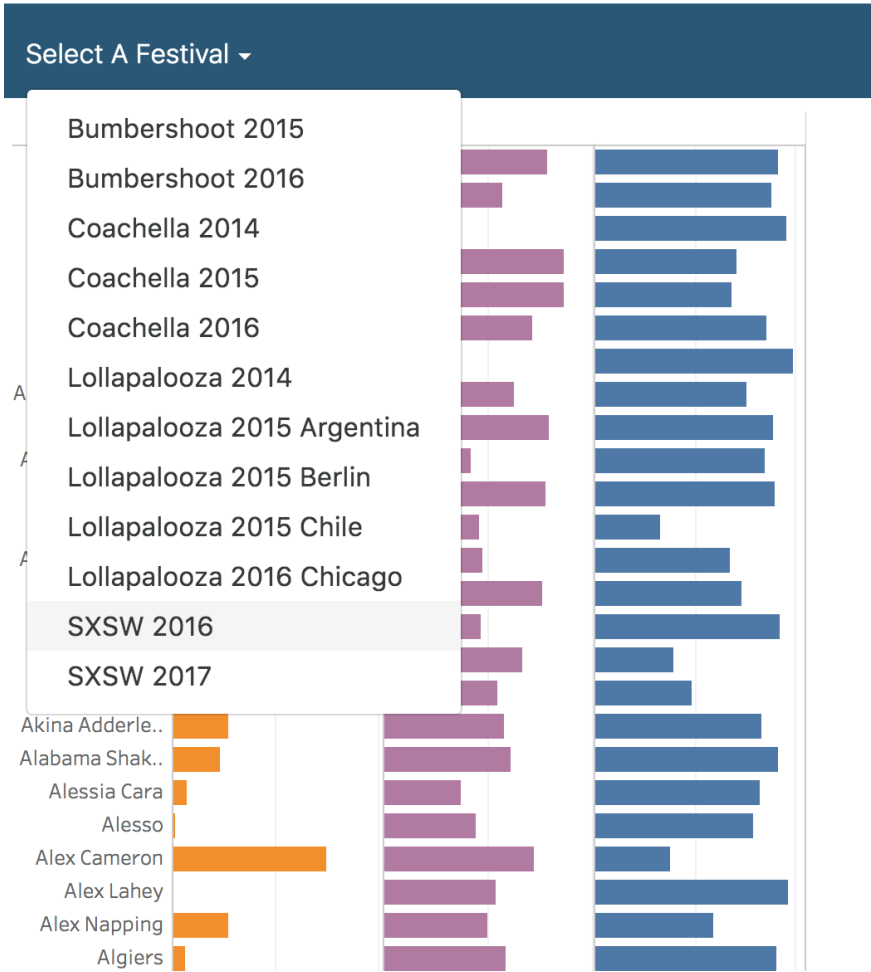
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    var results = data.map(function(row) {
        return row[column.getIndex()].value;
    });

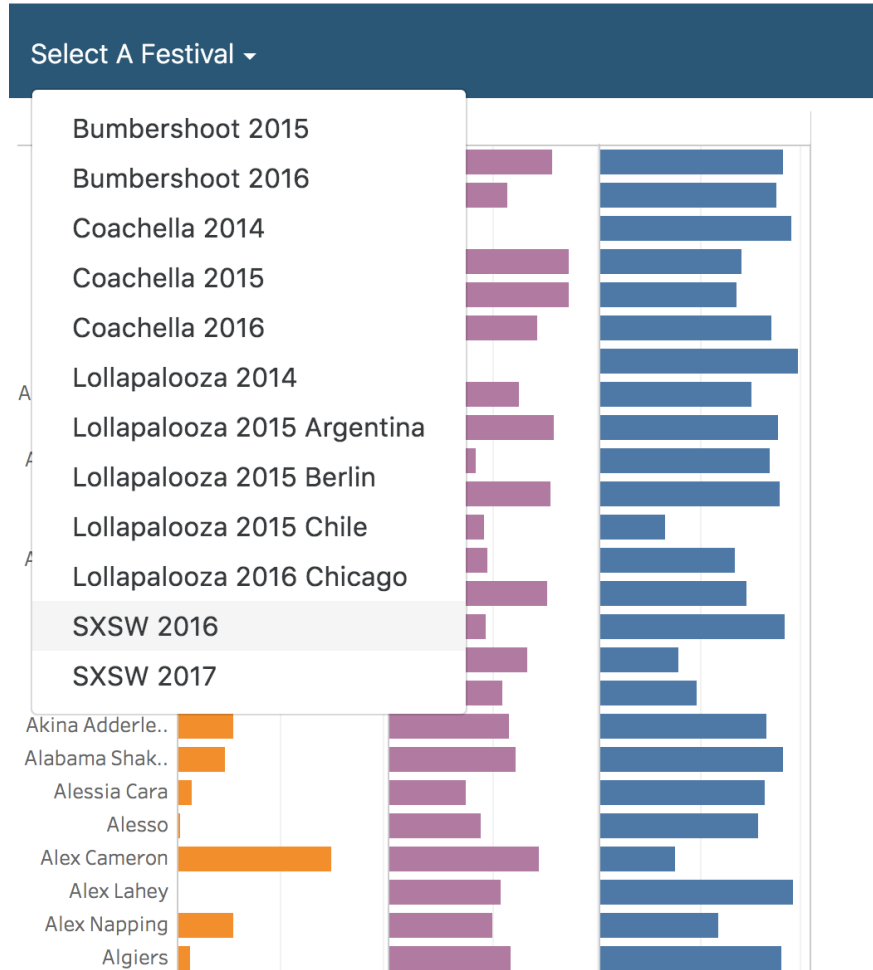
    return results;
}
```

Custom Filtering/Searching, Dynamically!

Find Your Artist



Dynamic Festival Filter



Get Data API



``getColumnValues`` for
Festival Names



Dynamically create a
dropdown Menu



`ApplyFilterAsync`

Dynamic Festival Filter

```
//Dynamically Set the Names of All the Festivals for Filter
function setupFestivalFilterValues(dataTable) {
    var festivalNames = getColumnValues(dataTable, "Festival");

    var festivalDropdown = $("#festival-dropdown");
    _.uniq(festivalNames).forEach(function(festivalName) {
        var festivalText = document.createTextNode(festivalName);
        var dropdownItem = document.createElement("a");
        dropdownItem.setAttribute("class", "dropdown-item");
        dropdownItem.append(festivalText);
        dropdownItem.addEventListener("click", function() {
            filterByFestival(festivalName);
            $('#festival-filter').text(festivalName);
        });
        festivalDropdown.append(dropdownItem);
    });
}
```

Dynamic Filter

```
var festivalNames = getColumnValues(dataTable, "Festival");
```


Dynamic Filter

```
var festivalDropdown = $("#festival-dropdown");
_.uniq(festivalNames).forEach(function(festivalName) {
  var festivalText = document.createTextNode(festivalName);
  var dropdownItem = document.createElement("a");
  dropdownItem.setAttribute("class", "dropdown-item");
  dropdownItem.append(festivalText);
  dropdownItem.addEventListener("click", function() {
    filterByFestival(festivalName);
    $('#festival-filter').text(festivalName);
  });
  festivalDropdown.append(dropdownItem);
});
```

Bring all the actions together!



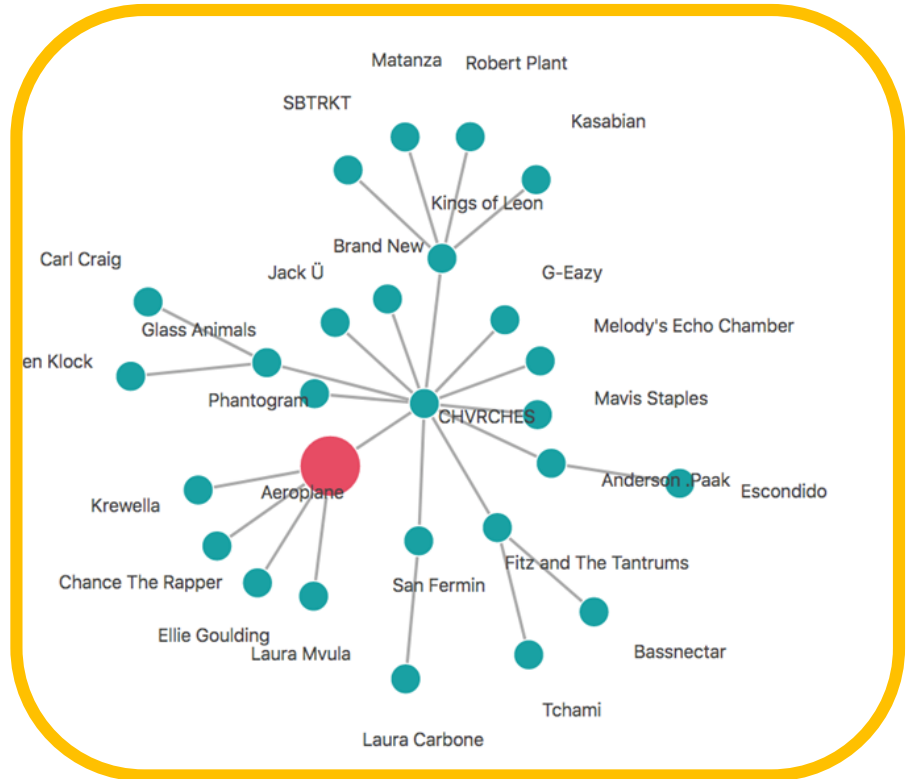
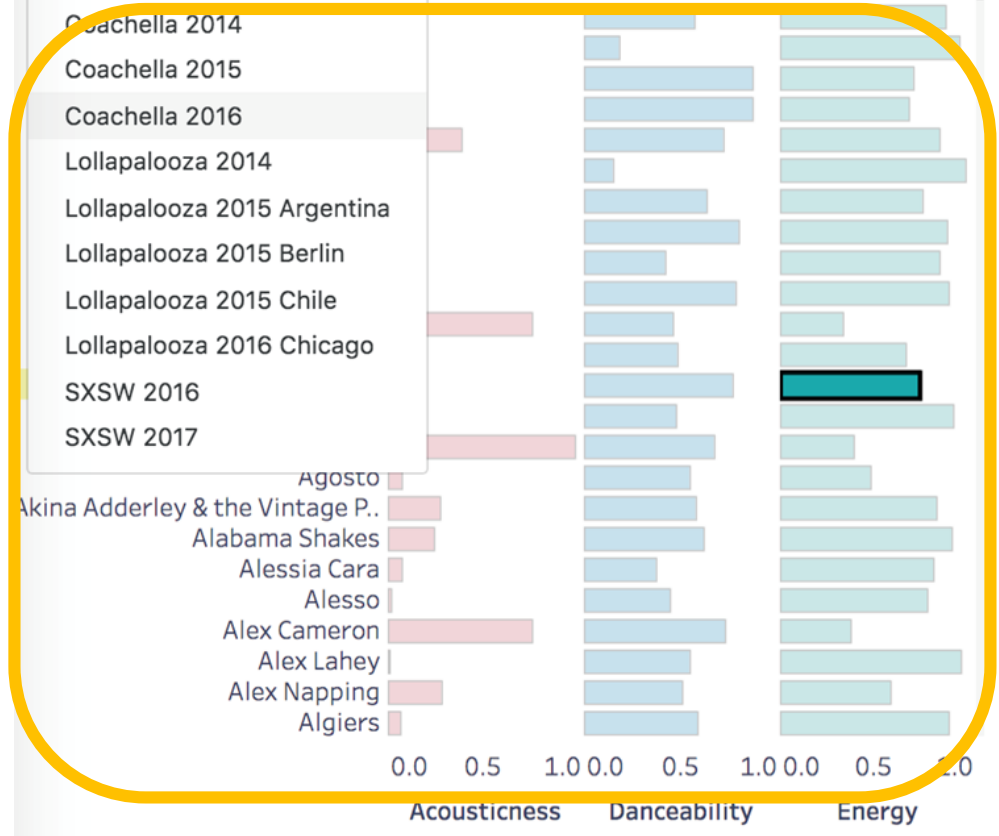
Find Your Artist

Select A Festival ▾

- Bumbershoot 2015
- Bumbershoot 2016
- Coachella 2014
- Coachella 2015
- Coachella 2016
- Lollapalooza 2014
- Lollapalooza 2015 Argentina
- Lollapalooza 2015 Berlin
- Lollapalooza 2015 Chile
- Lollapalooza 2016 Chicago
- SXSW 2016
- SXSW 2017

Artist Search

Find Your Artist



Bring all the actions together!

