

APIs for your Business

+

Stages of the API Lifecycle

Nicolas Grenié

*Hacker in Residence at 3scale.net
Out-of-the-box API Management
@3scale*

*API Workshop at TheFamily
Paris, December 5, 2014*



Outline

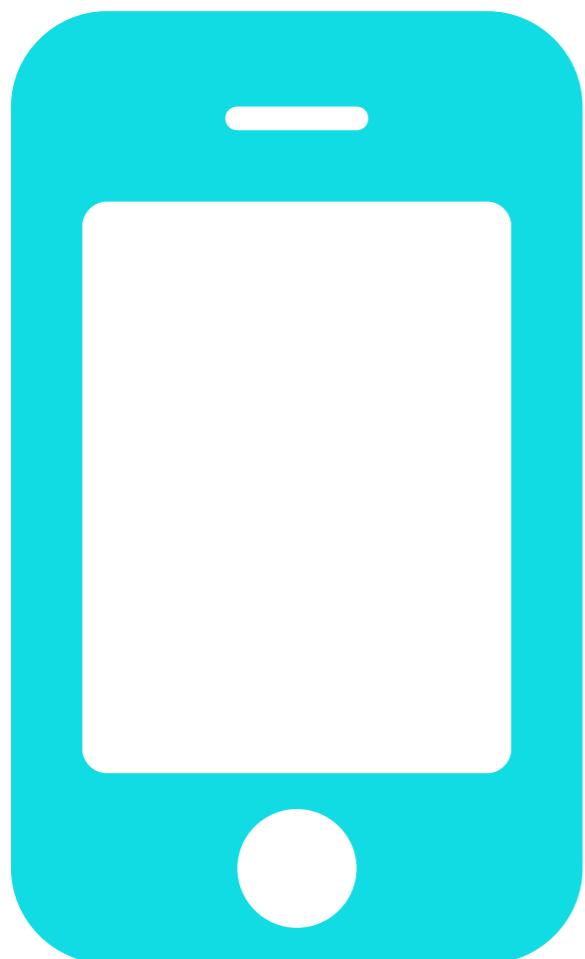
1. Four business benefits of APIs
2. The API lifecycle
 - Plan/Design
 - Build/Integrate
 - Operate/Manage
 - Share/Engage
3. Wrap-up and take-aways

A photograph of the interior of a sports car, likely a Nissan GT-R, based on the steering wheel badge. The dashboard is black with orange accents, and the seats are made of orange leather. The steering wheel has a prominent 'GT R' logo. The center console features a digital display and various control buttons.

API

Application Programming Interface

What's an API?



APIs for Developers

- * Enrich functionality
- * Increase attractiveness by new combinations
- * Leverage brand strength
- * Integrate more easily and quickly

APIs for Companies/ Organisations

- * Create/revive revenue sources
- * Deliver wider reach
- * Foster (external) innovation
- * Increase efficiency

Example 1: Create/revive revenue sources



- * 25% of revenue growth driven by APIs
- * 750,000 fundraising pages created using JustGiving APIs raising £76m
- * 40% annual user growth

Source: <http://www.3scale.net/resources/customer-stories/>

Example 2: Deliver wider reach



- * 700 partners created 50,000 third party apps/services
- * 300m monthly uniques who see the brand on other sites
- * The API gave reach and brand awareness which would not have been possible with traditional marketing.

(Dick Brouwer, TripAdvisor Director of Engineering)

Source: <http://bit.ly/1uk6Oo7>

Example 3: Foster [external] innovation



- * Only 1 app developed by Fitbit in-house
- * Third party apps in Fitbit's ecosystem accumulated are worth \$1m of development cost

Source: <http://www.slideshare.net/faberNovel/why-shouldicareaboutap-is4/53>

Example 4:

Increase efficiency



- *Wrap every internal service with an API – or you are fired
- *Better re-usability, quicker integration, spot opportunities, get to market quicker (AWS)

Source: <http://apievangelist.com/2012/01/12/the-secret-to-amazons-success-internal-apis/>

But what really is the power of APIs ?

