



# The Qlik<sup>®</sup> Sense APIs

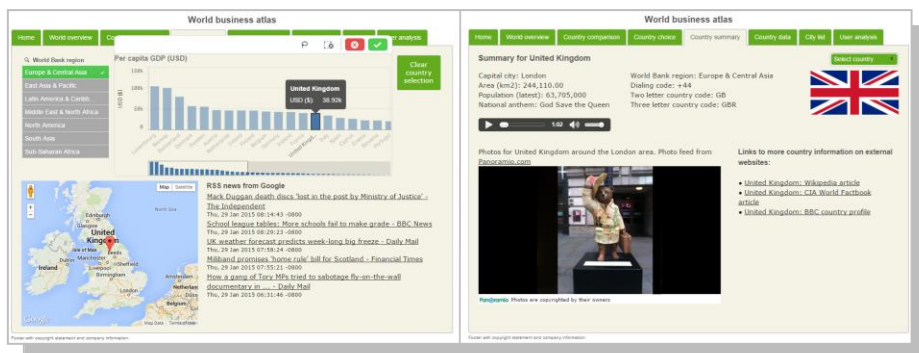
## Integrate, extend, and manage

The Qlik Sense APIs are the *same* APIs we use to develop Qlik Sense itself. This gives you tremendous flexibility to build, extend, and combine Qlik Sense with other technologies. With the Qlik Sense APIs you can:

- Integrate Qlik Sense into web or .NET applications.
- Extend Qlik Sense by adding your own visualizations and your own data sources.
- Manage licensing, users, and Qlik Sense server tasks programmatically.

## Integrate with web apps

Using the APIs, Qlik Sense visualizations can be seamlessly embedded into web pages or into applications built using web technologies.



Qlik Sense visualizations embedded in a complete web application. Application shows a Qlik Sense mashup with Google Maps, an RSS feed (in jQuery), Panoramio (a picture service), and an audio service.

## API technologies

To create the new Qlik Sense APIs, we use modern languages, styles, and libraries.

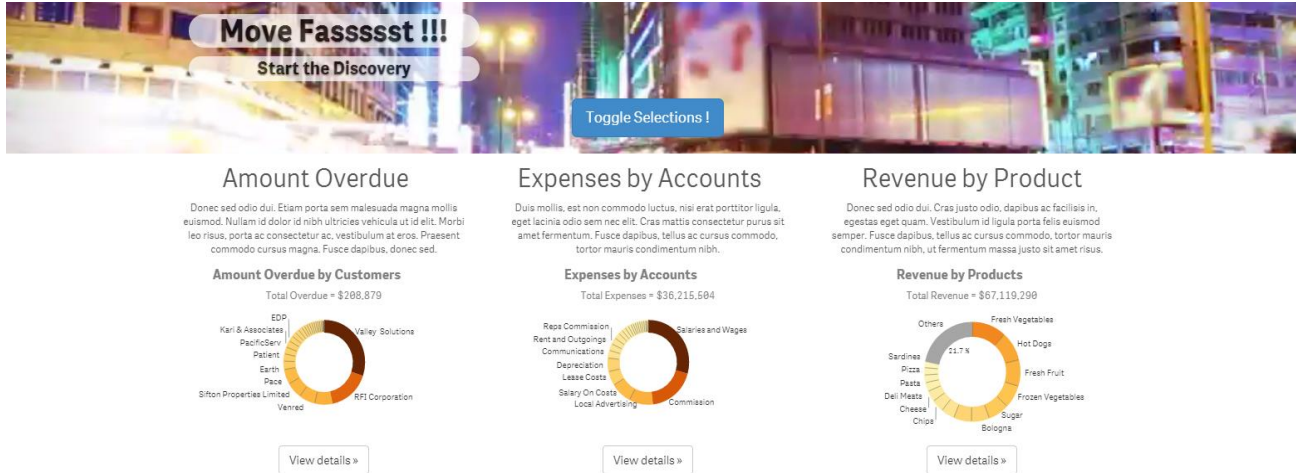
## Web technologies

Internally, Qlik Sense makes significant use of standard web technologies such as JSON, jQuery, RequireJS, and Angular. Most of the APIs are written in JavaScript.