Dynamic
Festival Filter

Artist Search
with Auto-Complete

Tableau Viz

Custom
Network Diagram

Bring all the actions together!

Dynamic
Festival Filter

ApplyFilterAsync

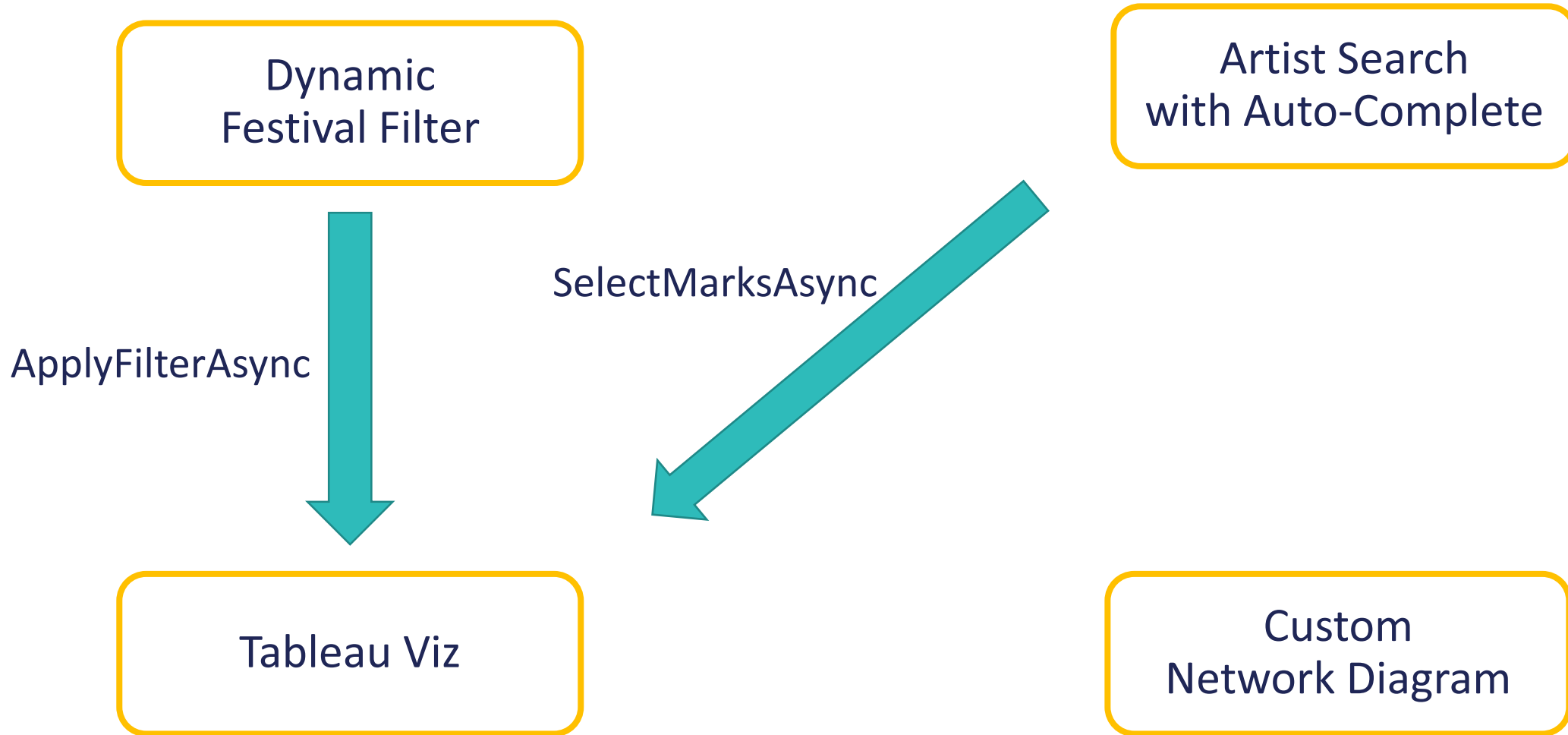


Tableau Viz

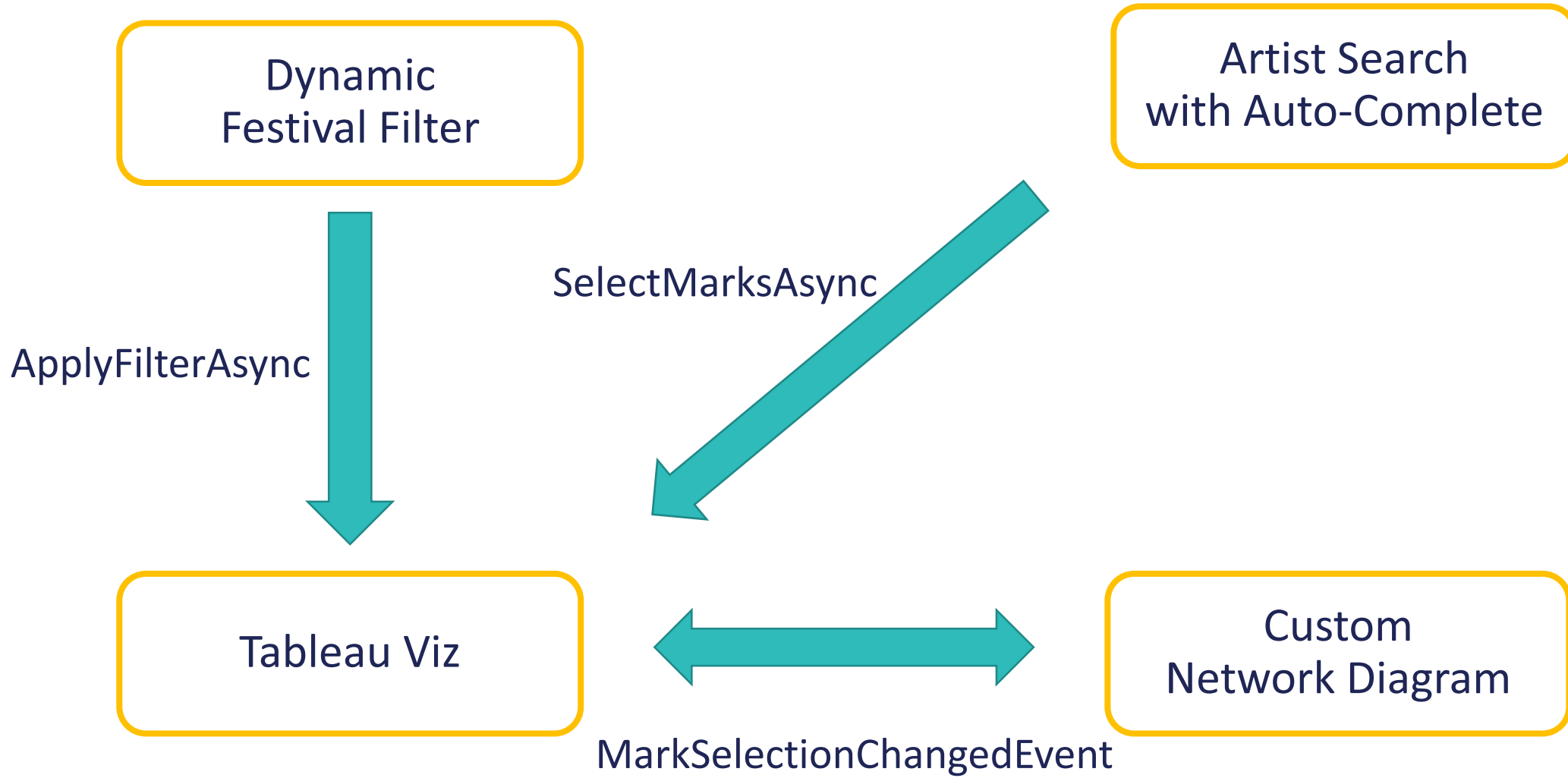
Artist Search
with Auto-Complete

Custom
Network Diagram

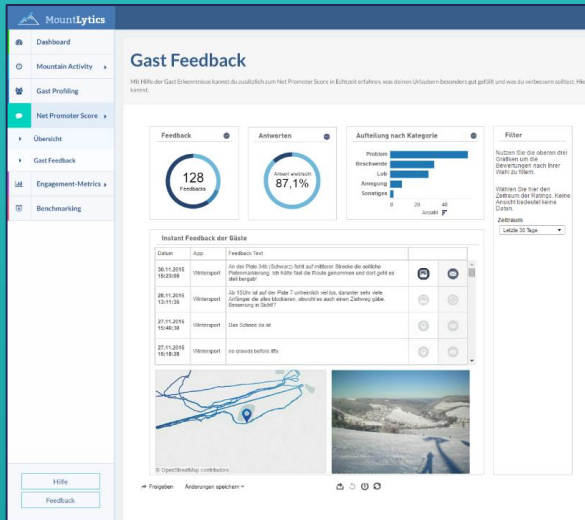
Bring all the actions together!



Bring all the actions together!

