

Embedded Analytics Webinar Series



Session 4: Seamless Integration of Embedded Analytics

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Meet your Presenters



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Practice Director, Data Analytics



What you'll learn: Webinar Series Overview

- Focus: How you and your company can leverage the power and value of embedded visual data analytics to empower your customers
- Objective: Provide you with a complete roadmap for the successful implementation and deployment of your embedded visual data analytics capabilities

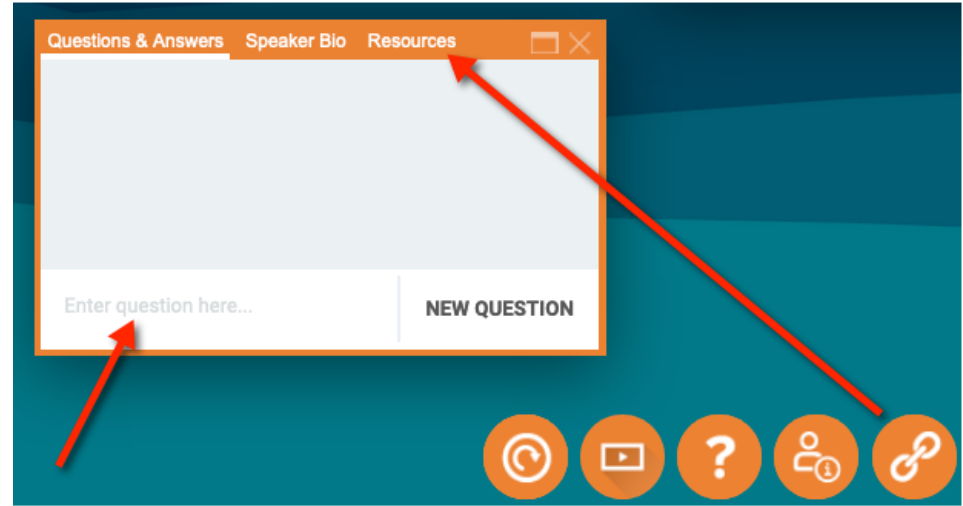
<https://www.tableau.com/learn/series/embedded-analytics>

- July 10: Discover the value of Embedded Analytics
- July 17 : Prepare for an Embedded Analytics implementation
- July 18 : Visual design best practices for Embedded Analytics
- July 24 : Seamless Embedded Analytics integration
- July 25 : Provision a scalable and secure Embedded Analytics platform

JULY 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Housekeeping

- You can submit your questions throughout the presentation by clicking on the Q&A window.
- Make sure to check out the “Resources” section for additional info and links.



- Webinar recording will be made available via email and on-demand at <https://www.tableau.com/learn/series/embedded-analytics>

Recap

- Follow a consistent methodology
 - Know your audience
 - Clearly define your business objectives
 - Include lagging and actionable leading indicators
 - Leverage the power of pre-attentive attributes
- Keep visualizations simple and uncluttered
- Incorporate interactive elements to increase engagement
- By combining visual analytics and transactional capabilities together, we provide – insight in the moment

Presentation content available online at:

<https://www.tableau.com/learn/series/embedded-analytics>

› ABOUT OSI DIGITAL



OSI Digital selected as one of the Tableau's *Partners of the Year* - 2018

OSI Digital provides purpose-built business and technology solutions that optimize performance to enable data-driven outcomes for our customers

25

YEARS OF EXPERIENCE

1400

GLOBAL PROFESSIONALS

1000+

CLIENTS SERVED

3500+

PROJECTS COMPLETED

EXAMPLE EMBEDDED ANALYTICS PORTAL

Online Savings Intelligence

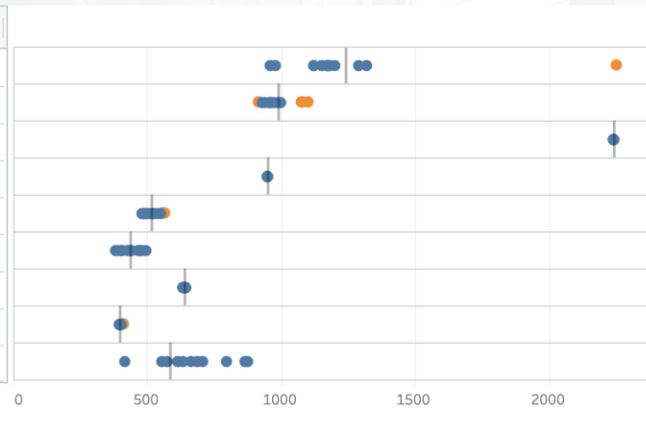
Menu

ONLINE BUDGET MANAGEMENT

Set your target budget for each expense category. The chart shows last year's actual expenses by month. Unusual months are highlighted in orange. Highlight the typical months to recalculate the average. A red "X" indicates that we have advice for how to improve your budget.

