



+



# D2D Advanced MicroStrategy Training

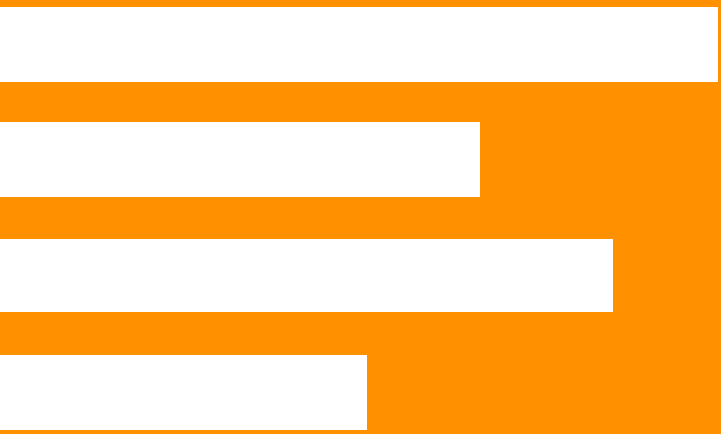
## Custom Visualization and Advanced Analytics

Presented By: Craig Mueller and Brandon Martin

# Objectives



- Setting Up
- Custom Visualizations
- Importing and Creating D3 Visualizations
- Advanced Dossier Functions
- Advanced Analytics Overview
- Q&A