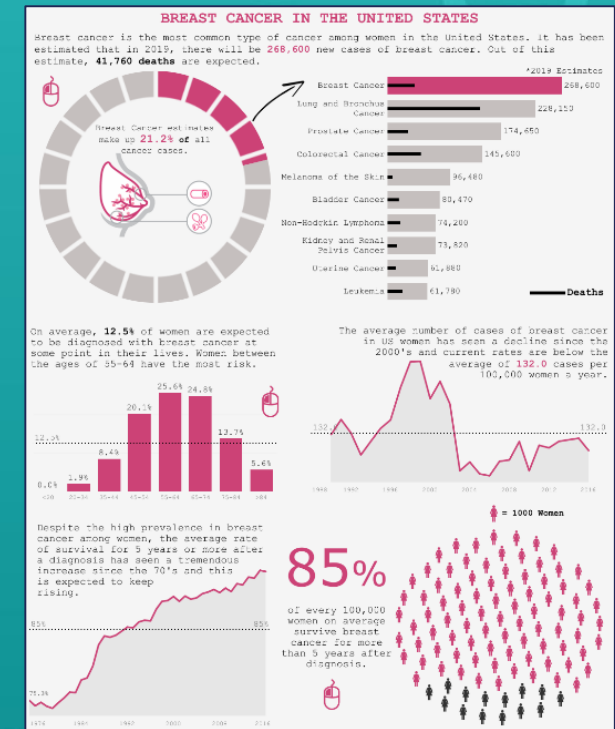
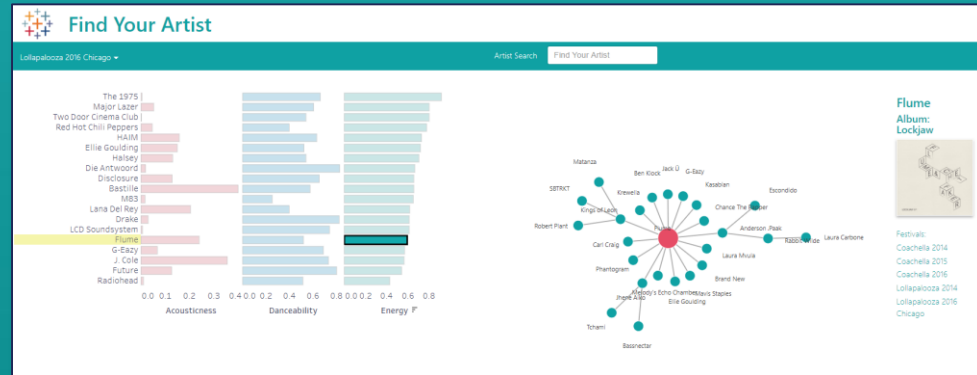


Common Use Cases



Write Back


Commenting



Filter Dashboards

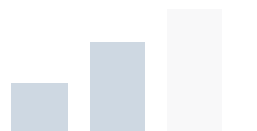
Interact with 3rd Party Software

Session Flow




Getting
Started

Embedding

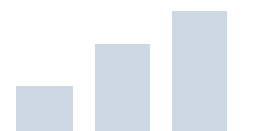


Part 1



Common
Scenarios

Code Snippets



Part 2



More
Examples

Customers
& Partners



Part 3



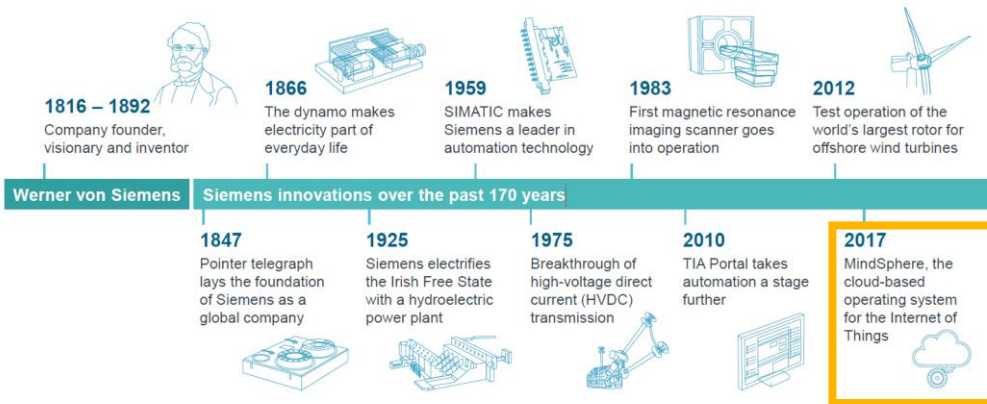


Siemens MindSphere

Siemens' next BIG THING

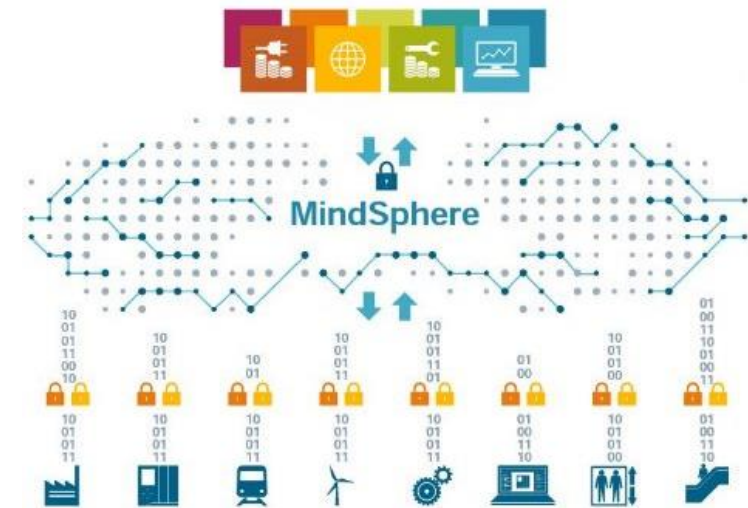
Milestones of a 170-year history

SIEMENS
Ingenuity for life



© Siemens AG 2018

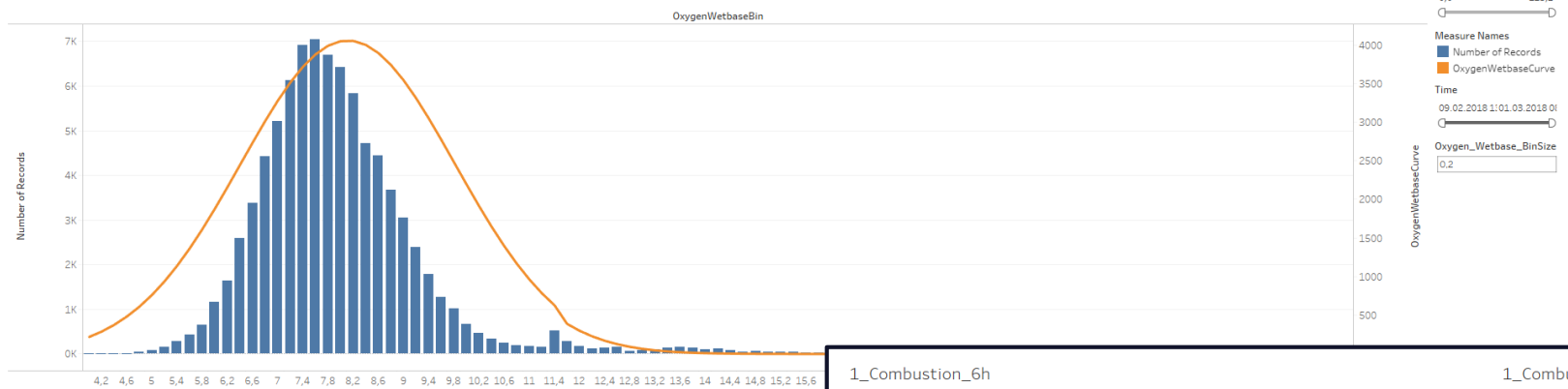
Open IOT Plattform



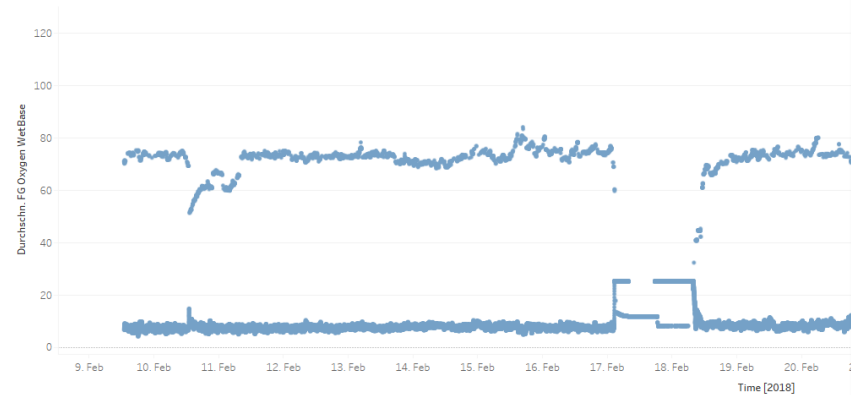
Siemens MindSphere



2_NormalWetbase

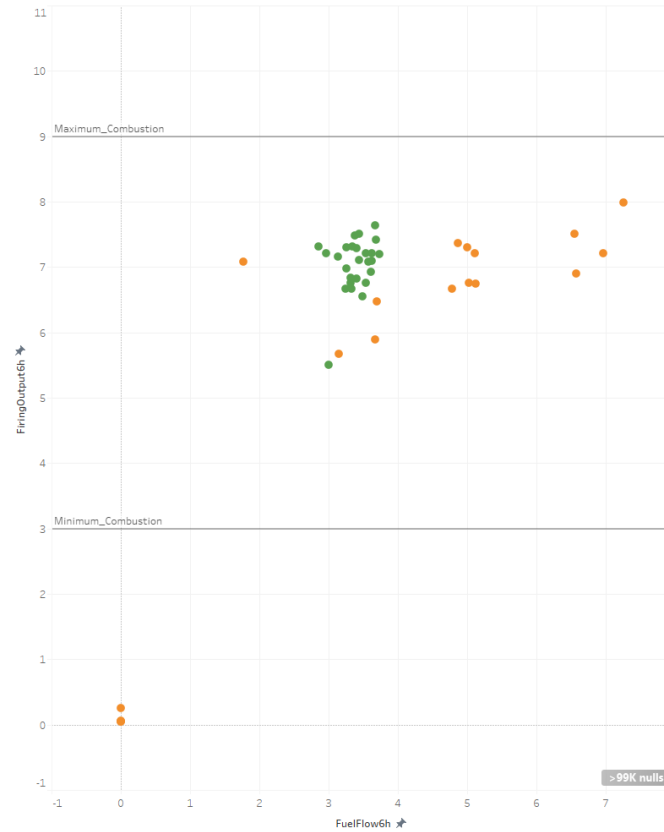


2_LineChartOxygen

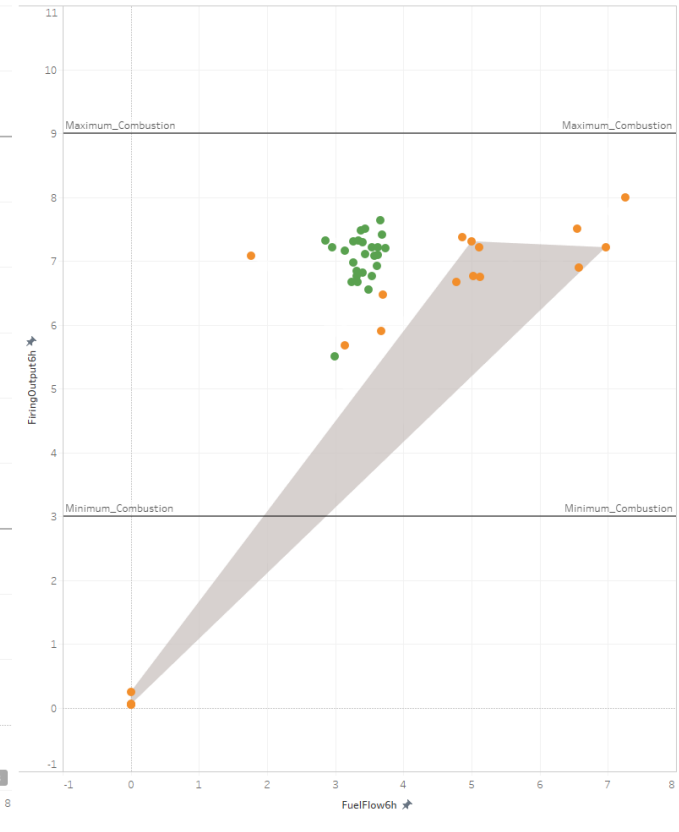