Category	Target	Average	
Entertainment	\$1,243	\$1,243	✗
Groceries	\$990	\$990	✓
Housing	\$2,241	\$2,241	✗
Insurance	\$951	\$951	✓
Medical	\$518	\$518	✓
Personal Care	\$439	\$439	✓
Transportation	\$639	\$639	✓
Utilities	\$400	\$400	✓
Savings	\$584	\$584	✓

Include Outliers?



› IMPORTANCE OF LANGUAGE INDEPENDENCE

- The most versatile data analytics platforms do not favor one development platform or language over any other
- Flexibility as requirements and standards evolve
- Ability to quickly respond to customer and partner opportunities



React



jQuery



ANGULARJS

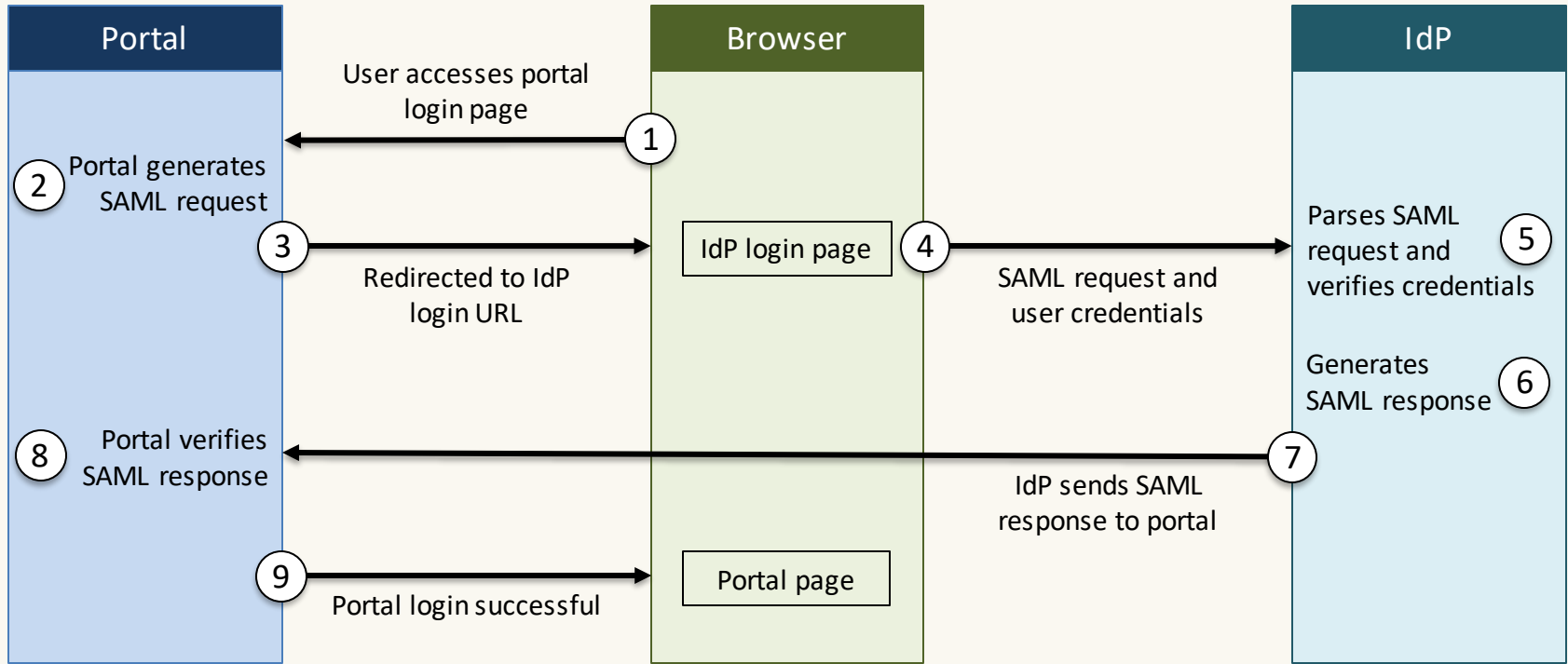


