

AGENDA

- Why APIs matter
- Leveraging APIs in your business
- Hands on: API Core Concepts & Examples
- Hands on: API exploration, tools, testing, and design

WHY APIs MATTER

- Trends
- Big companies & small companies
- External & Internal
- Why it is better

WHY

- Why are you here?
- What are you hoping to learn?

ALL AROUND YOU

- Big Data conf
- Mobile Conf & Internet of things (IOT)
- Yahoo (tons of APIs)
- Wolfram
- hackillinois.org hackathon

API ECONOMY

- Billions & Billions
 - SalesForce: 50% of revenue coming from APIs
 - Ebay: 60% of revenue
 - Expedia: 90% of \$2Billion coming through APIs
 - Healthcare, Retail, Telecom, all making huge API investment



API UNIVERSITY

RESEARCH

SPORTS

SECURITY

TRAVEL

DESIGN

Browse the world's largest API repository

Search Over 15,006 APIs

SEARCH APIs

Filter APIs

By Category

By Protocols/Formats

 Include Deprecated APIs

API Name	Description	Category	Updated
Google Maps	The Google Maps API allow for the embedding of Google Maps onto web pages of outside developers, using a simple JavaScript interface or a Flash interface. It is designed to work on both mobile...	Mapping	12.05.2005
Twitter	The Twitter micro-blogging service includes two RESTful APIs. The Twitter REST API methods allow developers to access core Twitter data. This includes update timelines, status data, and user...	Social	12.08.2006
YouTube	The Data API allows users to integrate their program with YouTube and allow it to perform many of the operations available on the website. It provides the capability to search for	Video	02.08.2006

EVERYTHING HAS AN API

The screenshot shows the 'DIY Electronics' section of the IFTTT website. The URL in the browser bar is <https://ifttt.com/channels>. The page displays a grid of icons for various IoT devices:

- ARTIK Cloud
- M2X
- blink(1)
- Btn
- Flic
- littleBits
- Maker
- MESH
- NIU
- openHAB
- ORBneXt
- Particle
- Pebblebee
- Seeed
- SIGNAL Beacon
- Wireless Tag

Below this section is a 'Fitness and Wearables' section:

- Fitbit
- Google Glass
- Misfit
- Nike+
- PAVLOK
- Recon



DATA TOPICS IMPACT APPLICATIONS DEVELOPERS CONTACT

The home of the U.S. Government's open data

Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and [more](#).

GET STARTED

SEARCH OVER 199,817 DATASETS



BROWSE TOPICS



Agriculture



Business



Climate



Consumer



Ecosystems



Education



Energy



Finance



Health



Local
Government



Manufacturing



Ocean



Public Safety



Science &
Research

BETTER THAN THE OLD WAY

- Release a library or SDK
 - out of date, limited platforms
 - hard to maintain
 - can't call from web or mobile

RECENT OLD WAY

- Release a mobile App
 - Is there actual demand for an App?
 - platform selection
 - dev team training, or hire a contractor

INTERNAL APIs

- Amazon Mandate from Jeff Bezos
 1. **ALL** teams will expose data through APIs
 2. **ALL** systems must communicate through these APIs
 3. No direct db access, shared-memory, or back doors
 4. Technology selection doesn't matter
 5. Design as if it will be **Public** from the start
 6. Anyone who doesn't do this will be **fired**

WELL DESIGNED API



MODERN SPREADSHEET

- get the data, slice/dice as needed
- compose data and workflow into unique functionality
- drive business intelligence
- full automation

LEVERAGING APIS

- IT spending
- As an API Consumer/Client
- As an API Producer/Host

BUDGET

- How does your company view IT spending?
 - Profit center or Cost center
- What are your core metrics?
 - Increase revenue or decrease costs

AS A CLIENT

- focus on your core business
- best of breed solution
- speed to market
- linear, known costs

METRICS

- what are the choices and criteria
- what will we measure against
- what will we do if we need to switch?

BACKUP PLAN?

Facebook Shuts Down Parse, Shocking Developers

News, Cloud, Mobile

Jan. 28 2016 By [Doron Katz](#), ProgrammableWeb Staff



The Cloud Application Platform

[Parse](#), a popular multi-platform cloud storage service, surprised the tech community today with a [blog post announcing that they will be shutting down](#). Parse has given its current users one year from now (January 28th, 2017) before it closes its services.