Conditional 6_Compare Steam Flow Act 6_Compare Oxygen Wetbase 6_Compare Firing Output 6_Compare Fuel Moisture 7_TrendlinesFurnace 7_TrendlinesFuelFlow

1_Combustion_6h



1_Combustion_6h



Minimum_Combustion

Maximum_Combustion

Combustion6hEVAL
■ out of limit
■ within limit

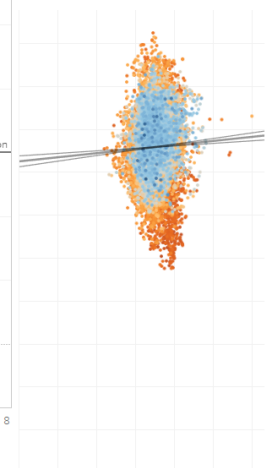
Time

TargetArea
 Yes
 Null

Combustion6hEVAL
■ out of limit
■ within limit

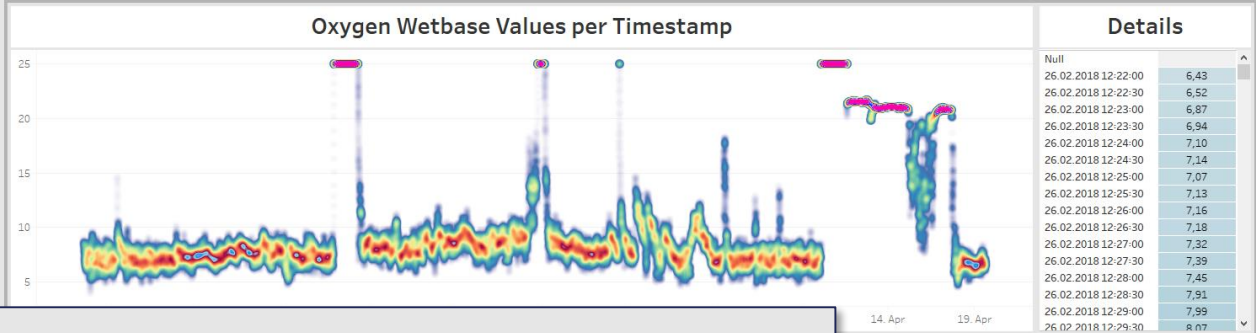
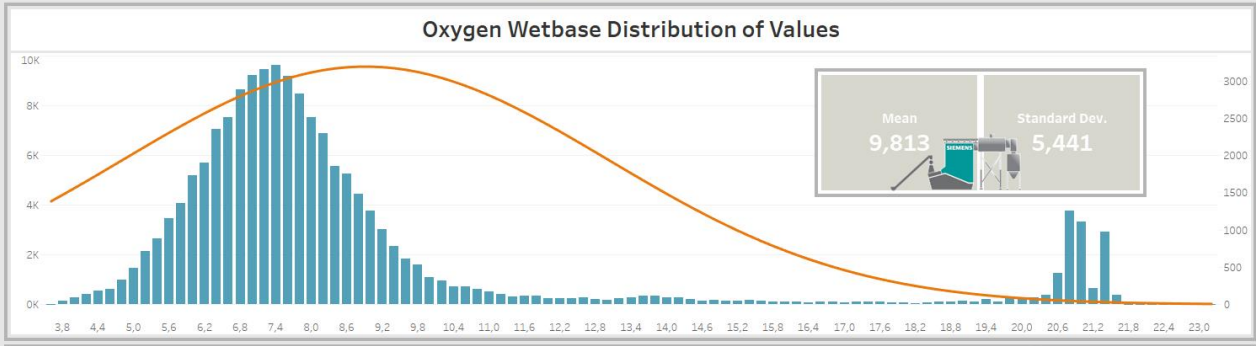
ScatterColor

3_Oxygen_vs_FuelMoisture



Wetbase Analysis

Bin Size: 0,2 | Time: 26.02.2018 12:22:00 - 19.04.2018 15:29:00



SIEMENS IOT Cockpit

Combustion Analysis

Plant Status

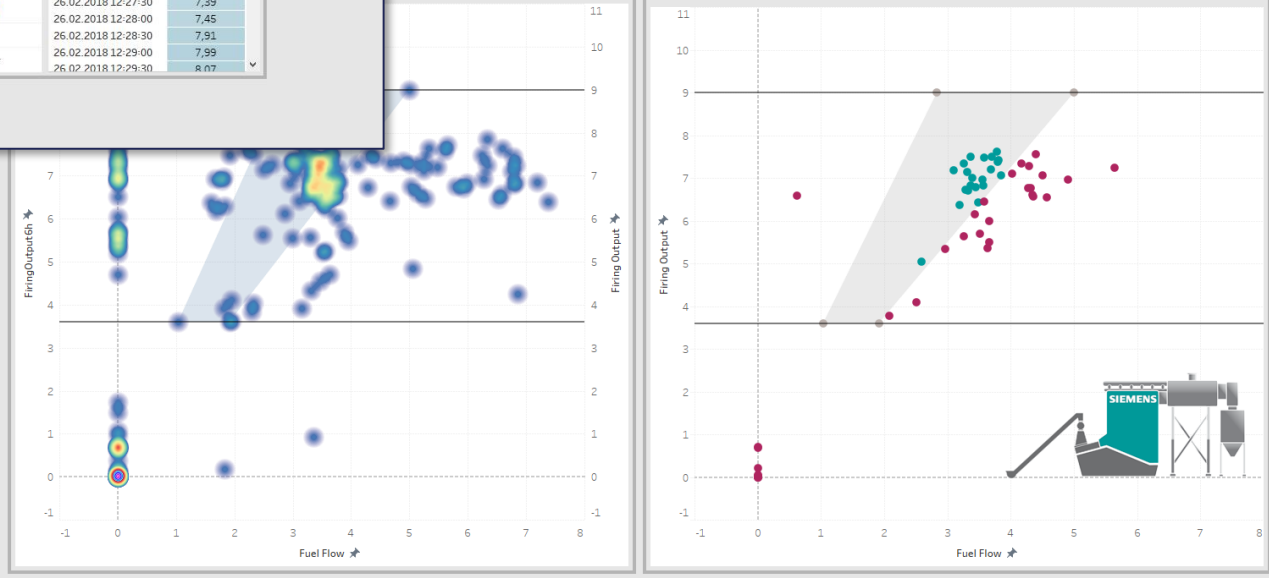
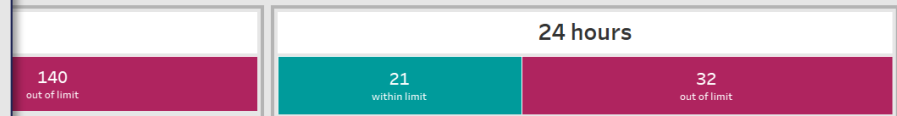
Wetbase Analysis

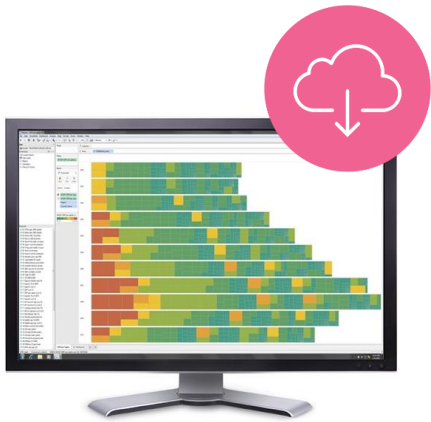
Compare Time Periods

Fan Speed Analysis

Combustion Analysis