› SINGLE SIGN-ON INTEGRATION

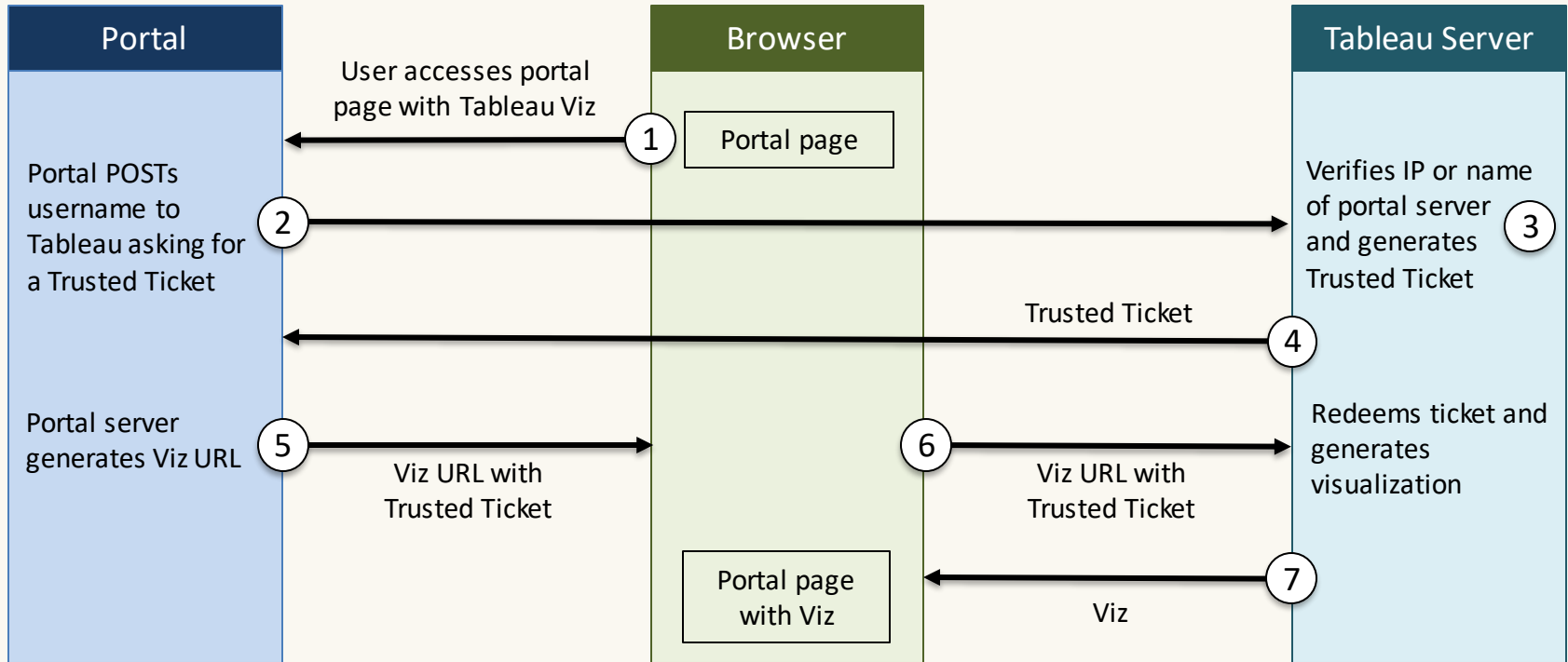
- There are two aspects to managing and authenticating users
 1. Where are the user credentials stored – **identity store**
 2. How are user credentials verified – **authentication mechanism**
- Typical external embedded analytics configurations
 - User credentials stored in Tableau Server
 - Authentication managed by SAML, OpenID Connect, or Trusted Authentication

Tableau Options		Identity Store		
		Local	AD	LDAP
Authentication Mechanism	Basic	✓	✓	✓
	SAML	✓	✓	✓
	Site SAML	✓		
	Kerberos		✓	
	SSPI		✓	
	OpenID Connect	✓		
	Trusted Auth	✓	✓	✓
	Mutual SSL	✓	✓	✓