# What are D3 visualizations?

# What are D3 visualizations?

---

---

D3 is a JavaScript library for creating visualizations using data

---

Utilizes HTML5 standards

---

Create interactive, dynamic visualizations

---

Simple for developers to create





# Use Already Created Visualizations

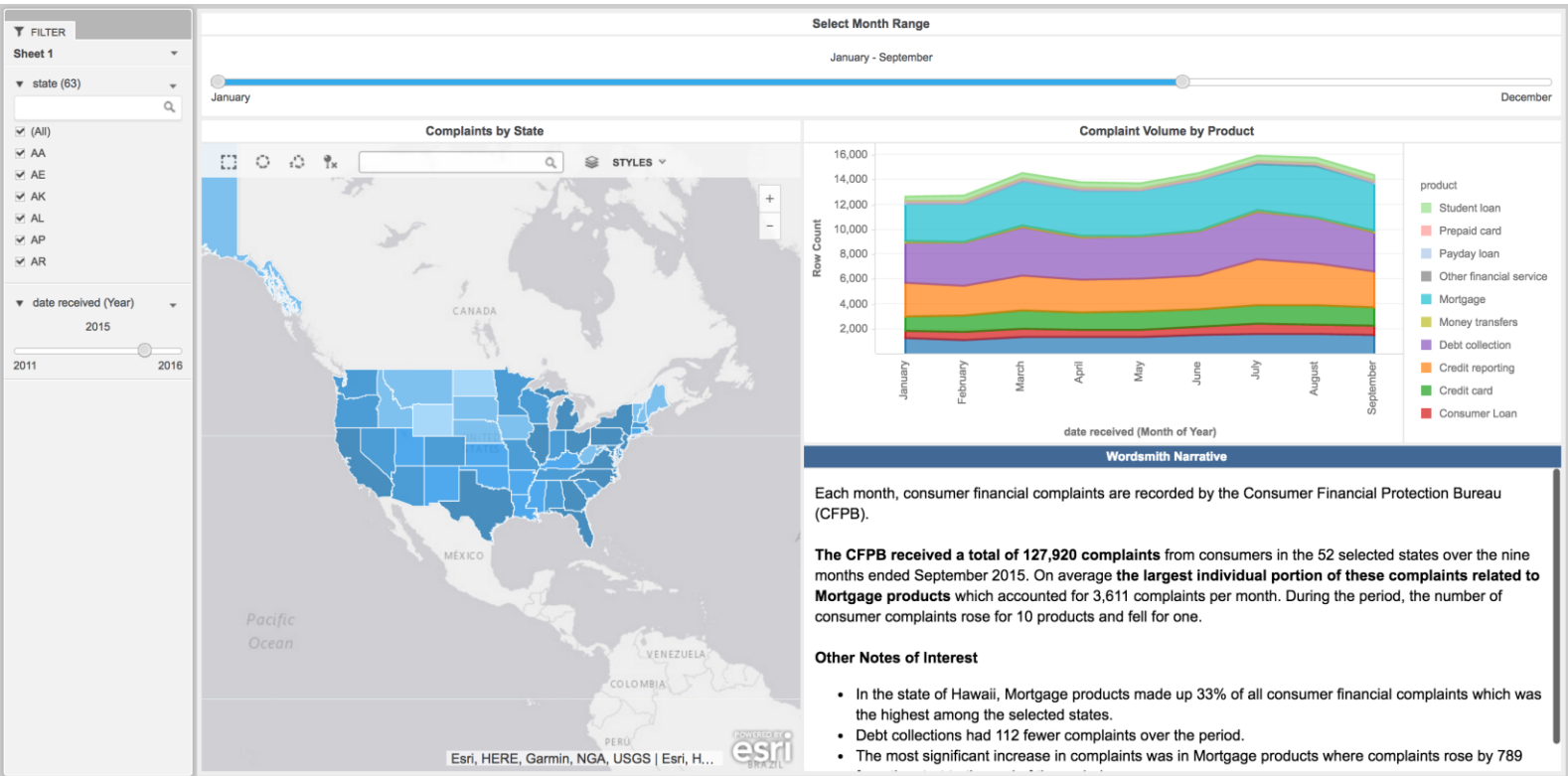


<http://d3js.org/>

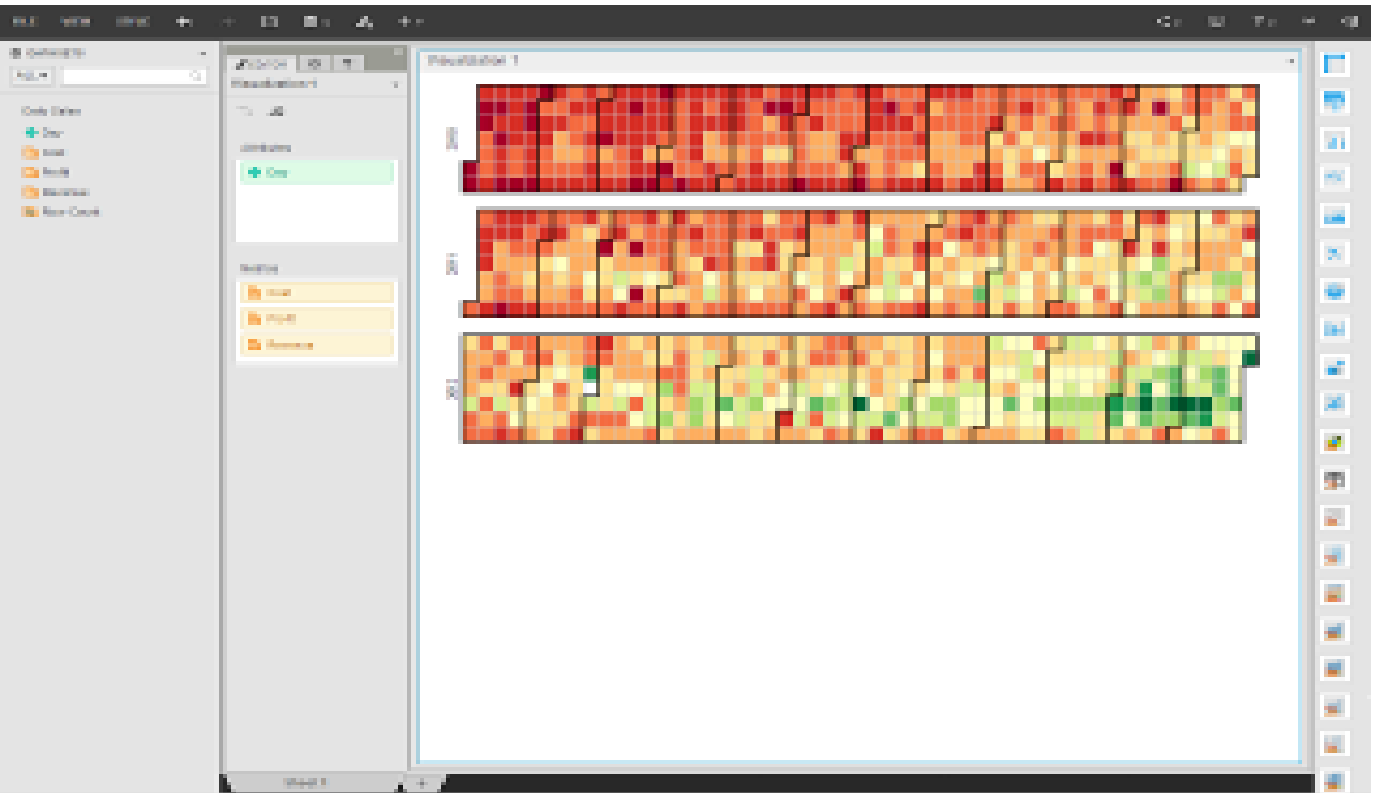


# MicroStrategy Desktop Ready Visualizations

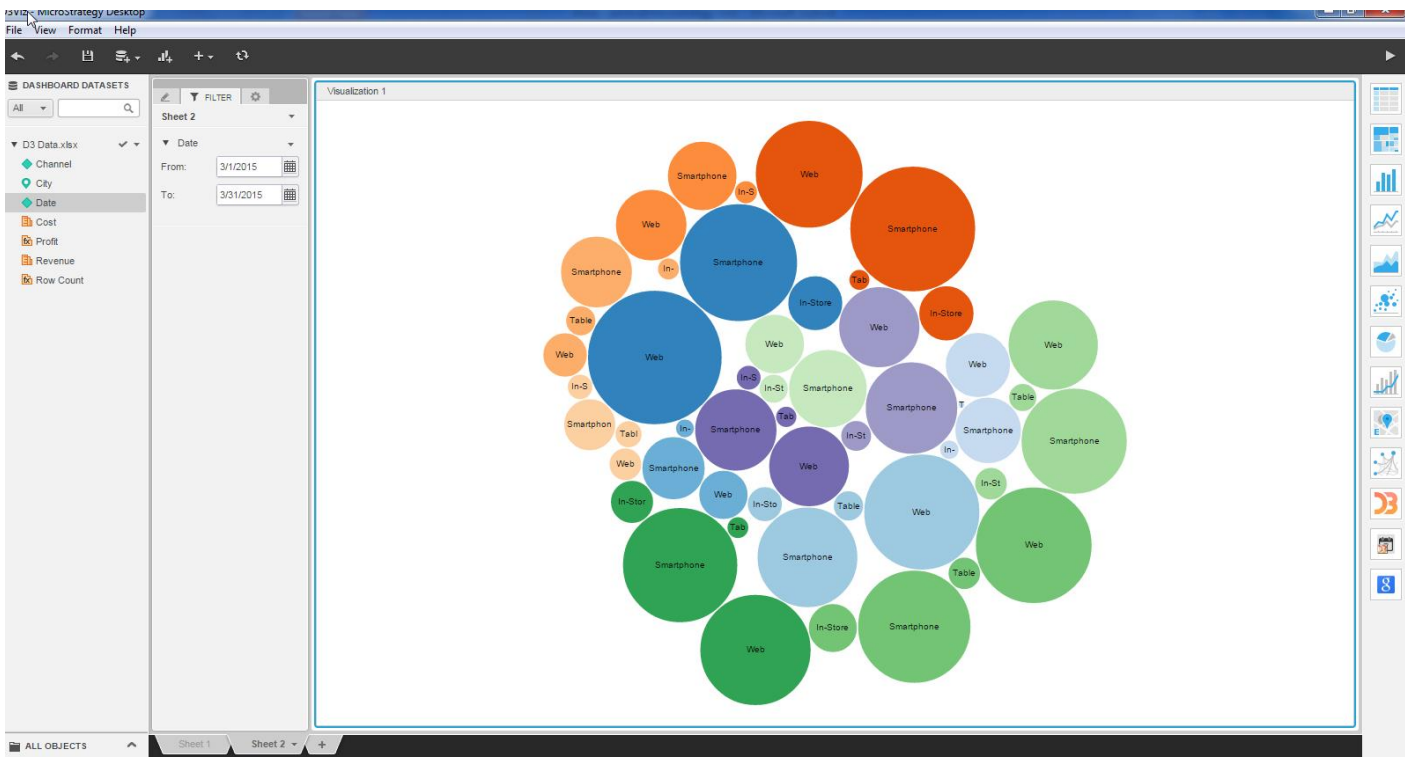
Visualizations.microstrategy.com



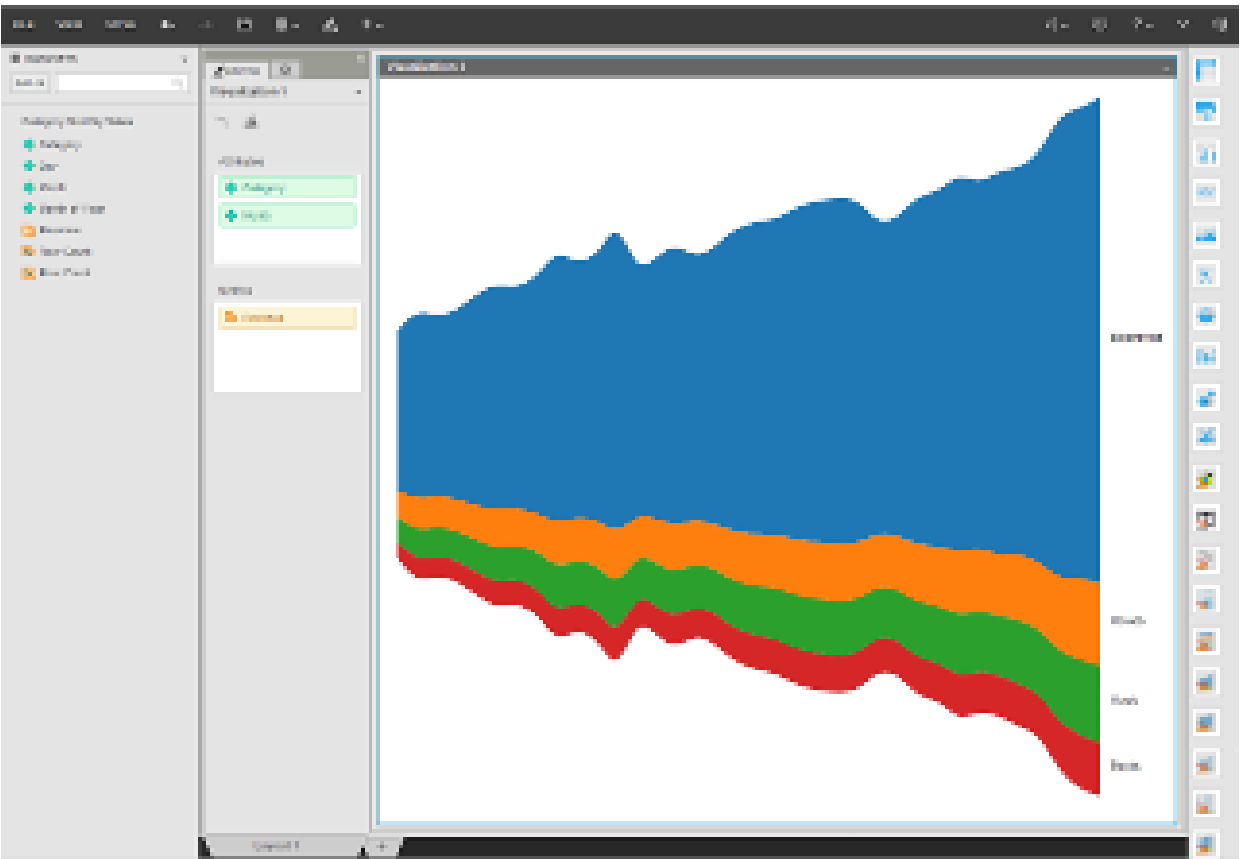
Natural Language Generation



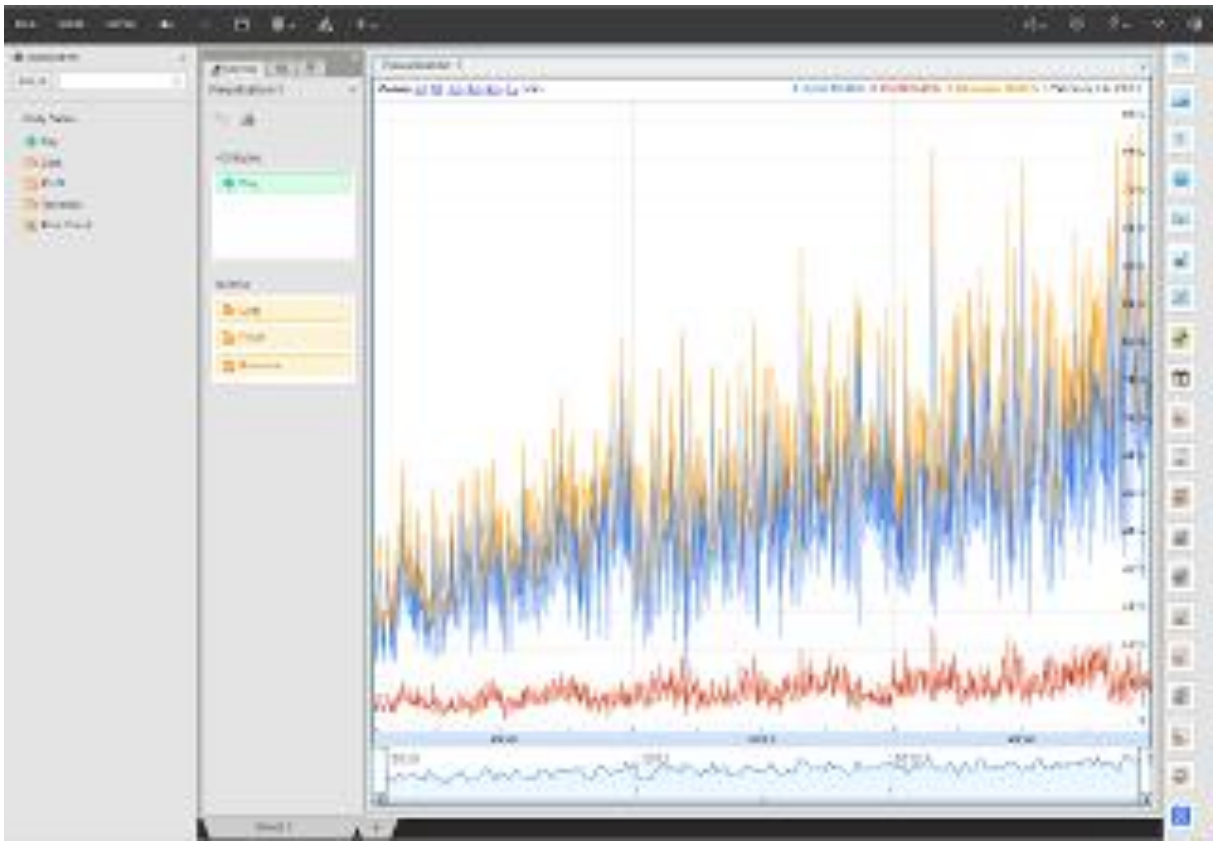
Calendar



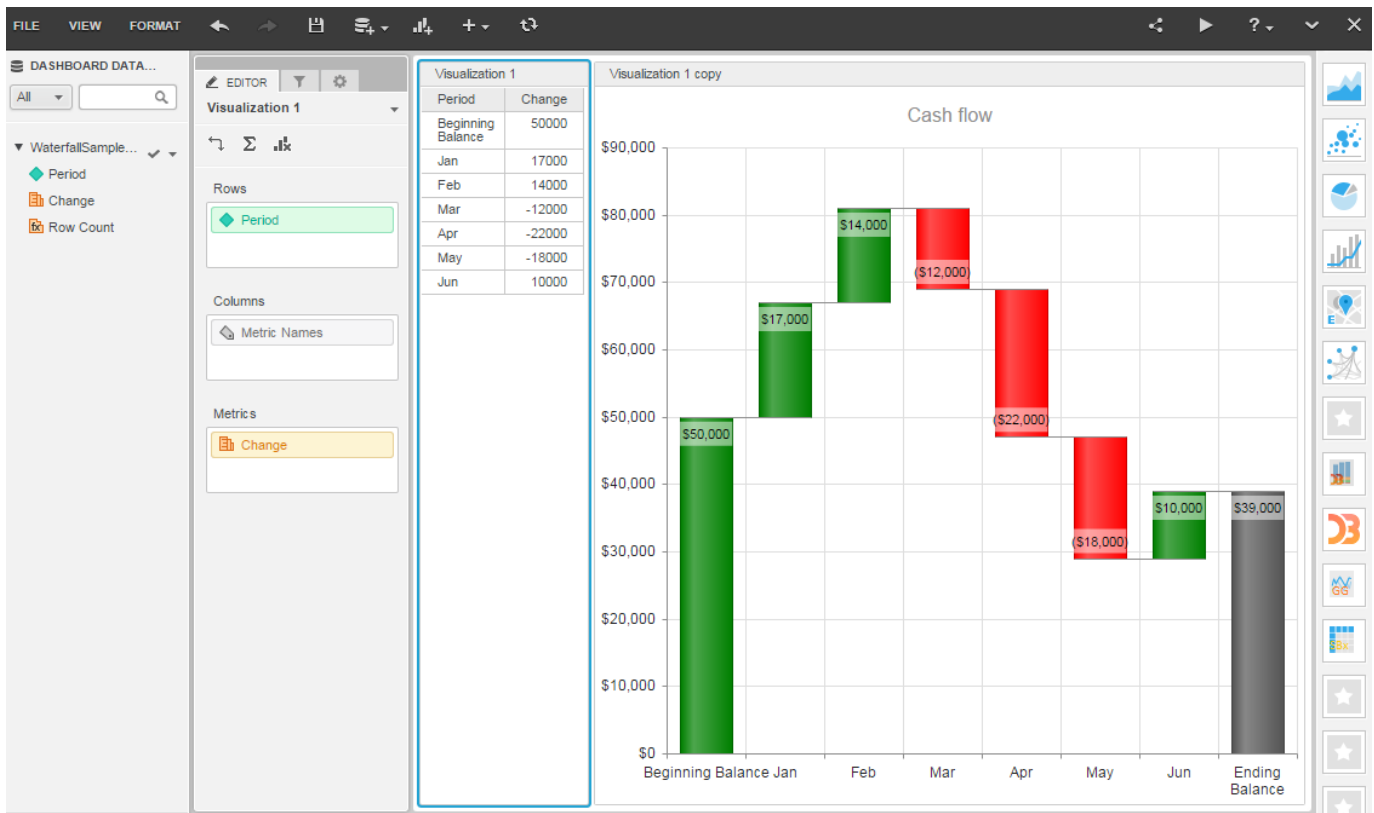
Bubble



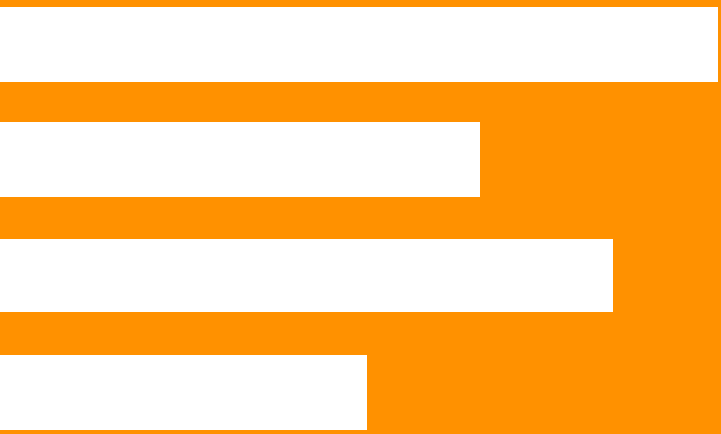
Line Charts



Annotation Chart

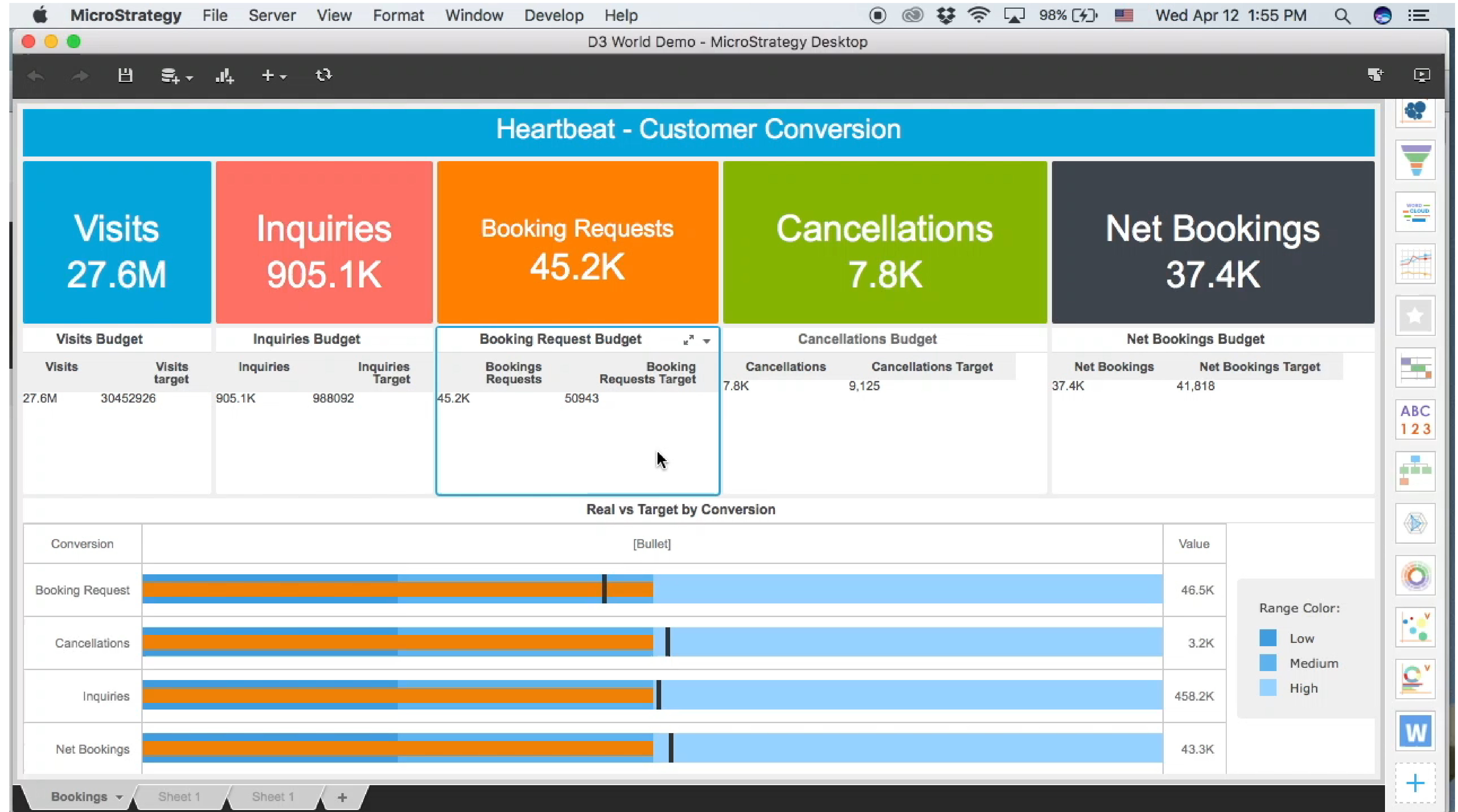


Waterfall



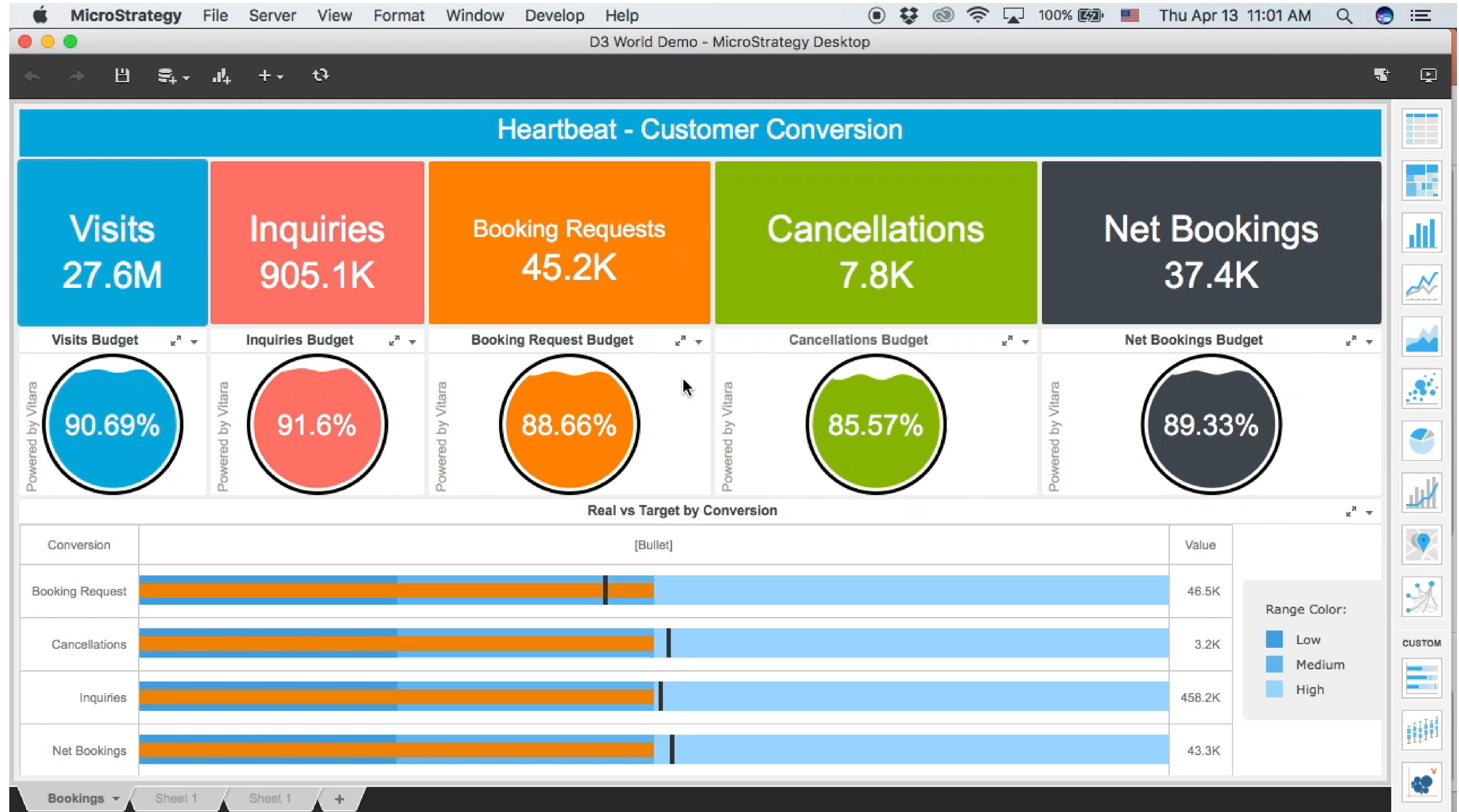
# How to Customize Your Dossier

# Import Plug-ins into Desktop



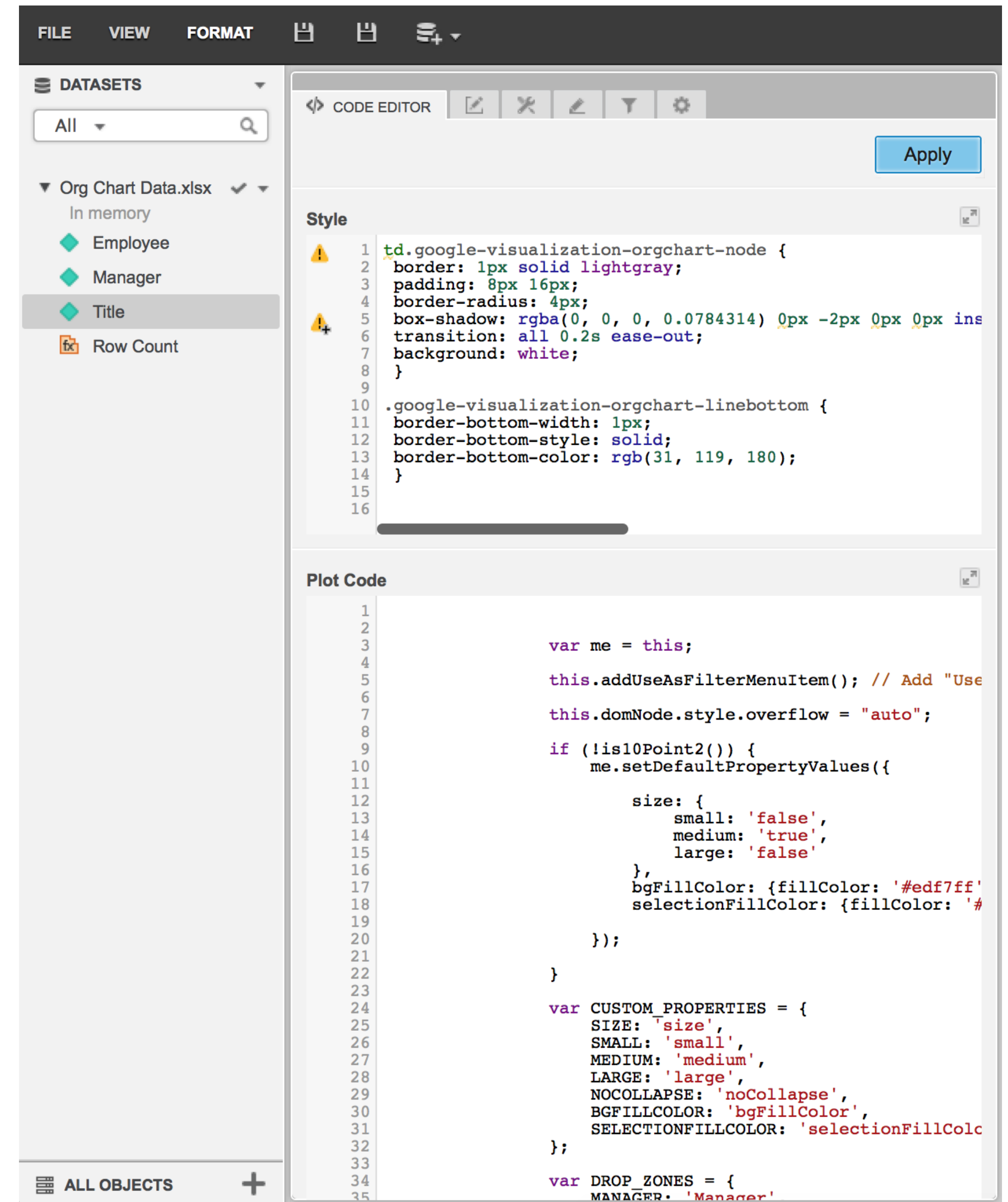


# Import Plug-ins into Desktop

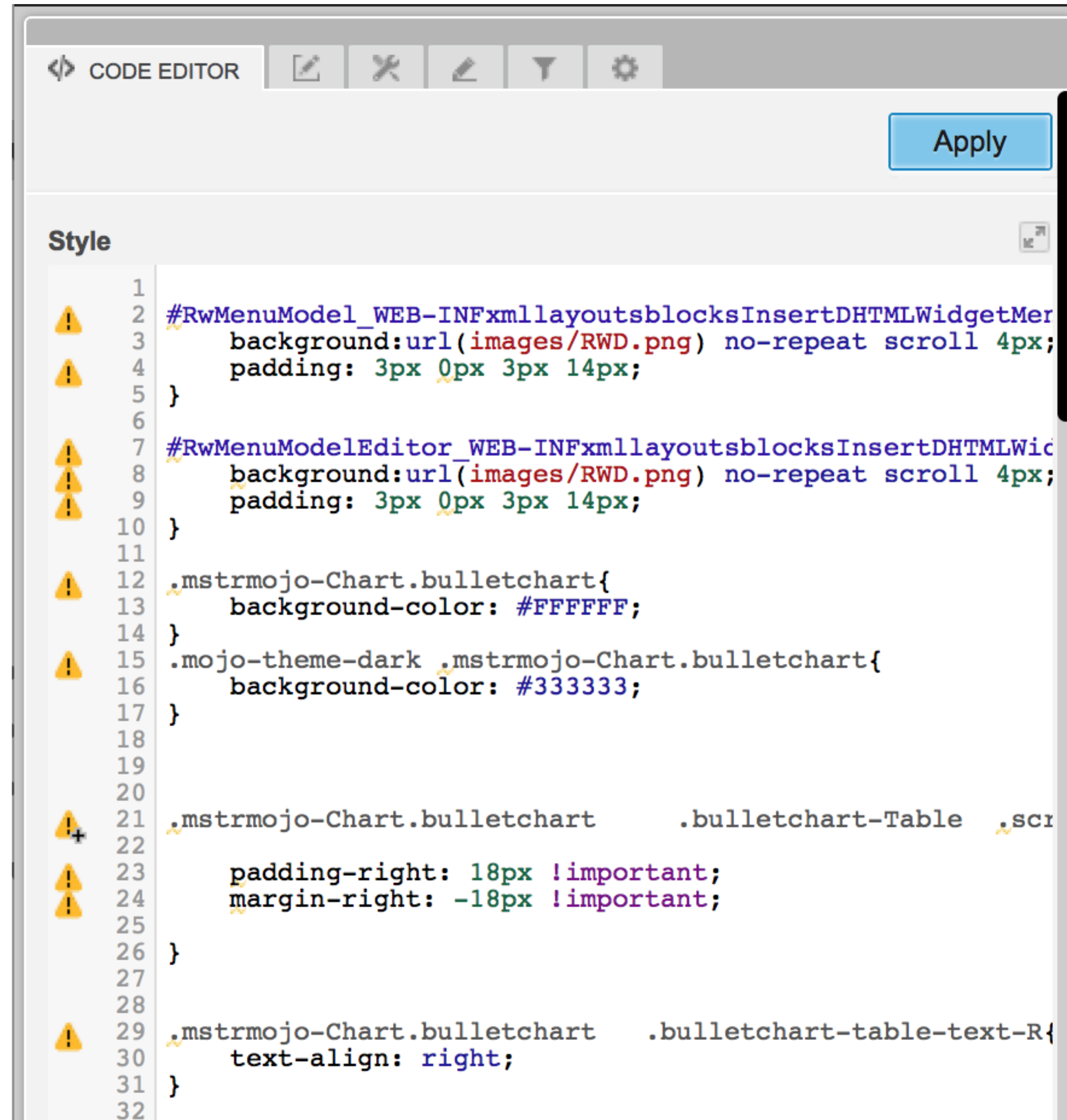