Choose Time: 09.02.2018 13:00:03 - 20.04.2018 08:18:30





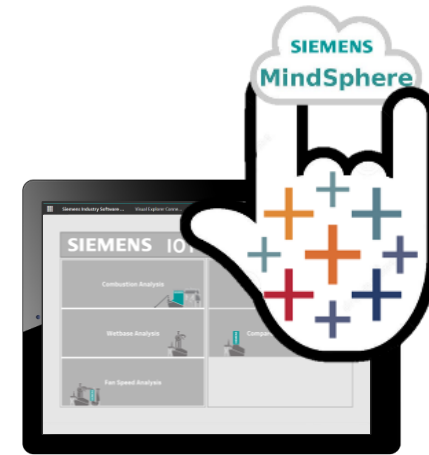
Download
Tableau



Prototyping



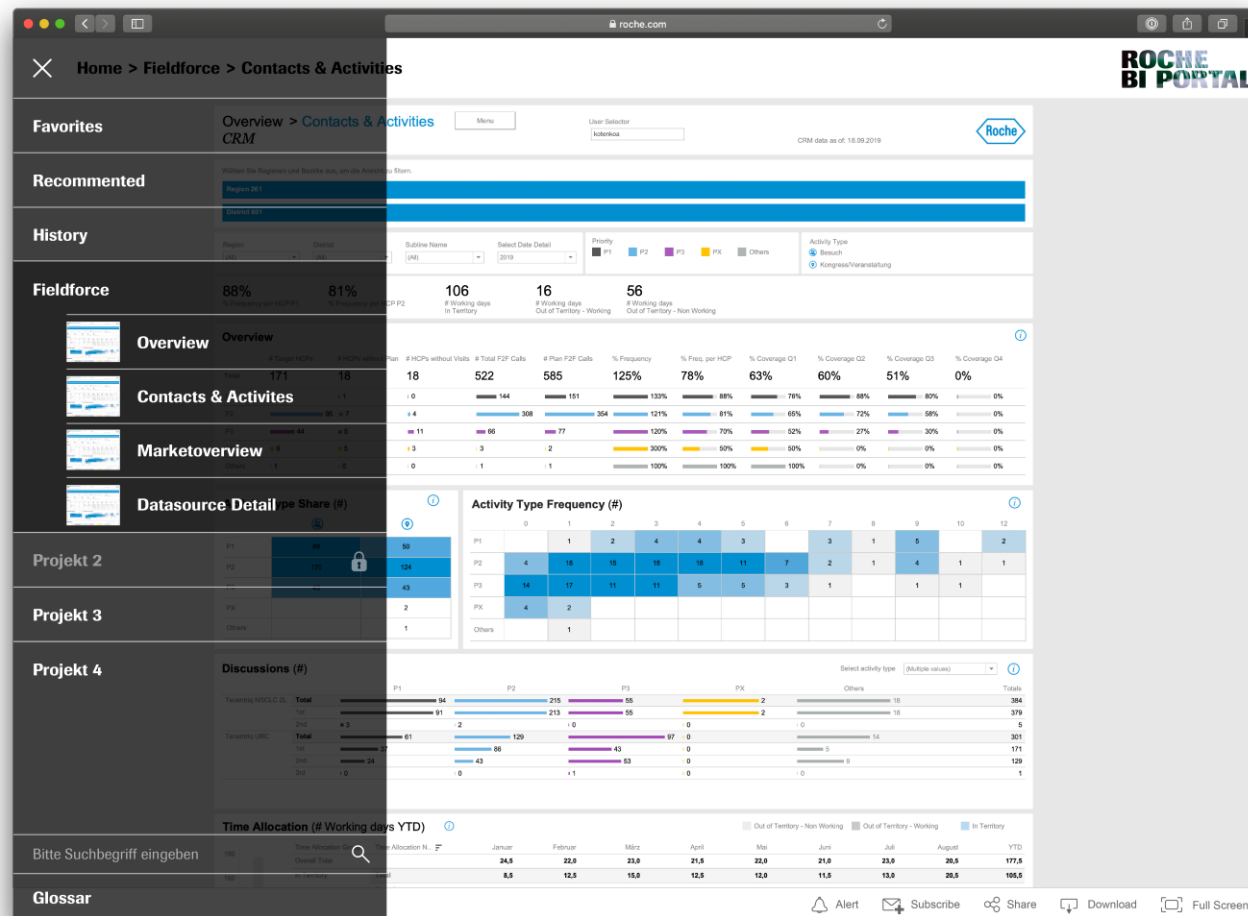
Polishing

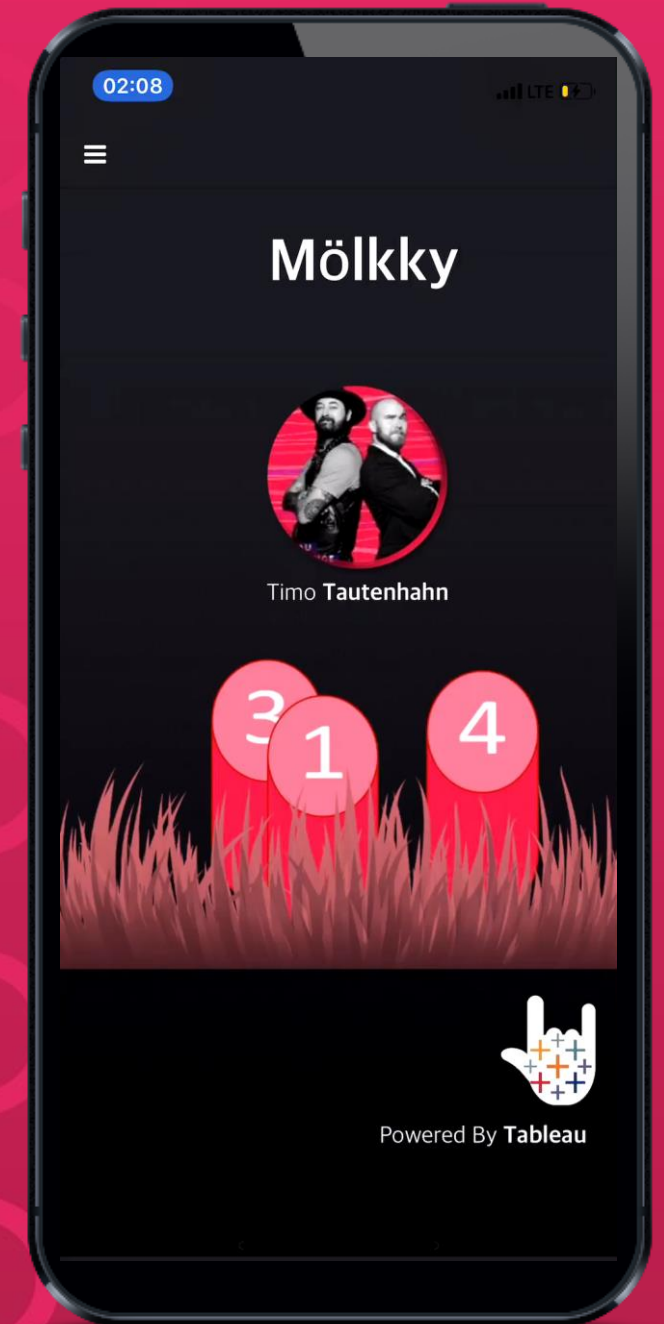


Integration



Visual Design · Example Mock-Ups for UX/UI · Customizable





KPMG

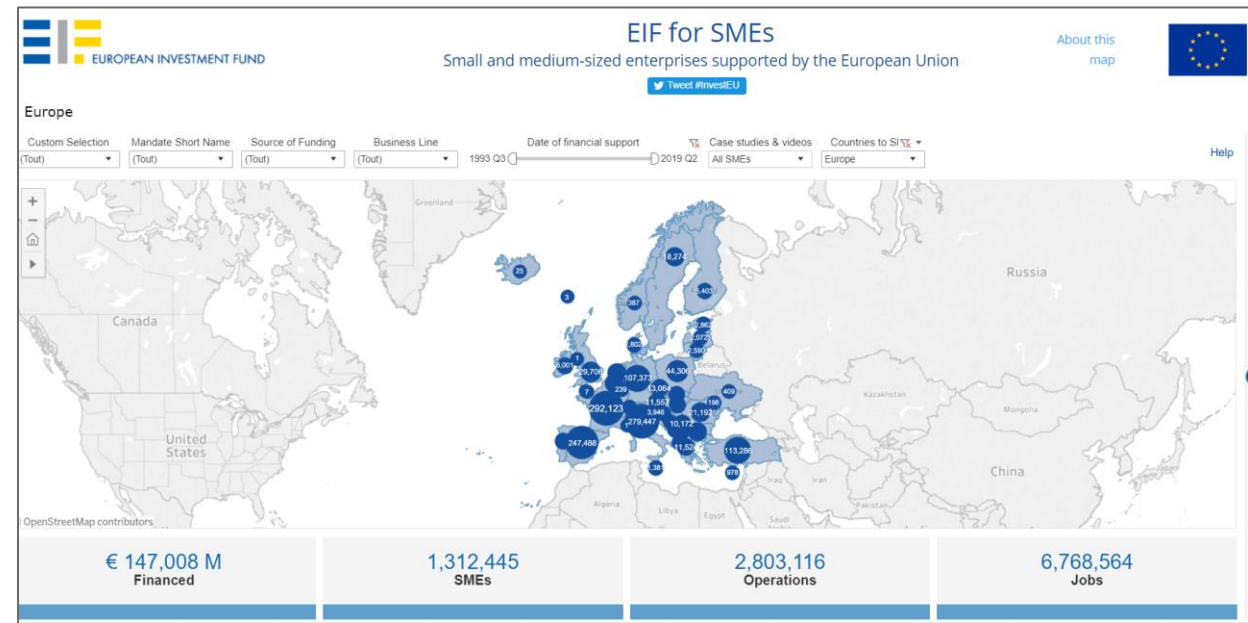
Global Automotive Executive Survey



<https://automotive-institute.kpmg.de/GAES2019/>

European Investment Fund

Transparent on how European public money is invested in fostering business innovation



<https://www.eif4smes.com/>

SKY IS THE LIMIT

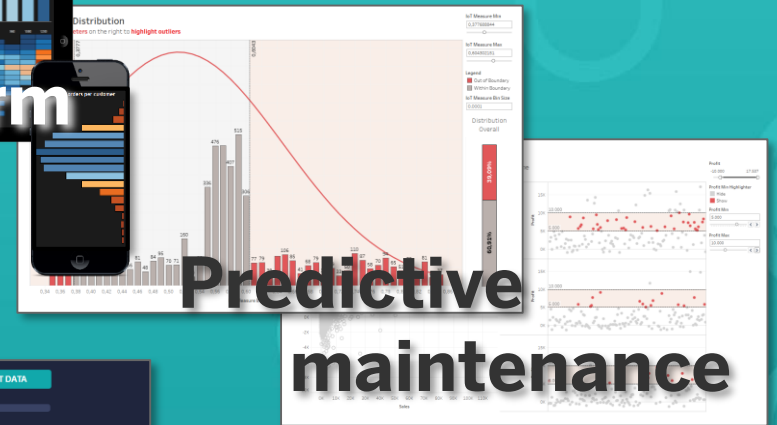
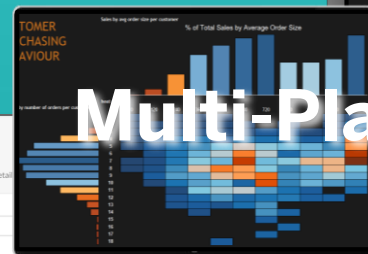
TABLEAU
CONFERENCE



Benchmarking



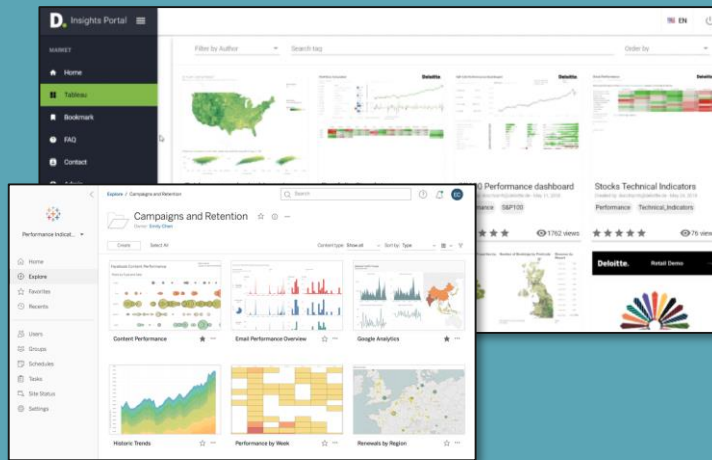
Customer Portal



Special Licensing from Tableau

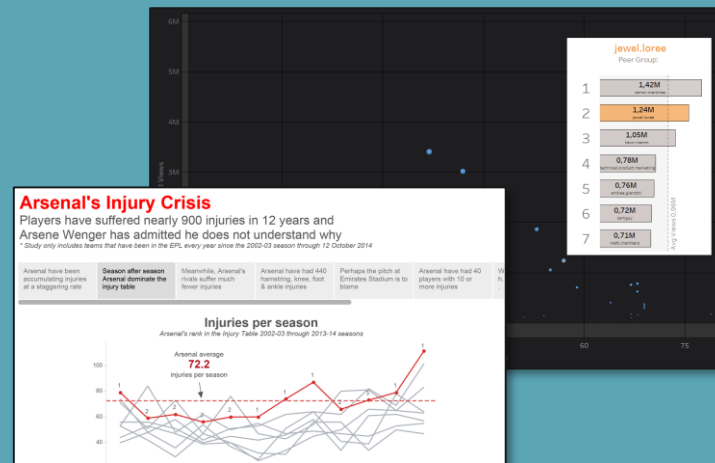
How to charge it to your customers?

