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# Google Spreadsheets

## Automation using Web Services

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# Overview

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## What is Google Spreadsheets?

- Short Demo

## What is the Google Spreadsheets Data API?

- Motivations (Why an API?)
- Protocol design
- Atom Publishing Protocols
- GData
- List feed deconstructed

## How do I use the Google Spreadsheets Data API?

- Authentication
- Longer Demo

## Questions

# What is Google Spreadsheets?

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Let's take a look

# What is Google Spreadsheets?

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## Why not ask why

- Spreadsheets fits well with our mission...
  - “Organize **My** Information... and...
  - Make it Accessible and Useful...
  - **With whomever I choose** (and nobody else, thanks)”
- In other words....
  - Do-it-yourself Content Creation
  - Accepted/Familiar Interface of Spreadsheets and Documents
  - Accessibility from anywhere (...connected)
  - Easy-to-use Collaboration
  - Do-it-yourself Community Creation

# What is the Google Spreadsheets Data API?

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## Motivations

- Foster development of specific-use apps
- Allow users to create new UIs
- To extend features offered
- To integrate with 3rd party products
- To offer new vertical applications

# What is the Google Spreadsheets Data API?

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## Protocol design based on existing open standards

- Deciding on design principles
  - Use a RESTful approach
  - Reuse open standards
  - Reuse design from other Google APIs
- The end result
  - REST web service based on GData
  - Data is in Atom XML and protocol based on the Atom Publishing Protocol (APP)
  - GData is based on Atom and APP and adds authentication, query semantics, and more

# What is the Google Spreadsheets Data API?

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## Atom and Atom Publishing Protocol

- Easily maps to blogs
- Data in XML
  - Feed contains Entries
  - Represents metadata and data
    - Author
    - Id
    - Updated
    - Content
    - The list goes on



# What is the Google Spreadsheets Data API?

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## REST verbs are from HTTP

- Manipulate data using CRUD operations
  - Use HTTP operations GET, POST, PUT, DELETE
- GData: control access to your data
  - Authentication through web services
  - Client Login (HTTP POST)
  - Auth Sub (browser redirects)

# What is the Google Spreadsheets Data API?

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## GData is a family of protocols

- All share common features
  - Authentication
  - Data format (XML Atom Feeds)
  - Operations (HTTP verbs)
- For a variety of Google services
  - Google Base
  - Google Calendar
  - Google Code Search
  - Google Notebooks
  - Picasa Web Albums
  - Blogger
  - Google Apps Provisioning API
  - Google Spreadsheets
  - And more all the time

# What is the Google Spreadsheets Data API?

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## So, how is the data organized?

- Resources are organized into a series of feeds
- Data can be expressed in multiple formats (Cell feed, List feed)
- Ask for a different feed, get a different view of the data

## Available Feeds

- Spreadsheets
- Worksheets
- List
- Cells

## View Parameters

- Visibility (private, public)
- Projection (full, values, basic)

# What is the Google Spreadsheets Data API?

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## An example query

- Look at the rows in a spreadsheet using the list feed
- */feeds/list/spreadsheet-key/worksheet-id/visibility/projection*
- GET (<http://spreadsheets.google.com>)/feeds/list/sid/wid/public/full