A year after being founded in 2011 Parse had over 20,000 developers on its platform. The company continued to grow throughout the subsequent years, reaching 500,000 users in 2014. Its popularity led to being acquired by Facebook in 2013.

PRODUCER

- Why are we doing it? (Revenue? Reach?)
- How will we measure success?
- Who are the core clients?
- What are the long-term support/maintenance costs?

WHY IT MATTERS

- Metrics of success
- Do we spend to **grow** or to **reduce costs?**
- Is this API is a core part of a profit center?
- Or a side-project for a cost center?

API ASSESSMENT

- sizing up the main elements
- comparing options
- hands on: capture key components
- planning for the long term

CORE CONCEPTS

- documentation
- registration
- testing & playground
- billing & support
- authentication
- request/response structure
- errors
- throttling & rate limit
- versioning & updates
- maintenance & downtime

SIZING UP AN API

- 1. Documentation URL**
- 2. Test url or playground**
- 3. Billing & support**
- 4. Versioning & updates**

EXERCISE # 1

- Find a Partner!
- Answer these 4 questions

1. Documentation URL

2. Test url or playground

3. Billing & support

4. Versioning & updates

Choose 2 APIs!

- Facebook Graph API
- Twitter
- NY Times Article Search
- LinkedIn
- OpenWeatherMap
- Yelp

WHAT DID YOU FIND?

- Was it easy to find?
- Outstanding questions?
- Risks/concerns?
 - Mitigation strategies?

EXPLORING AN API

- Beyond the Documentation
- Rapid feedback, confirm your assumptions
- Establish baseline test cases
- Capture your understanding
- Share what you've learned

HTTP URL Anatomy

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

<https://www.example.com:3000/path/resource?id=123#section-id>

Key

- 1 Scheme - defines how the resource will be obtained.
- 2 Subdomain - www is most common but not required.
- 3 Domain - unique value within its top-level domain.
- 4 Top-level Domain - hundreds of options now exist.
- 5 Port - if omitted HTTP will connect on port 80, HTTPS on 443.
- 6 Path - specify and perhaps find requested resource.
- 7 Query String - data passed to server-side software, if present.
- 8 Fragment Identifier - a specific place within an HTML document.

HTTP VERBS

HTTP VERBS

POST

GET

PUT

DELETE

PATCH

OPTIONS

HEAD

HTTP VERBS

POST	Create
GET	Read
PUT	Update
DELETE	Delete
PATCH	Partial update
OPTIONS	Allowed methods
HEAD	Exists? Modified?

STATUS CODES

STATUS CODES

2xx

3xx

4xx

5xx

STATUS CODES

2xx	Success
3xx	Redirect
4xx	User error
5xx	Server error

OLD WAY

- look at documentation and start writing code
- curl or wget

POSTMAN

The screenshot shows the homepage of the Postman website (<https://www.getpostman.com>). The page has a space-themed background with illustrations of a rocket launching, a satellite in orbit, and a space station. The Postman logo, featuring a stylized orange circle with a white rocket ship, is prominently displayed on the left. The main headline reads "Modern software is built on APIs." Below it, a sub-headline states "Postman helps you develop APIs faster." Two download buttons are visible: "Chrome App" (dark grey button) and "Mac App" (orange button). A small note below the buttons says "Go ahead and download our apps, they're free!" At the bottom, a blue banner promotes "Postman Cloud for teams" and offers a "Try Cloud for 30 days" trial.

Pricing Apps Documentation Integrations Blog Sign in

POSTMAN

Modern software is built on APIs.

Postman helps you develop APIs faster.

Chrome App Mac App

Go ahead and download our apps, they're free!

Securely share, sync and collaborate on your APIs with Postman Cloud for teams Try Cloud for 30 days

POSTMAN 101

- Test the API endpoint
- Authentication
- Explore the shape of the data

DEMO: SIMPLE CALLS

- GET
- POST
- Fire from History
- Save to Collection

dump.getpostman.com

EXERCISE #2

- Fire up Postman
- GET
- POST
- Fire again from History
- Save to Collection

ADVANCED

- collections
- environment variables
- authentication
 - basic auth
 - oauth

REST

- What does HATEOS even mean?

<https://api-workshop-rest.herokuapp.com/contacts>

RESOURCES

- <http://university.stack.network/universities/>
- restful-api-design.readthedocs.org
- <http://design.apievangelist.com/>