Flavor 1



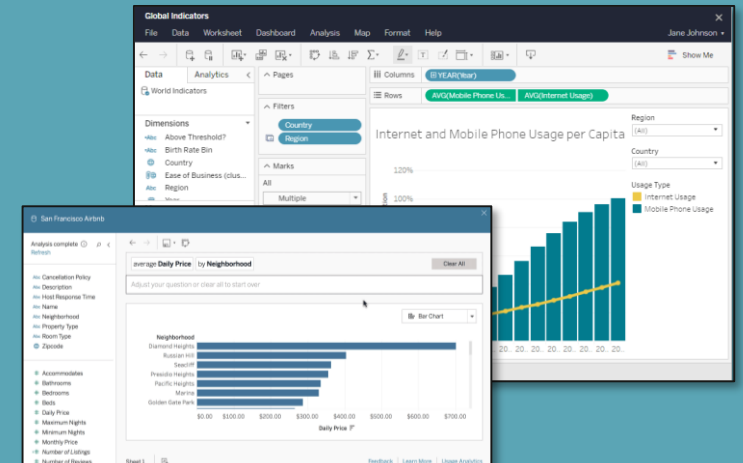
Let customers **see and interact** with their own data

Flavor 2



Let customers compare their selves to **peer groups**

Flavor 3



Let your customers answer **their own questions**

Recap



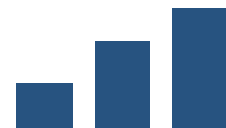
Getting Started

Feel Confident



Common Scenarios

Equipped

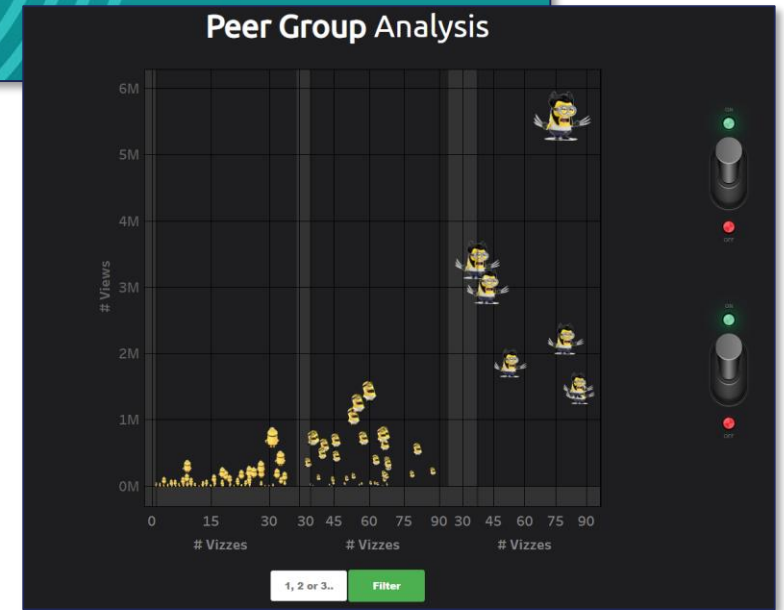


More Examples

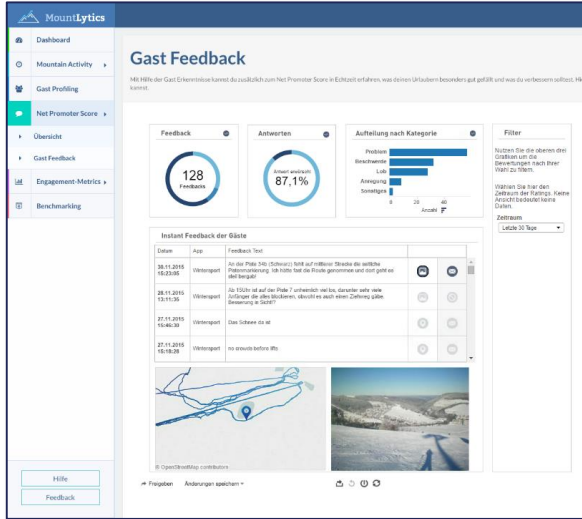
Inspire You



Getting Started



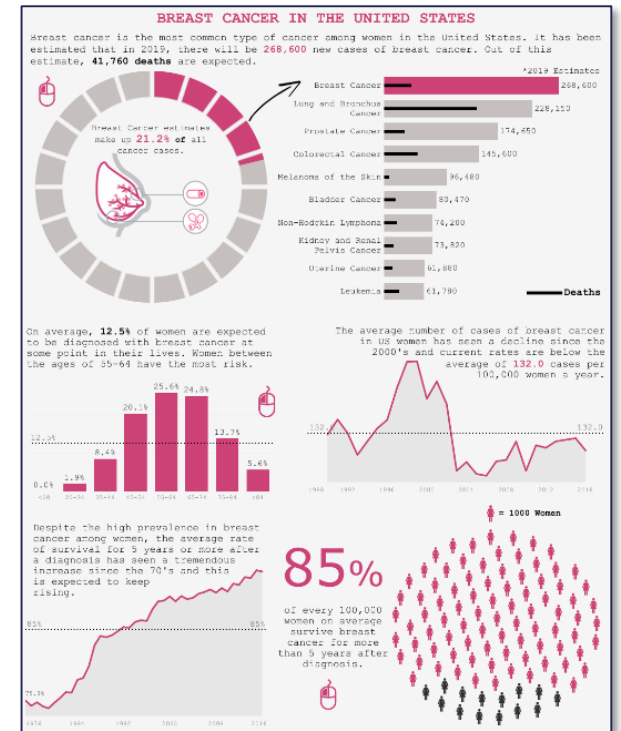
Common Scenarios