# Visualization Builder

- **Create** custom HTML5 visualizations that consume and display MicroStrategy data
- **Find** an interesting D3 visualization online and quickly create your own custom visualization that is integrated with MicroStrategy
- **Edit** a set of sample visualizations that you can use as a base for creating your own custom visualizations



# Visualization Builder – Code Editor



# Visualization Builder – Dropzone Editor

DROPZONE EDITOR

Apply

Custom Zones

Order	Zones
	New Zone

shouldAllowObjectsInDropZone

1

2

3

4

5

6

7

8

9

10

getActionsForObjectsDropped

1

2

3

4

5

6

New Zone

Zone Name:

New Drop Zone Title

Element Type:

☒ Attribute and Metric

☐ Attribute

☐ Metric

☐ Attribute or Metric

Max Capacity:

Maximum element number

Zone Tooltip:

Drag Object Here

Disabled:

1

2

3

4

5

6

7

8

9

10

OK

Cancel



# Visualization Builder - Configuration

CONFIGURATION

Apply


Visualization name

BulletChart

Light theme icon:

file:///Applications/Micro...

...

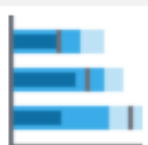


Reset to Default Light Icon

Dark theme icon:

file:///Applications/Micro...

...



Reset to Default Dark Icon

Error message :

Either there is not enough data to display the visu

Error details:

This visualization requires one or more attributes :

Minimum number of attributes:

1

Minimum number of metrics:

1

☒ Available for reports

☒ Available for documents

☒ Available for dashboards

Insert script URL

Add Library

# Visualization Builder - Properties

⚙️ PROPERTIES

BulletChart

Title

☒ Show titlebar

Arial

**B**

*I*

U

⌵

9

Fill color:

Alignment:

≡

≡

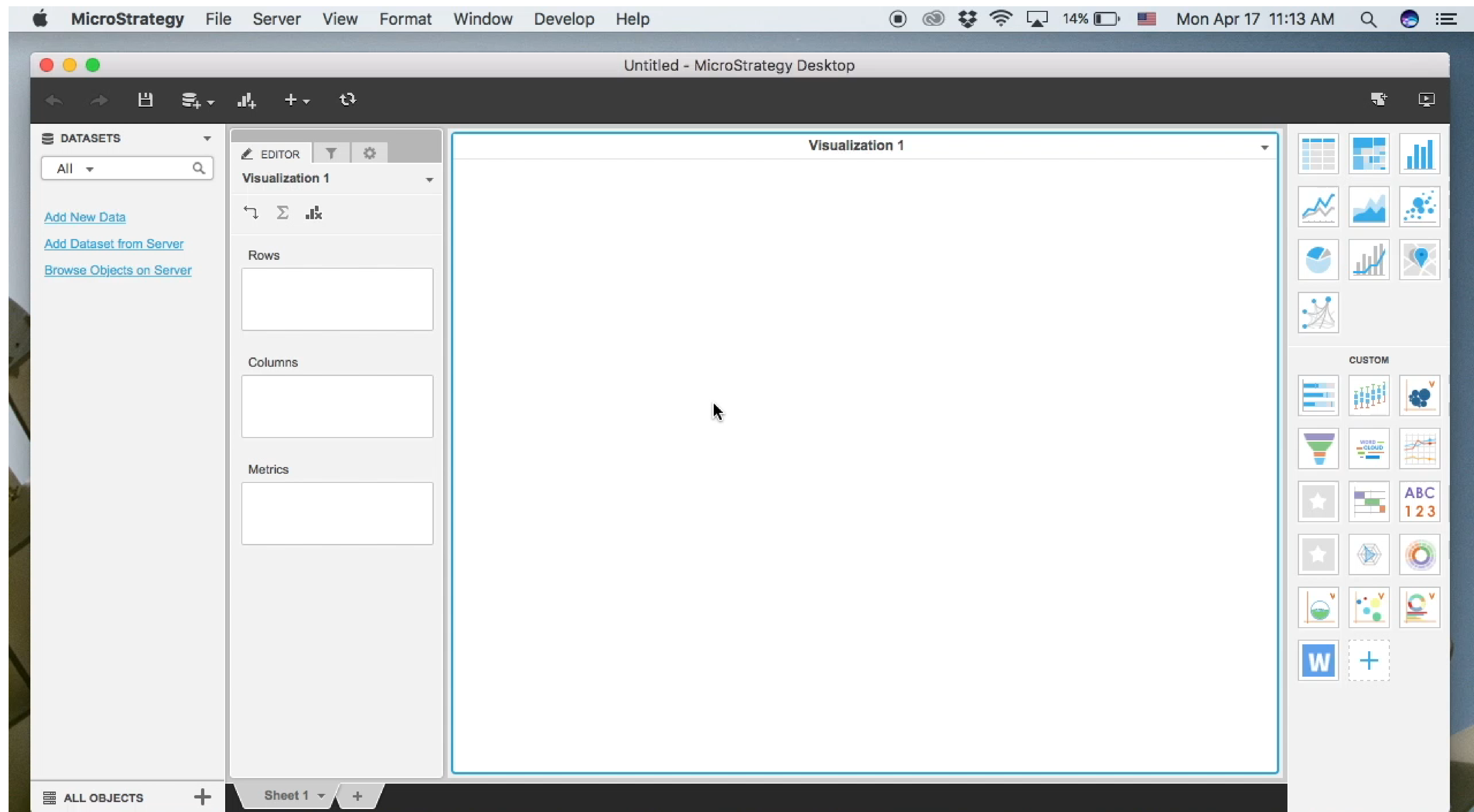
≡

Container

Fill color:

Outer border:

# Visualization Builder Demo – Adding New Fields



# Visualization Builder Demo – Edit Code

MicroStrategy File Server View Format Window Develop Help 37% Wed Apr 12 5:07 PM

FILE VIEW FORMAT

DATASETS

All

Org Chart Data.xlsx In memory

- Employee
- Manager
- Title
- Row Count

Dropzone Editor

Apply

Custom Zones

Order	Zones
1	Manager
2	Employee
3	Title
4	Metric

shouldAllowObjectsInDropZone

```
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