# What is the Google Spreadsheets Data API?

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## The result

```
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:openSearch="http://a9.com/-/spec/opensearchrss/1.0/"
xmlns:gsx="http://schemas.google.com/spreadsheets/2006/extended"> <id>http://spreadsheets.google.com/feeds/list/key/od6/private/full</id>
<updated>2006-11-17T18:23:45.173Z</updated> <title type="text">Sheet1</title> <link rel="alternate" type="text/html"
href="http://spreadsheets.google.com/ccc?key=key"/> <link rel="http://schemas.google.com/g/2005#feed" type="application/atom+xml"
href="http://spreadsheets.google.com/feeds/list/key/od6/private/full"/> <link rel="http://schemas.google.com/g/2005#post"
type="application/atom+xml" href="http://spreadsheets.google.com/feeds/list/key/od6/private/full"/> <link rel="self"
type="application/atom+xml" href="http://spreadsheets.google.com/feeds/list/key/od6/private/full"/> <author> <name>Fitzwilliam
Darcy</name> <email>fitz@gmail.com</email> </author> <openSearch:totalResults>2</openSearch:totalResults>
<openSearch:startIndex>1</openSearch:startIndex> <openSearch:itemsPerPage>2</openSearch:itemsPerPage> <entry>
<id>http://spreadsheets.google.com/feeds/list/key/od6/private/full/cokwr</id> <updated>2006-11-17T18:23:45.173Z</updated> <category
scheme="http://schemas.google.com/spreadsheets/2006" term="http://schemas.google.com/spreadsheets/2006#list"/> <title
type="text">Bingley</title> <content type="text">Hours: 10, Items: 2, IPM: 0.0033</content> <link rel="self" type="application/atom+xml"
href="http://spreadsheets.google.com/feeds/list/key/od6/private/full/cokwr"/> <link rel="edit" type="application/atom+xml"
href="http://spreadsheets.google.com/feeds/list/key/od6/private/full/cokwr/2ehkc2oh7d"/> <gsx:name>Bingley</gsx:name>
<gsx:hours>10</gsx:hours> <gsx:items>2</gsx:items> <gsx:ipm>0.0033</gsx:ipm> </entry> <entry>
<id>http://spreadsheets.google.com/feeds/list/key/od6/private/full/cyevm</id> <updated>2006-11-17T18:23:45.173Z</updated> <category
scheme="http://schemas.google.com/spreadsheets/2006" term="http://schemas.google.com/spreadsheets/2006#list"/> <title
type="text">Charlotte</title> <content type="text">Hours: 60, Items: 18000, IPM: 5</content> <link rel="self" type="application/atom+xml"
href="http://spreadsheets.google.com/feeds/list/key/od6/private/full/cyevm"/> <link rel="edit" type="application/atom+xml"
href="http://spreadsheets.google.com/feeds/list/key/od6/private/full/cyevm/64rl27px3zyn"/> <gsx:name>Charlotte</gsx:name>
<gsx:hours>60</gsx:hours> <gsx:items>18000</gsx:items> <gsx:ipm>5</gsx:ipm> </entry></feed>
```

# What is the Google Spreadsheets Data API?

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## The result (cleaned up)

```
<feed>
  <id>http://spreadsheets.google.com/feeds/list/key/od6/private/full</id>
  <updated>2006-11-17T18:23:45.173Z</updated>
  <title type="text">Sheet1 </title>
  <author><name>Fitzwilliam Darcy</name></author>
  <entry>
    <id>http://spreadsheets.google.com/feeds/list/key/od6/private/full/cokwr</id>
    <updated>2006-11-17T18:23:45.173Z</updated>
    <gsx:name>Bingley</gsx:name>
    <gsx:hours>10</gsx:hours>
    <gsx:items>2</gsx:items>
    <gsx:ipm>0.0033</gsx:ipm>
  </entry>
  <entry>
    <id>http://spreadsheets.google.com/feeds/list/key/od6/private/full/cyevm</id>
    <updated>2006-11-17T18:23:45.173Z</updated>
    <gsx:name>Charlotte</gsx:name>
    <gsx:hours>60</gsx:hours>
    <gsx:items>18000</gsx:items>
    <gsx:ipm>5</gsx:ipm>
  </entry>
</feed>
```

# What is the Google Spreadsheets Data API?

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## The result (just the facts)

```
<feed>
  <entry>
    <gsx:name>Bingley</gsx:name>
    <gsx:hours>10</gsx:hours>
    <gsx:items>2</gsx:items>
    <gsx:ipm>0.0033</gsx:ipm>
  </entry>
  <entry>
    <gsx:name>Charlotte</gsx:name>
    <gsx:hours>60</gsx:hours>
    <gsx:items>18000</gsx:items>
    <gsx:ipm>5</gsx:ipm>
  </entry>
</feed>
```

# How do I use the Google Spreadsheets API?

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## Demo Application motivations

- Manage the developer events calendar
- Easy to add events
- Publicize them in multiple places
- Easy to see them all in one place
- Collaborative changes copied to events

## The solution

- 3-way GData mashup
  - Google Calendar Data API
  - Google Base Data API
  - Google Spreadsheets Data API



# How do I use the Google Spreadsheets API?

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Let's see it in action

# How do I use the Google Spreadsheets API?

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How does it work?

Lets look at the source code.

# Questions

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# Resources

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## Spreadsheets API Documentation

- API start page: <http://code.google.com/apis/spreadsheets/overview.html>
- Developer's Guide: <http://code.google.com/apis/spreadsheets/gdata.html>
- Discussion Group: <http://groups.google.com/group/Google-Spreadsheets-Data-API>

## GData Documentation

- Main Page: <http://code.google.com/apis/gdata/overview.html>
- Authentication: <http://code.google.com/apis/gdata/auth.html>
- Client Libraries: <http://code.google.com/apis/gdata/clientlibs.html>



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