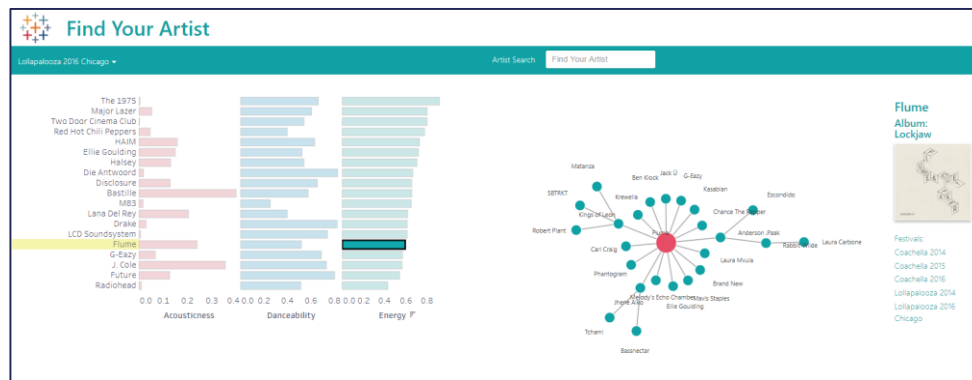
Commenting



Write Back

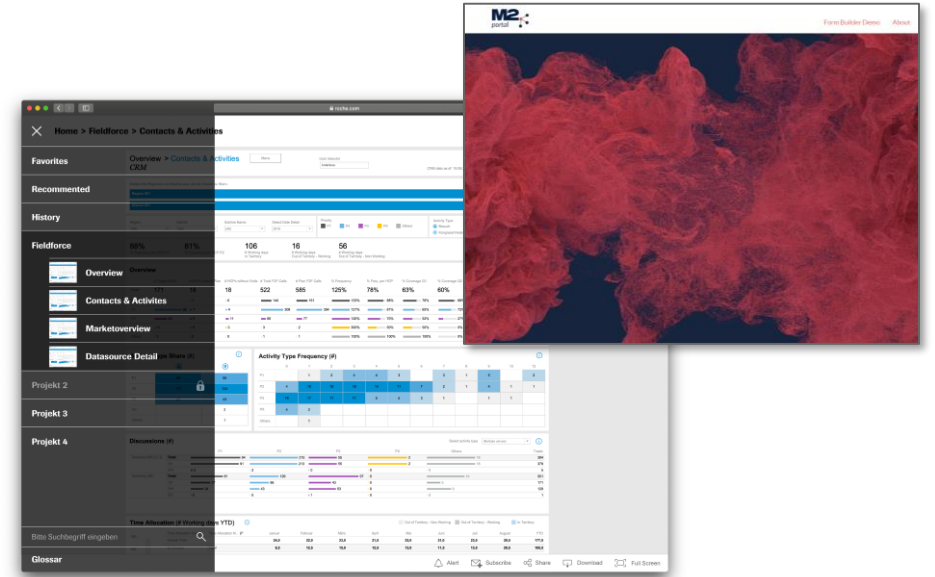
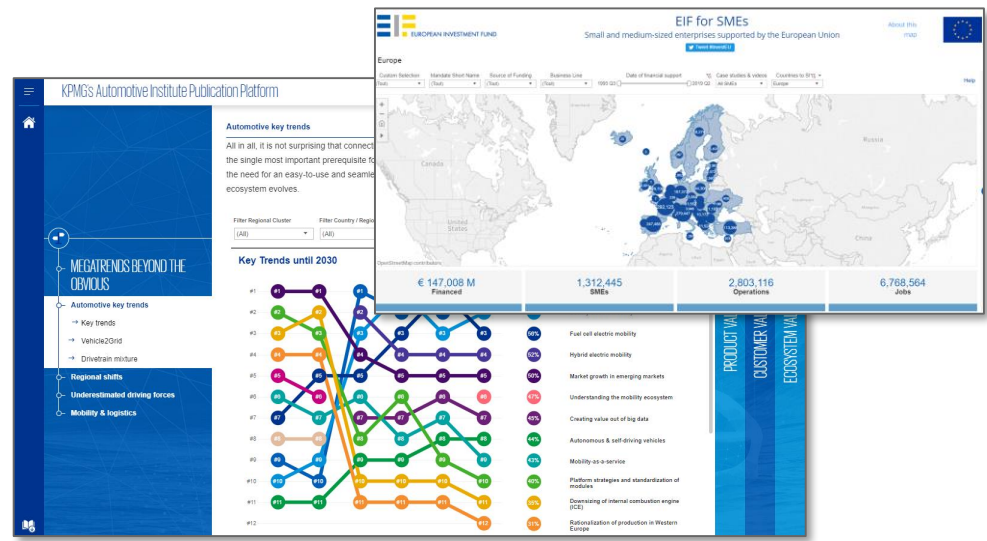
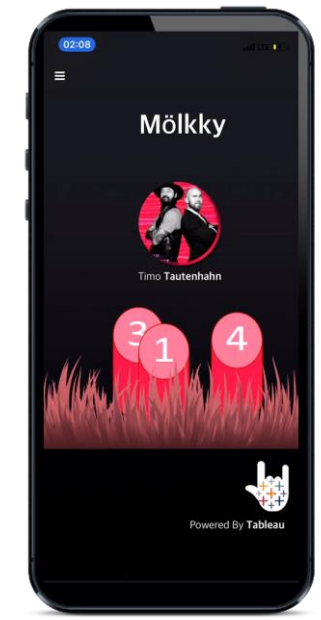
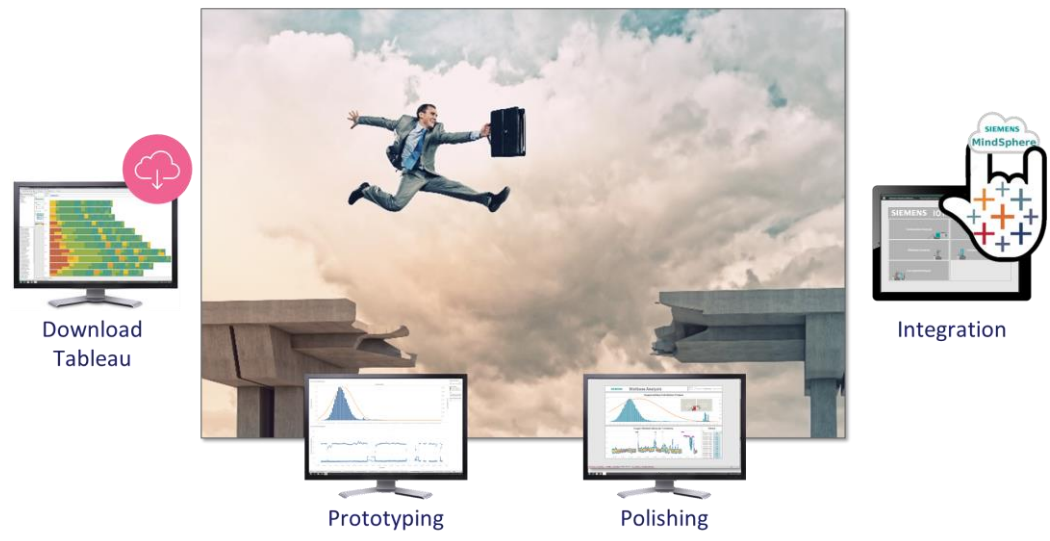


Filter Dashboards



Interact with 3rd Party Software

More Examples

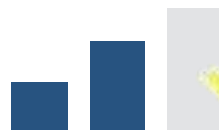


Recap



Getting Started

Feel Confident

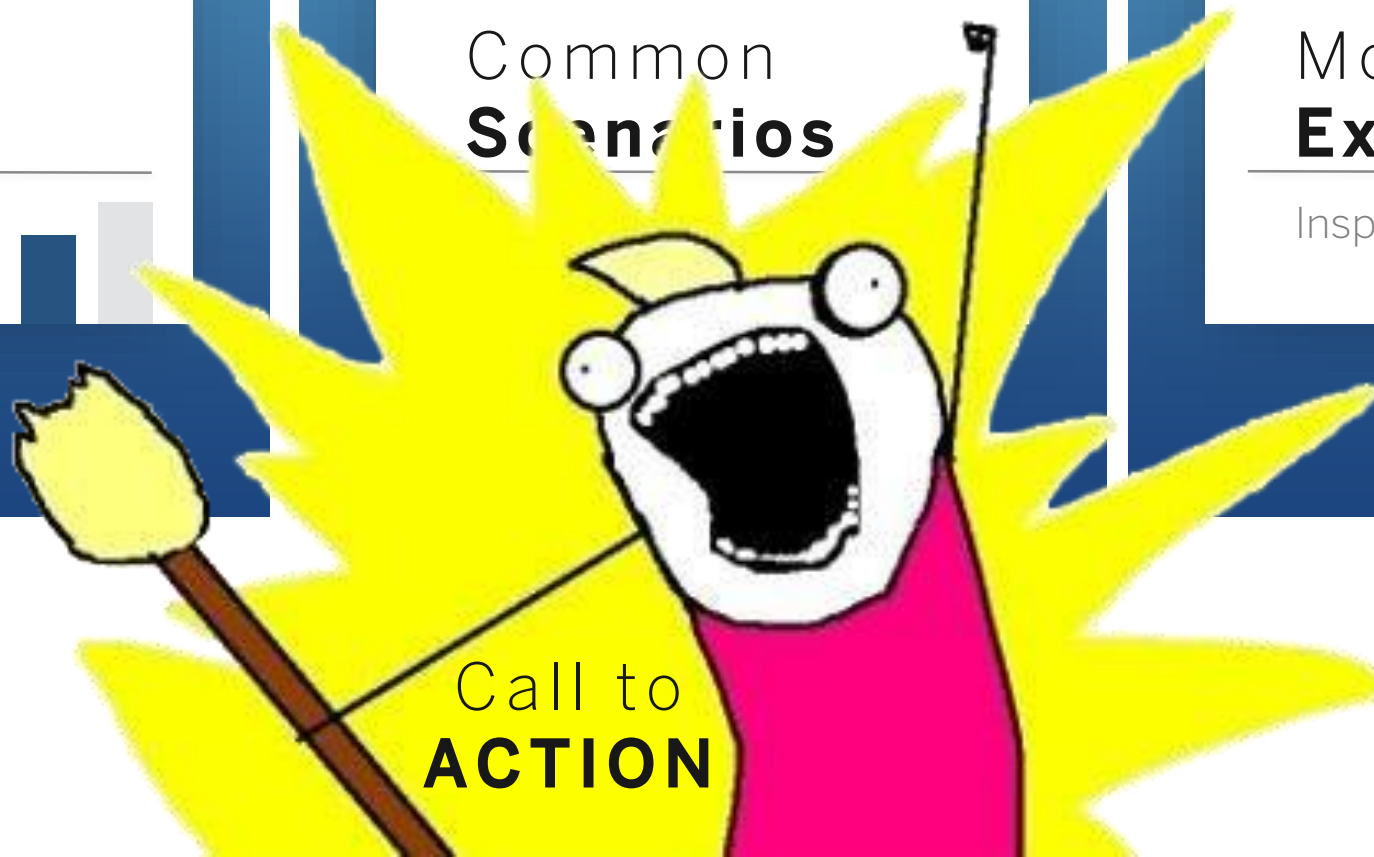


Common Scenarios



More Examples

Inspire You



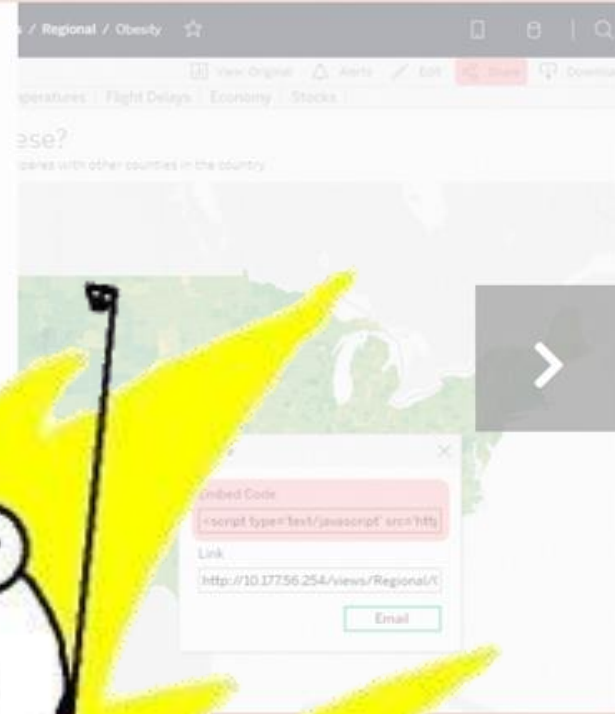
Call to
ACTION