return {allowedItems: dragObjects};
```

getActionsForObjectsDropped

```
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11
```

getActionsForObjectsRemoved

ALL OBJECTS

Org Chart World

```
graph TD; SamLiu["Sam Liu<br/>Sr VP & CTO"] --> MarthaRivera["Martha Rivera<br/>Sr VP, Tools"]; SamLiu --> RajSrinivasin["Raj Srinivasin<br/>Sr VP, Clients"]; MarthaRivera --> EllenChu["Ellen Chu<br/>Senior Architect"]; MarthaRivera --> SamJones["Sam Jones<br/>Senior Director"]; SamJones --> MohanParalkar["Mohan Paralkar<br/>Sr /W Engineer"]; RajSrinivasin --> BillVentura["Bill Ventura<br/>Senior Architect"]; RajSrinivasin --> SoniaRamirez["Sonia Ramirez<br/>Senior Director"]; SoniaRamirez --> FanLi["Fan Li<br/>Sr /W Engineer"];
```



# Additional Resources

## Visualization Library

### Visualization Library

Powerful data discovery for everyone.

DOWNLOAD DESKTOP FOR FREE TODAY >

MicroStrategy > Marketplace > Visualization Library

1 Discover

Find the perfect way to visualize your data.

2 Deploy

Easily download and use.

3 Contribute

Share your creations with the community.