› SAML EXAMPLE

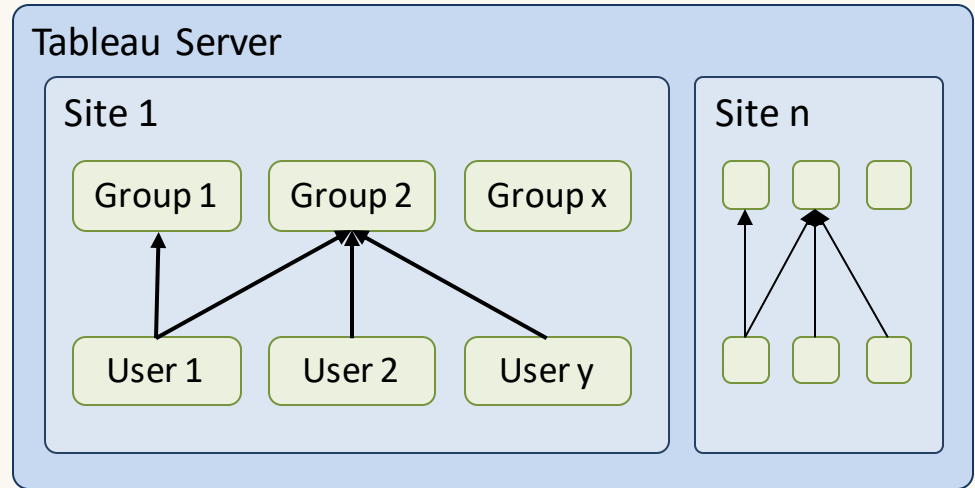


TRUSTED AUTHENTICATION EXAMPLE



› CONTENT PERMISSIONS MANAGEMENT

- Groups are defined to manage common permission sets
- Users can belong to one or more groups
- Managing content access at the group level makes permissions management easier
- Tableau Server Sites facilitate a multi-tenant configuration and minimizes the cost and effort involved in managing the infrastructure



› GRANULAR PERMISSION LEVELS



View



View Comments



Save Customized



Filter



Add Comments



Move



Download
Image or PDF



Web Edit



Delete



Download
Summary Data



Save



Manage Permissions



Download
Full Data



Download Workbook
/ Save As

➤ USER-BASED ROW-LEVEL DATA SECURITY

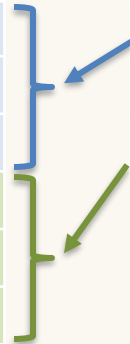
- Ensure that users only have access to authorized data
- Many ways of accomplishing this in Tableau

Data Table

Account	Month	Category	Amt
100-5432	Jan 2018	Entertainment	\$1,200
100-5432	Feb 2018	Entertainment	\$1,290
100-5432	Mar 2018	Entertainment	\$1,150
100-6983	Jan 2018	Entertainment	\$950
100-6983	Feb 2018	Entertainment	\$975
100-6983	Mar 2018	Entertainment	\$990

Entitlement Table

Account	Username
100-5432	Jeff Pierick
200-6543	Jeff Pierick
100-6983	Sally Smith



➤ USER-BASED ROW-LEVEL DATA SECURITY

Owns Data? HistoricSpending ✕

`[Username] = USERNAME()`

The calculation is valid. 1 Dependency ▾ Apply OK

HistoricSpending Connection ○ Live Extract Edit Refresh Filters 1 | Edit

Extract will include all data.

Actuals ⊕ Entitlements

Filter Details

Filter	Details
Owns Data?	keeps True

Add... Edit... Remove

Cancel OK

› TABLEAU SERVER INTEGRATION

- Tableau Server REST API provides ability to query and manage:
 - Dashboards
 - Data sources
 - Users
 - Tasks
 - Subscriptions
 - Alerts
 - etc.
- Typical use cases:
 - Dynamically determine list of dashboards that a user has access to
 - Retrieve dashboard preview images that can be displayed in your portal
 - Manage users, groups, and permissions
 - Download dashboard data, dashboard images, PDF renditions, etc.

➤ REST API – FIND AUTHORIZED WORKBOOKS (LOGIN)

```
import requests
import json

# The URL for the Tableau Server, including the API version:
server = "https://10az.online.tableau.com/api/3.4"

# The HTTP request headers are used to specify that the request and response
# will be in JSON format:
request_headers = {"Content-Type": "application/json", "Accept": "application/json"}

# The URL for the API call to sign into Tableau:
api_url = server + "/auth/signin"

# The data passed in the POST includes the Tableau username, password, and
# site name:
request_json = {
    "credentials": {
        "name": username,
        "password": password,
        "site": {
            "contentUrl": site_name
        }
    }
}
```

➤ REST API – FIND AUTHORIZED WORKBOOKS (LOGIN)

```
# Attempt to log into Tableau Server:  
response = requests.post(  
    url=api_url,  
    data=json.dumps(request_json),  
    headers=request_headers  
)
```

```
# The site and user IDs returned by Tableau will be needed for future API  
# calls:
```

```
site_id = response.json()["credentials"]["site"]["id"]  
user_id = response.json()["credentials"]["user"]["id"]
```

```
# The token that is returned by Tableau is used to authenticate future  
# API calls. The token is added to the HTTP headers:
```

```
token = response.json()["credentials"]["token"]  
request_headers["X-Tableau-Auth"] = token
```