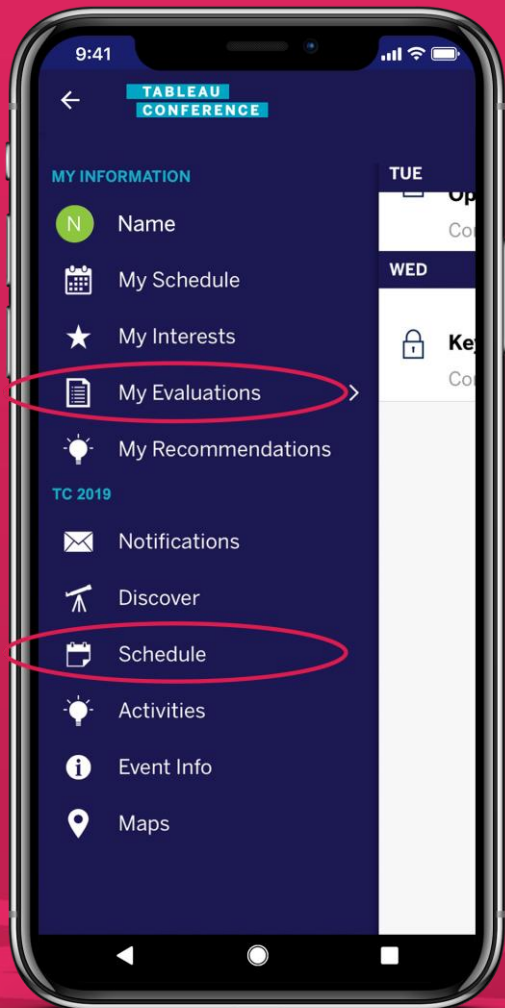
<https://tableaufans.com/embedding/getting-started>



Step 1

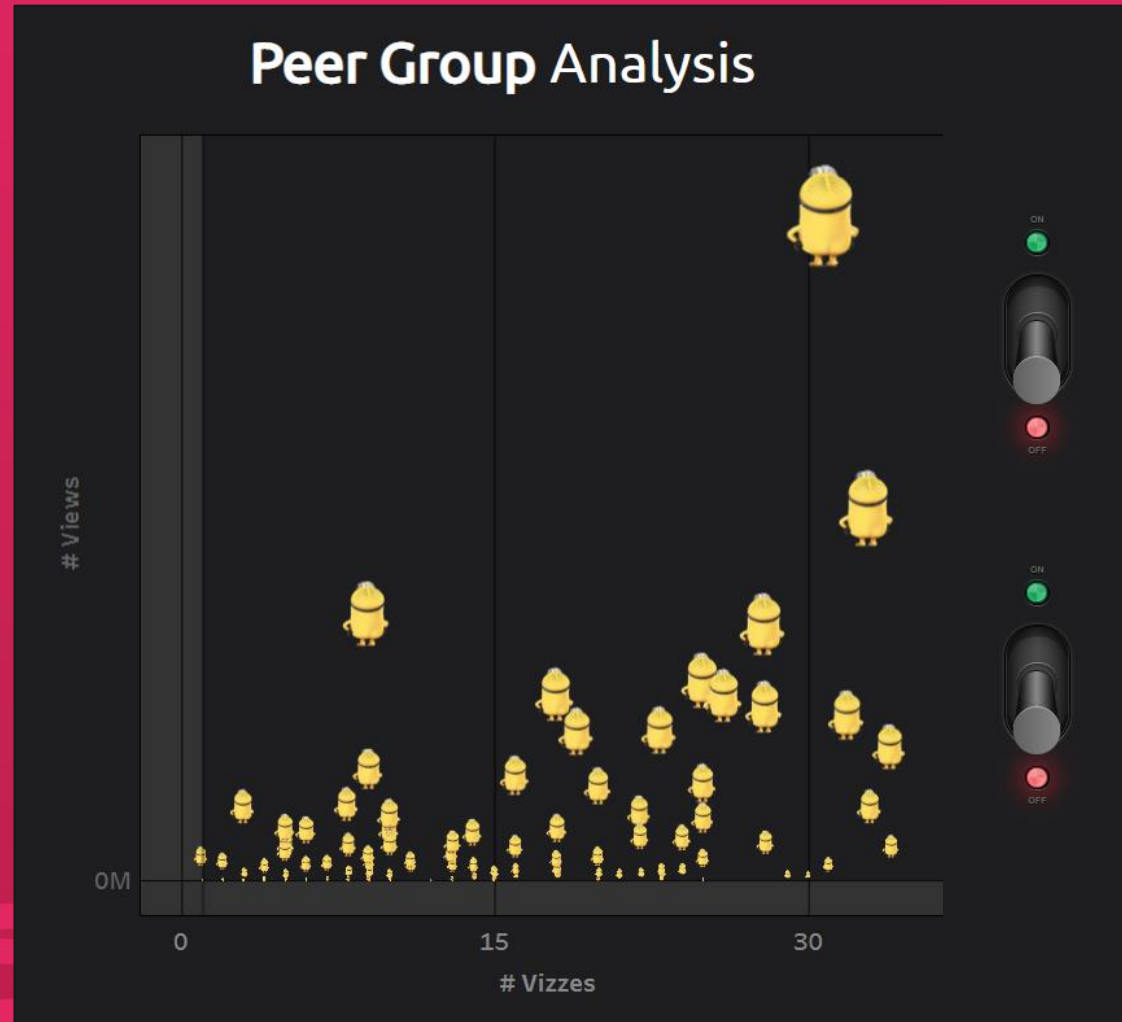
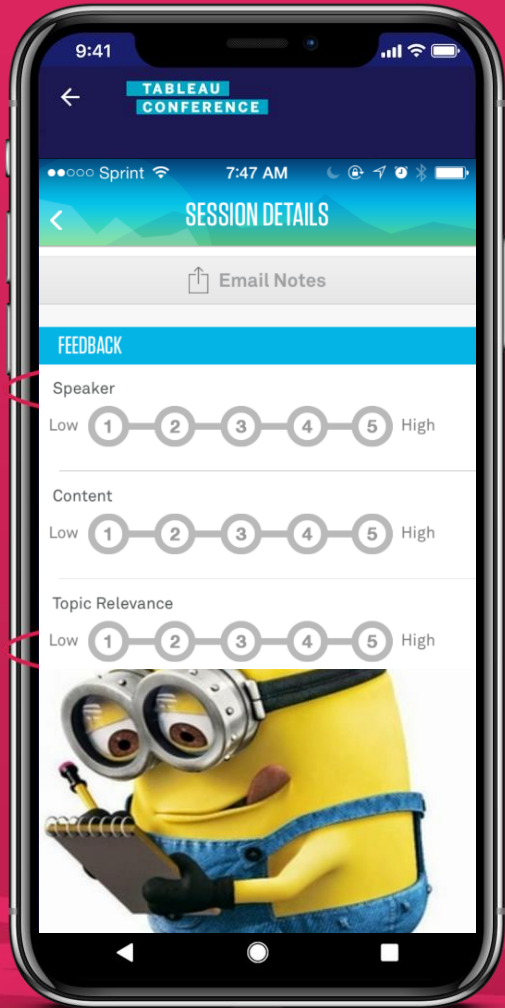
Integrate your first dashboard view embed code

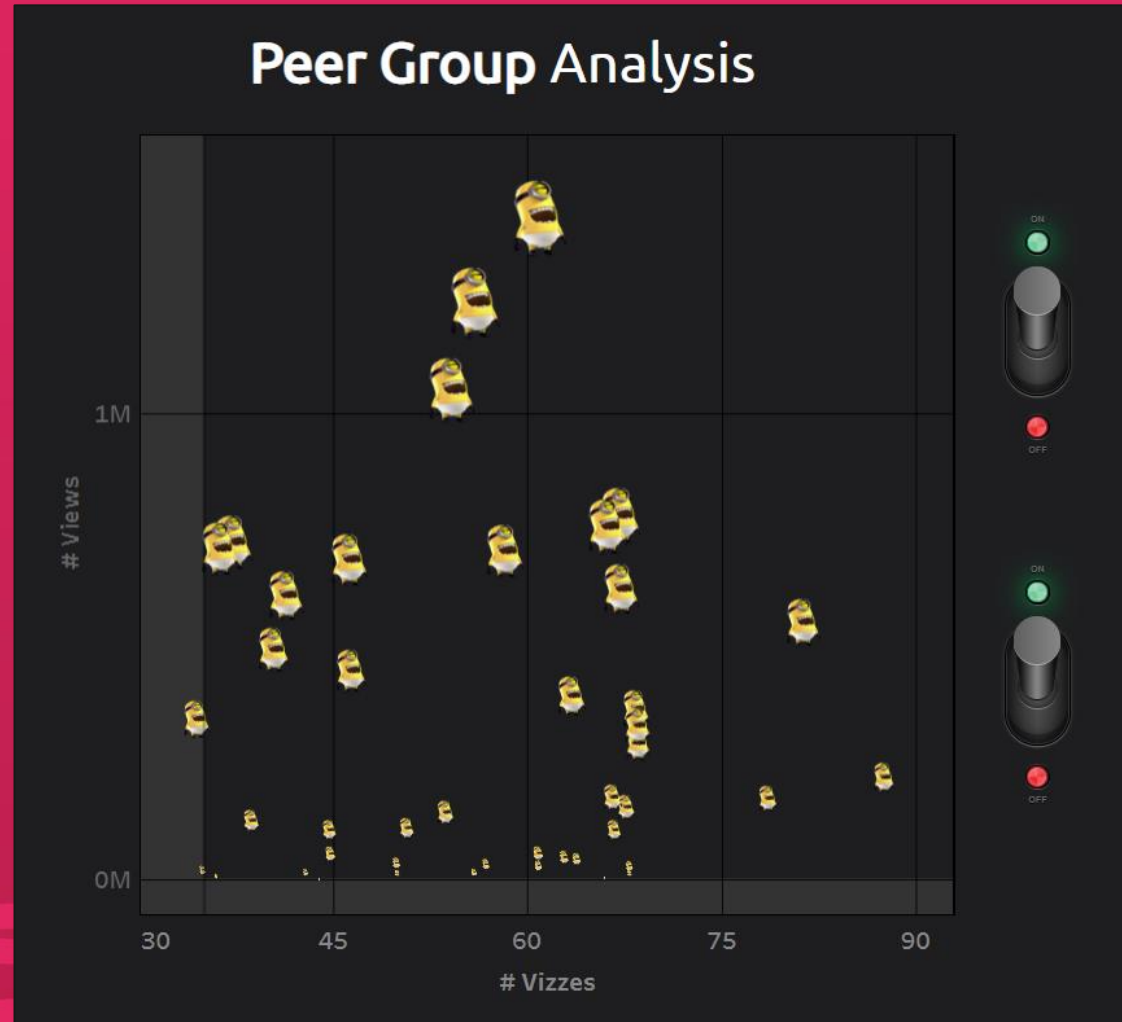
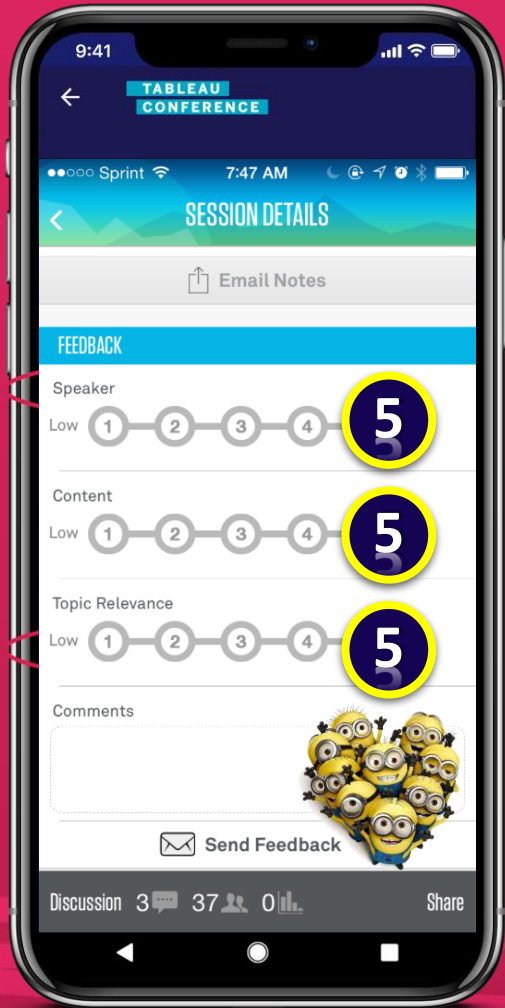




Please complete the session survey in the mobile app

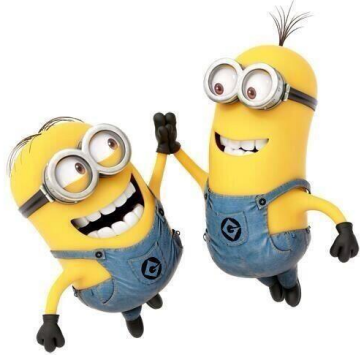
‘My Evaluations’ or ‘Schedule’





THANK YOU!

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Jackson & Timo



tableaufans.com