All this makes building applications with the JavaScript-based APIs very straightforward for web developers. It also means the APIs work very well with modern web technologies and JavaScript libraries like D3.

## Desktop technologies

For desktop related tasks like integrating Qlik Sense into Microsoft<sup>®</sup> Windows<sup>™</sup> applications, creating new connectors for custom data sources, and server-related tasks, we use APIs based on the Microsoft .NET<sup>™</sup> framework.



Qlik Sense visualizations embedded in a web page.

Unlike other business intelligence tools, Qlik Sense offers *complete* web integration. The APIs enable data to be freely exchanged between Qlik Sense and the web application, which means developers can build true mashups with Google Maps, D3, or other web services and libraries. Selections and data from Qlik Sense visualizations can easily be passed back to the web application.

Embedded Qlik Sense visualizations behave in the same way as in the desktop product; charts have the same interactivity and the same interconnectedness. Users can zoom, move around, or select data on visualizations in exactly the same way as in the Qlik Sense desktop. Making selections in one visualization will automatically update all other visualizations in the same application.

Because of the unique level of integration offered by the APIs, Qlik Sense is being integrated with products that use web technologies. We have partners who have integrated Qlik Sense with Salesforce and other web-based products.

Including a Qlik Sense visualization in a web application is as simple as writing a single line of JavaScript code or HTML.

## Integrate with desktop apps

Using the .NET SDK, developers can embed Qlik Sense visualizations into desktop applications written using the Microsoft .NET framework. The user will see just one seamless application.

The .NET SDK enables data and control information to be easily shared between Qlik Sense and the application. For example, selections and data from Qlik Sense visualizations can be sent back to a .NET application for processing.

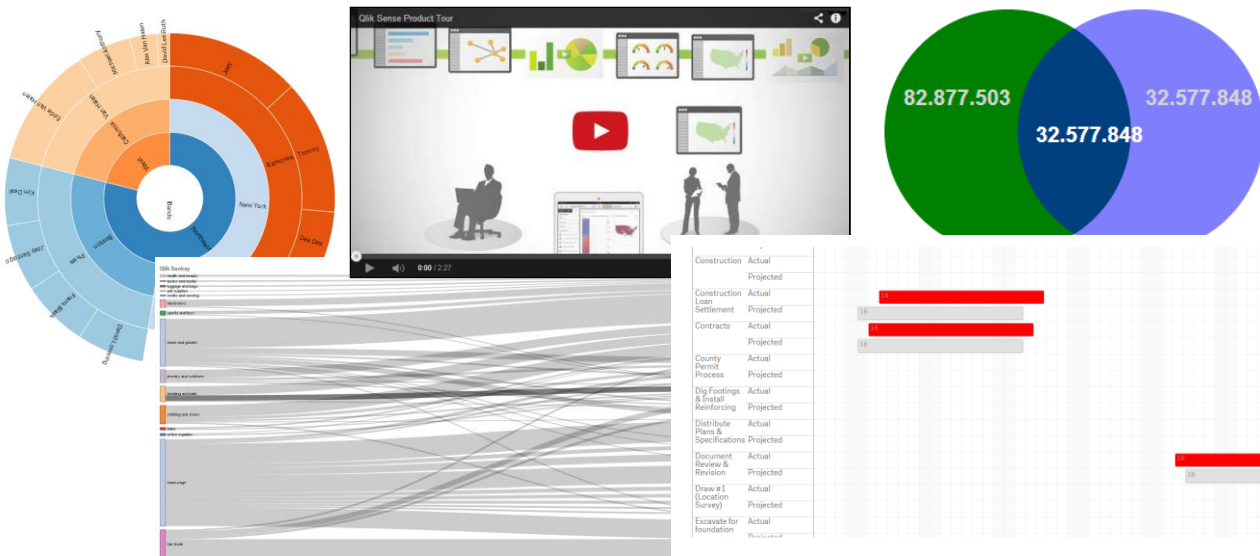
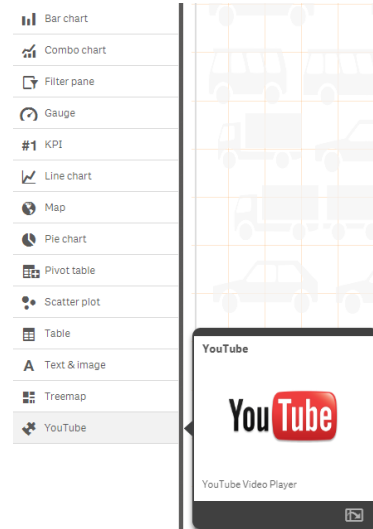
Developers can integrate Qlik Sense into applications written in any .NET language, for example Visual Basic or C#. We have partners who are integrating Qlik Sense into desktop applications such as Microsoft Office.