4 Request

Don't see what you need? Contact us.

Blog

Search

Annotation Chart

Visualize data over time using a line chart with annotations to provide insight into data...

19 6

Org Chart

Visualize the hierarchy of an organization with relevant insightful data. Org charts le...

31 5

Narratives generated by Narrative Science

Empower enterprises with automated narratives

Narratives for MicroStrategy...

12 6

## Developer Zone

### Developer Zone

Browse the developer library and API documentation, and connect with other developers.

MicroStrategy > Developer Zone

SDK discussion forums

Ask questions, find solutions, and share insights about your MicroStrategy implementation.

Browse discussions >

SDK knowledge base

Search and browse the latest tech notes on our SDK, written by MicroStrategy experts.

Find SDK tech notes >

Web SDK

Browse documentation, samples, plug-ins, tools, and utilities to help you customize MicroStrategy Web.

Documentation

Download

Mobile SDK

Browse documentation and sample code to help you customize your iOS and Android applications.

Documentation

Download

Visualization SDK

Browse documentation, sample code, plug-ins, and tools to help you create HTML5 visualizations.

Documentation

API References

Access reference information for packages, classes, interfaces and methods in MicroStrategy SDKs.

Select API ✓

D3 provides new and exciting ways to discover insights

Free\* to use with MicroStrategy license

Available on Desktop, Web, and Mobile



# Advanced Analytics

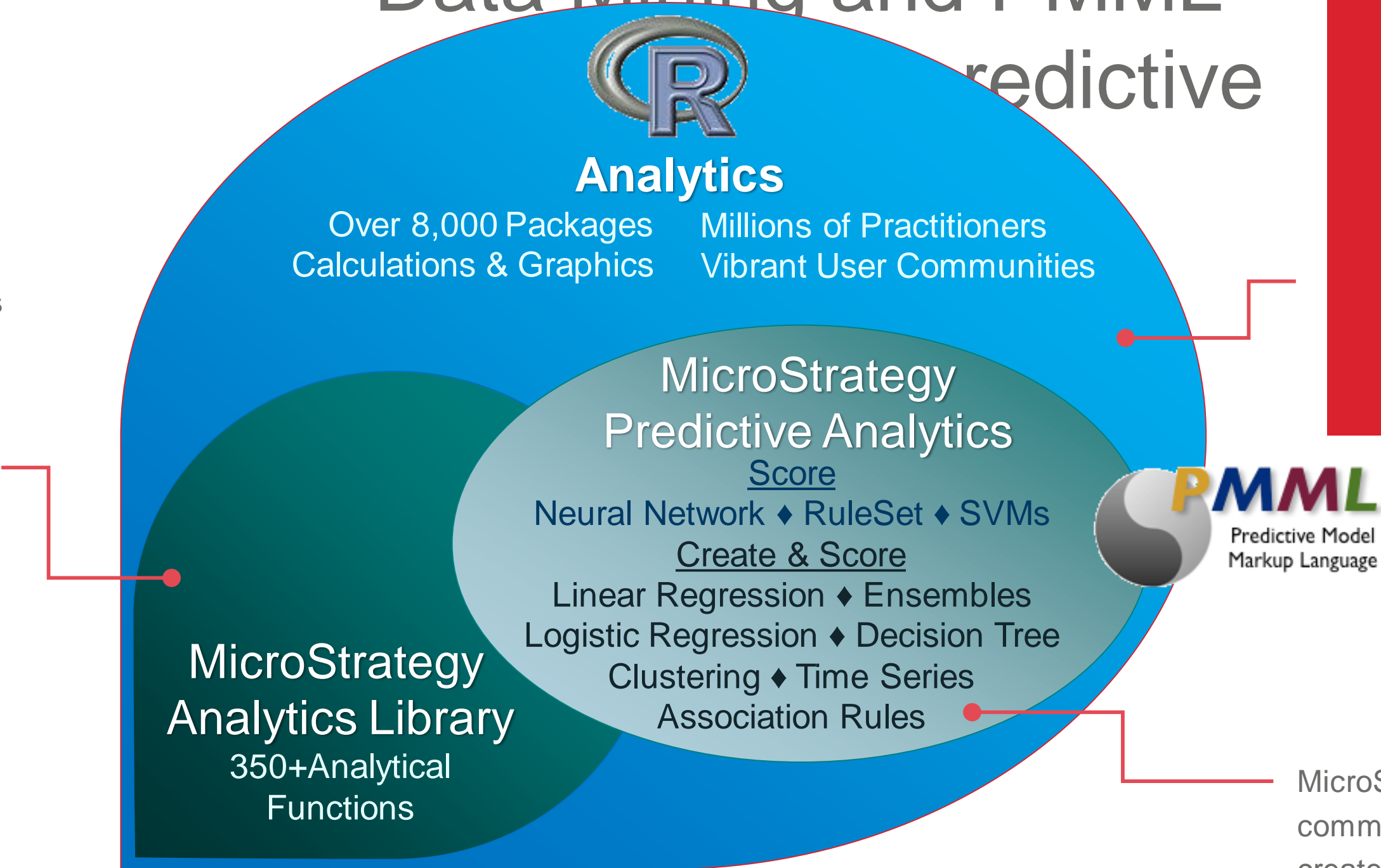
MicroStrategy offers three easy methods to include advanced analytics into your applications

## Native Statistical Library of 350+ functions for self-service

MicroStrategy offers an advanced analytics library that is built-in to the product. From basic summarization to optimization to even forecasting and predictions, users can embed statistical metrics into the analytical workflow very easily.

MicroStrategy offers over 350 native functions, out of the box, so that business users are able to perform data mining and create highly advanced statistical algorithms, on their own, with minimal support from IT.

## MicroStrategy's Native Data Mining and PMML Predictive



## The industry's best integration with

76% of analytic professionals report using R

- 2015 Rexer Data Science Survey ([www.RexerAnalytics.com](http://www.RexerAnalytics.com))

MicroStrategy allows organizations to leverage existing investments in other technologies by seamlessly integrating with data mining models from other applications by importing Predictive Model Markup Language (PMML) into the metadata repository.



MicroStrategy includes native functions implementing the most commonly used predictive algorithms so that any organization can create and deploy data mining models without any third party tools.

MicroStrategy can seamlessly integrate your advanced analytics into reports, documents, dashboards and alert driven apps

# MicroStrategy Functions Library

350+ Analytical Functions available Out-of-the-Box

## Basic Aggregations

Average  
Mean  
Count  
Sum  
Maximum  
Minimum  
Median  
Mode  
Product  
Rank  
Percentile

## Mathematical

Absolute	Integer
A-cosine	Ln
Hyp A-cos	Log
A-sine	Log10
Hyp A-sine	Mod
A-tan	Power
A-tan2	Quotient
Hyp A-tan	Radians
Ceiling	Randbetween
Combine	Round
Cosine	Sine
Hyp Cosine	Hyp Sine
Degrees	Square Root
Exponent	Tan

## Date & Time

Add Days  
Add Months  
Current Date  
Current Date & Time  
Current Time  
Day of Month  
Day of Week  
Day of Year  
Days Between  
Month Start Date  
Month End Date  
Months Between  
Year Start Date  
Year End Date

## Statistical

Average Deviation  
AvgDev  
Beta CDF  
Binomial PDF/CDF  
ChiSquare CDF/Inv  
ChiSquareTest  
Confidence  
Correlation  
Covariance  
CritBinomial  
Exponential PDF/CDF  
F CDF/Inv

Fisher PDF/Inv  
Forecast  
ForecastV  
FTest  
Gamma PDF/CDF/Inv  
Geometric Mean  
Growth  
GrowthV  
HeteroscedasticTTest  
HomoscedasticTTest  
Hypergeometric PDF  
Intercept  
Kurtosis  
Lognormal CDF/Inv  
MeanTTest  
NegativeBinomial PDF  
Normal PDF/CDF/Inv  
PairedTTest  
Pearson

Permut  
Poisson PDF  
RSquare  
Skew  
Slope  
Standard Deviation  
Standardize  
StandardNormal CDF/Inv  
SteYX  
T Dist CDF/Inv  
Trend  
TrendV  
Variance  
VarTest  
Weibull PDF/CDF