➤ REST API – RETRIEVE LIST OF WORKBOOKS

```
# This is the API endpoint used to retrieve the list of workbooks that the
# user has access to:
response = requests.get(
    url="{0}/sites/{1}/users/{2}/workbooks".format(server, site_id, user_id),
    headers=request_headers
)

# List the workbooks in the "Financial Services" project:
for workbook in response.json()["workbooks"]["workbook"]:
    print workbook["name"]
```

› PORTAL UX INTEGRATION

- Tableau JavaScript API provides ability to:
 - Dynamically display one or more dashboards in a portal page
 - Hide or swap dashboards that are displayed
 - Respond to events when the user interacts with a visualization
 - Modify a visualization based on events in your portal
- In this session we'll demonstrate how to:
 - Display a dashboard in a portal page
 - Update data in the portal when the user selects marks in a Tableau visualization
 - Filter a visualization based on user selections in the portal page

➤ JAVASCRIPT API – RENDER VISUALIZATION

```
<!-- Include the Tableau JavaScript API library -->
<script
  type="text/javascript"
  src="https://10az.online.tableau.com/javascripts/api/tableau-2.min.js"
></script>

<script type="text/javascript">
  // The JavaScript variable that will track the Tableau visualization object:
  var viz;

  // The following function is used to initialize and display the specified
  // Tableau visualization in the "vizContainer" HTML div:
  function initViz(sheetName) {
    // This is the HTML div into which the visualization will be rendered:
    var containerDiv = document.getElementById("vizContainer");

    // This is the URL on the Tableau server that points to the visualization:
    var url = server + siteName + "/views/BudgetAnalysis/" + sheetName;
```

➤ JAVASCRIPT API – RENDER VISUALIZATION

```
// These options are passed to the Tableau function that renders the
// visualization. The tabs and toolbar will be hidden from the user.
// Once the visualization has been rendered, an event listener called
// "listenToMarksSelection" is registered; this function is invoked
// whenever the user changes the set of marks selected on the visualization.
// Another function called "calcAllData" is invoked which updates the
// average spend in the HTML grid based on the data displayed in the
// visualization:
var options = {
  hideTabs: true,
  hideToolbar: true,
  onFirstInteractive: function() {
    listenToMarksSelection();
    calcAllData();
  }
};
```

➤ JAVASCRIPT API – RENDER VISUALIZATION

```
// If a visualization is already displayed, then we need to dispose of
// it before displaying the new one:
if (viz) {
    viz.dispose();
}

// Initialize and display the new visualization:
viz = new tableau.Viz(containerDiv, url, options);
}
```

```
<body onload="initViz('HistoricSpending');">
```

➤ JAVASCRIPT API – FILTER VISUALIZATION FROM PORTAL

```
<input type="checkbox" id="includeOutliers"
  onclick="filterViz(this);" checked>
<label for="includeOutliers">Include Outliers?</label>
```

```
function filterViz(checkBox) {
  // Find the Tableau worksheet that is currently displayed:
  workbook = viz.getWorkbook();
  activeSheet = workbook.getActiveSheet();

  if (checkBox.checked) {
    // The user selected the checkbox so clear the filter and display all
    // of the data:
    activeSheet.clearFilterAsync("Outlier?");
  } else {
    // The user unselected the checkbox so set the filter to exclude the
    // outliers:
    activeSheet.applyFilterAsync("Outlier?", "False",
      tableau.FilterUpdateType.REPLACE);
  }
}
```


➤ KEY TAKE-AWAYS

- Select a data visualization platform that supports the following:
 - Development language agnostic
 - User authentication options that support your needs
 - A granular permissions model that's easy to manage
 - Row-level security that's easy to implement and performs well
 - Ability to query and update system data
 - Bi-directional interaction between portal and visualizations
- Partner with an implementation partner that has strengths in three key areas:
 - Visual design best practices
 - Software engineering
 - Systems infrastructure



Next Steps

Learn more

<https://www.tableau.com/embedded-analytics>

<https://www.osidigital.com>

Try

<https://www.tableau.com/trial>

Register for the next session

<https://www.tableau.com/learn/series/embedded-analytics>

- July 25 : Provision a scalable & secure Embedded Analytics platform

Webinar presentation available online at

<https://www.tableau.com/learn/series/embedded-analytics>

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- Analytics 101
- Analytics 102
- Business Intelligence (BI)
- Business Intelligence
- Cloud Analytics
- Cloud Analytics Integration
- Cloud Analytics

Q & A

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.../online.
.../Sales/SalesScoreCard?.embed
...=yes&.toolbar=yes" width="800" height="600"></iframe>