## Extending Qlik Sense

Qlik Sense has many visualizations built-in, but no tool can supply every visualization. Using the Extensions API, developers can create their own visualizations. The Extensions API is written in JavaScript and is built using modern web technologies. This means developers can use standard web libraries like D3 or Angular to create their own visualizations.

Qlik Sense treats these visualizations in exactly the same way as the built-in ones; they are listed alongside the built-in visualizations and they can be dragged and dropped into applications in the same way.

Visualizations built using the Extensions API can be easily shared within an organization and beyond. There is an extensive open-source community at <http://branch.qlik.com/> who have created hundreds of freely available visualizations add-ons for Qlik Sense, including radar charts, Gantt charts, Sankey diagrams and more.



Example Qlik Sense extensions: a sunburst diagram, a Sankey diagram, a Gantt chart, a Venn diagram and an embedded YouTube video player – all publicly and freely available.

## Adding data sources

Qlik Sense has a large number of connectors to sources such as ODBC, Salesforce, and SAP, but it's possible you might have a data source that's not supported off-the-shelf. The QVX SDK is a .NET-based API that enables developers to build their own connectors to their own data sources.

QVX connectors are designed to be easy to develop and high performance. A QVX connector is launched as a separate process when a user wants to retrieve data. The connector responds to data requests from Qlik Sense, retrieves the data from the data source, and streams the formatted data back to the Qlik Sense application.

QVX connectors appear as first-class connectors in the Qlik Sense load script editor; application developers can choose them in the same way as any other connectors and QVX connectors can be easily distributed within the organization or externally.

Many of our OEM partners use the QVX SDK to build their own connectors for their own data sources.

## Managing users and the system

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Most Qlik Sense implementations are networked based, which involves serving applications and licenses from the Qlik Sense Server. Server functionality can be controlled via several of our APIs. Here are some of the behaviors a developer can control programmatically:

- Add, delete, or modify users and their permissions
- Set rules about which user groups can access which applications
- Control user authentication
- Start tasks from an external scheduler.

Using the Qlik Engine API and the other APIs, it's possible to go further than managing the Qlik Sense-based system. It's possible to build a completely new Qlik Sense client. While very few people would want to do that, it does give you an indication of just how extensive, complete, and powerful the APIs are.

## Finding out more

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To see a demo of our APIs, contact us at <http://www.qlik.com/us/company/contact-us>

### The APIs

#### Extensions

Integrates new visualizations and features into Qlik Sense. Written in JavaScript.

#### Backend

A helper API for Extensions and Mashups. Written in JavaScript.

#### Mashups

Merges Qlik Sense visualizations into web applications or web pages. Written in JavaScript.

#### .NET SDK

Combines Qlik Sense with Windows desktop software. Written in .NET.

#### QVX SDK

Connects Qlik Sense to new and custom data sources. Written in .NET.

#### Qlik Engine

Controls and specifies how data is passed between the client and the server. Websocket protocol based.

#### Proxy Service

Controls authentication, sessions, and load management. Written in .NET.

#### Repository Service

Governs data and configuration information for a site. A REST API.

#### User Directory Connector

Imports users and groups into the Qlik Sense Server. Written in .NET.