## Financial Functions

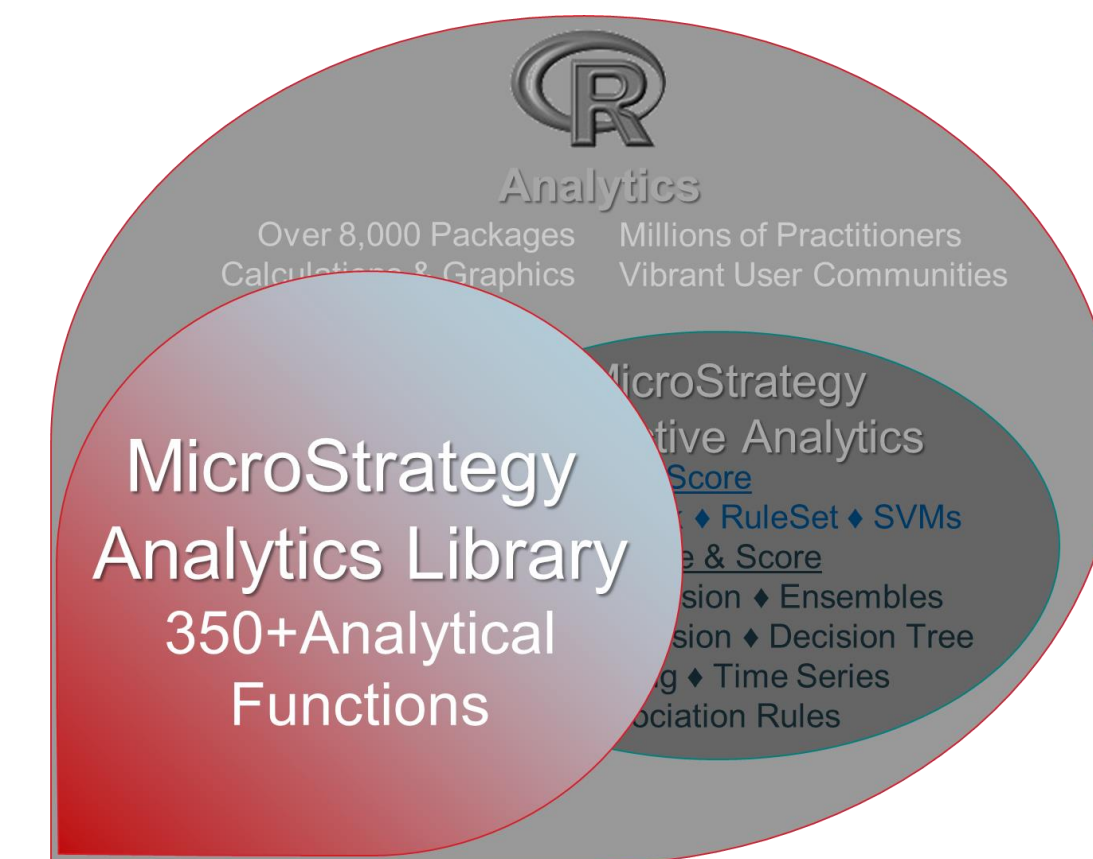
Accrued Interest  
Accrued Interest Maturity  
Amount Received at Maturity  
Bond-equivalent Yield for T-BILL  
Convert Dollar Price from Fraction to Decimal  
Convert Dollar Price from Decimal to Fraction  
Cumulative Interest Paid on Loan  
Cumulative Principal Paid on Loan  
Depreciation for each Accounting Period  
Days In Coupon Period to Settlement Date  
Days In Coupon Period with Settlement  
Date

Days from Settlement Date to Next Coupon  
Double-Declining Balance Method  
Discount Rate For a Security  
Effective Annual Interest Rate  
Fixed-Declining Balance Method  
Future Value  
Future Value of Initial Principal with Compound Interest Rates  
Interest Rate  
Interest Payment  
Internal Rate of Return  
Interest Rate per Annuity  
Macauley Duration  
Modified Duration  
Modified Internal Rate of Return  
Next Coupon Date After Settlement Date  
No of Coupons Settlement and Maturity Date  
Nominal Annual Interest Rate  
No of Investment Periods  
Net Present Value

Odd Last Period / Yield  
Prev Coupon Date Before Settlement Date  
Price Per \$100 Face Value w Odd  
First Period Payment  
Payment on Principal  
Price  
Price Discount  
Price at Maturity  
Present Value  
Prorated Depreciation for each Period  
Straight Line Depreciation  
Sum-Of-Years' Digits Depreciation  
T-BILL Price  
T-BILL Yield  
Variable Declining Balance  
Yield  
Yield for Discounted Security  
Yield at Maturity

## OLAP Functions

Running Total  
Running Std Deviation  
Running Std Deviation of Population  
Running Minimum  
Running Maximum  
Running Count  
Moving Difference  
Moving Maximum  
Moving Minimum  
Moving Average  
Moving Sum  
Moving Count  
Moving Std Deviation  
Moving Std DeviationP  
First / Last in Range  
Exponential Weight Moving Avg  
Exponential Weight Running Avg

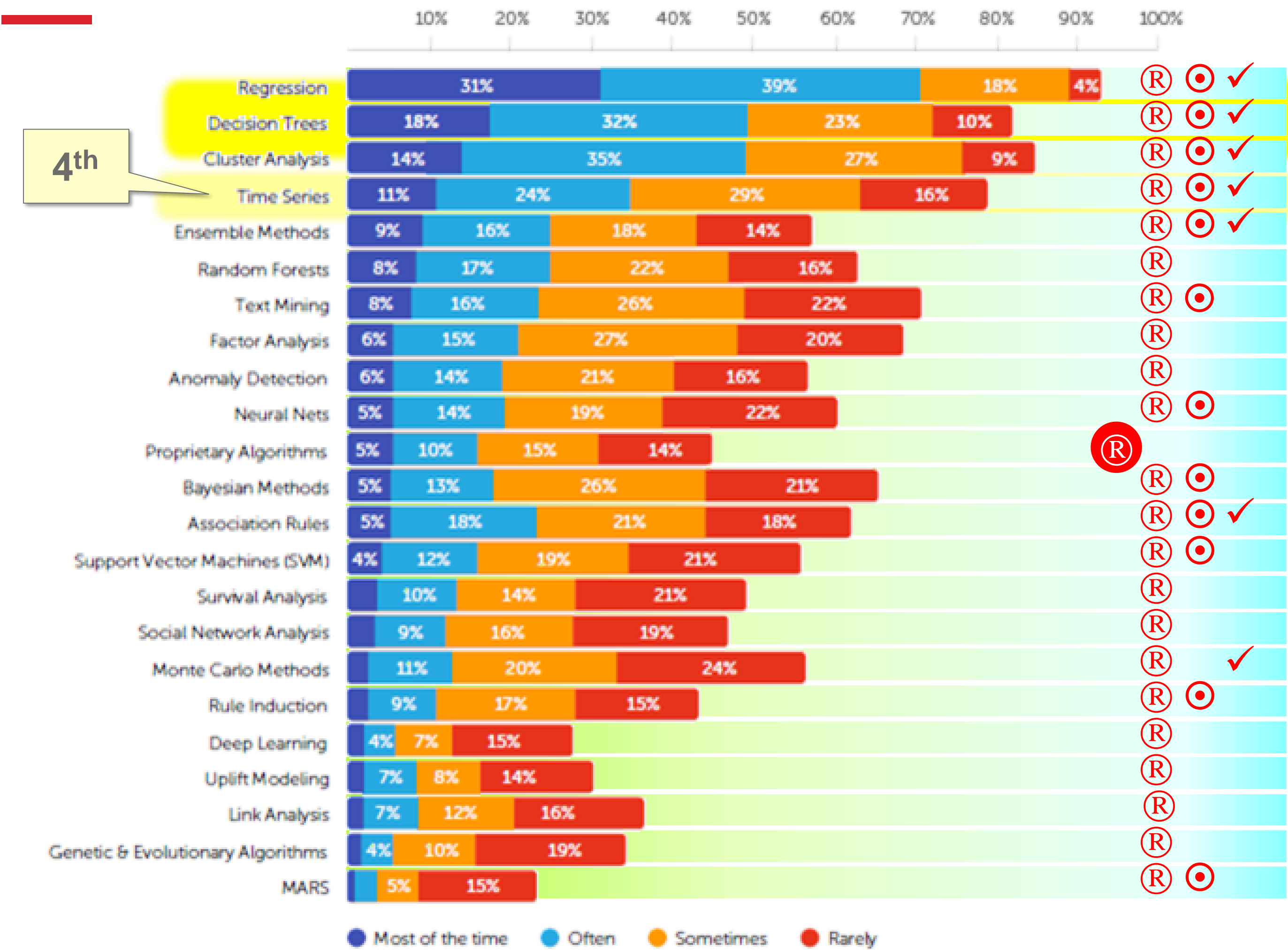




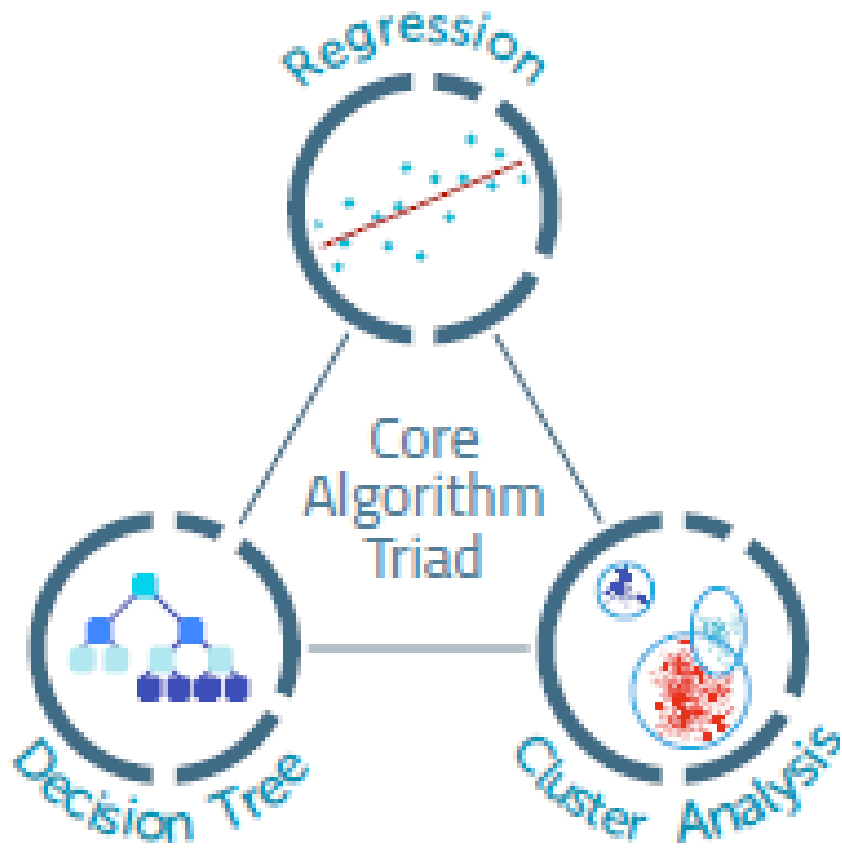
# Predictive Analytics We Support

Deploy Analytics using virtually Any and All Techniques

“Which Techniques Do You Use Most”



Three Work Horses of Data Mining



Ⓡ = via R  
Ⓞ = via PMML  
✓ = MicroStrategy Native

MicroStrategy  
Predictive Analytics

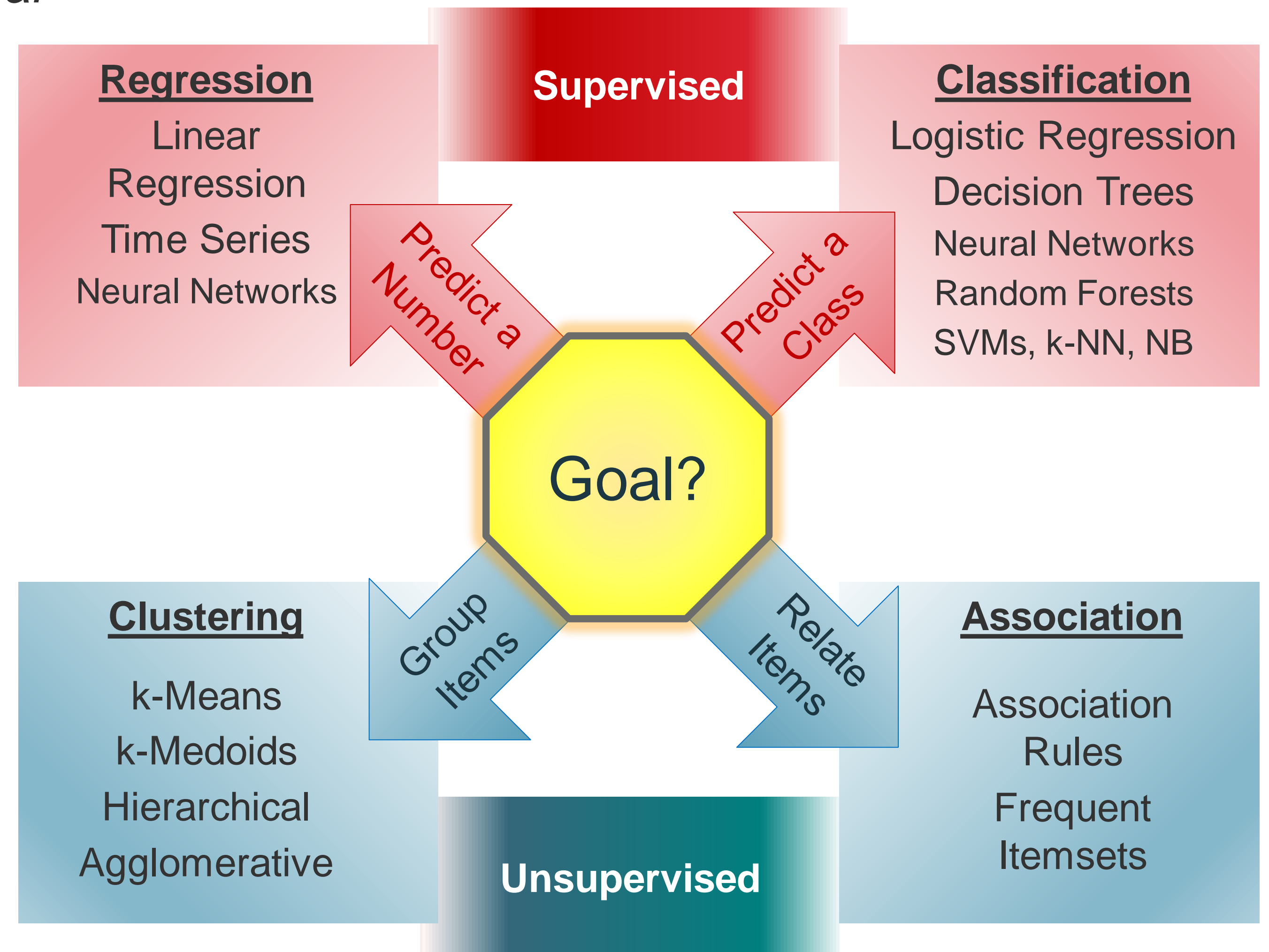
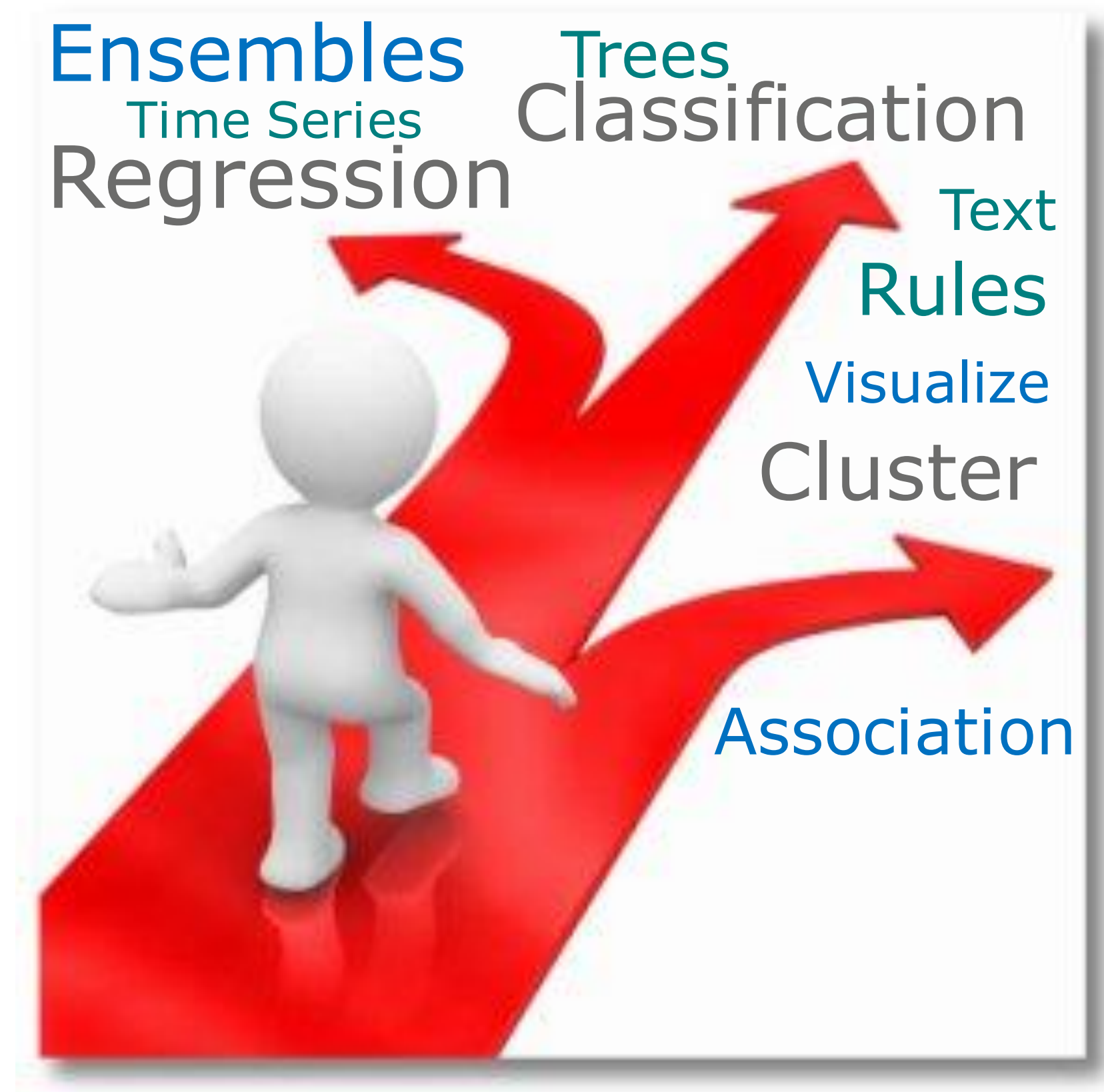
Score  
Neural Network ♦ RuleSet ♦ SVMs  
Create & Score  
Linear Regression ♦ Ensembles  
Logistic Regression ♦ Decision Tree  
Clustering ♦ Time Series  
Association Rules  
350+ Analytic Functions

Source: 2015 Rexer Data Miner Surveys  
[www.RexerAnalytics.com](http://www.RexerAnalytics.com)  
Over 1,220 Data Miners from 72 Countries



# Algorithm Selection

*Predictive Analytics are Defined by their Goal*



# Questions?





# Thank you

For more information, Contact:

Chris Fleming: [cfleming@microstrategy.com](mailto:cfleming@microstrategy.com)

Craig Mueller: [rmueller@microstrategy.com](mailto:rmueller@microstrategy.com)

Brandon Martin: [brmartin@microstrategy.com](mailto:brmartin@microstrategy.com)