- APIs enable the creation of platforms.
- Platforms enable 2-sided / n-sided business models.

[aka Asymmetric Business Models]

See also VisionMobile report on Asymmetric Business Models:
<http://www.visionmobile.com/product/asymmetric-business-models/>

Asymmetric Business Models

Side 1

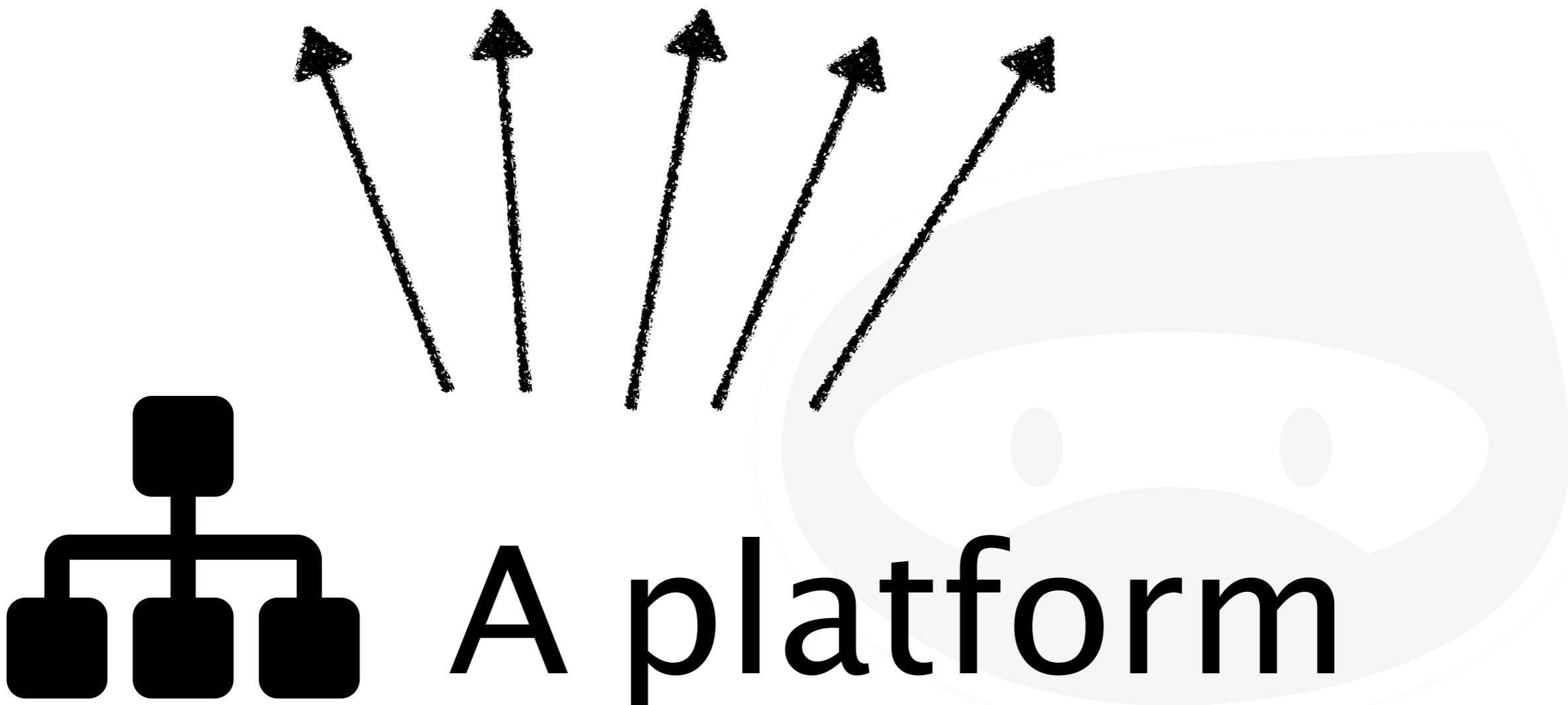
Get most of
the services

Side 2..n

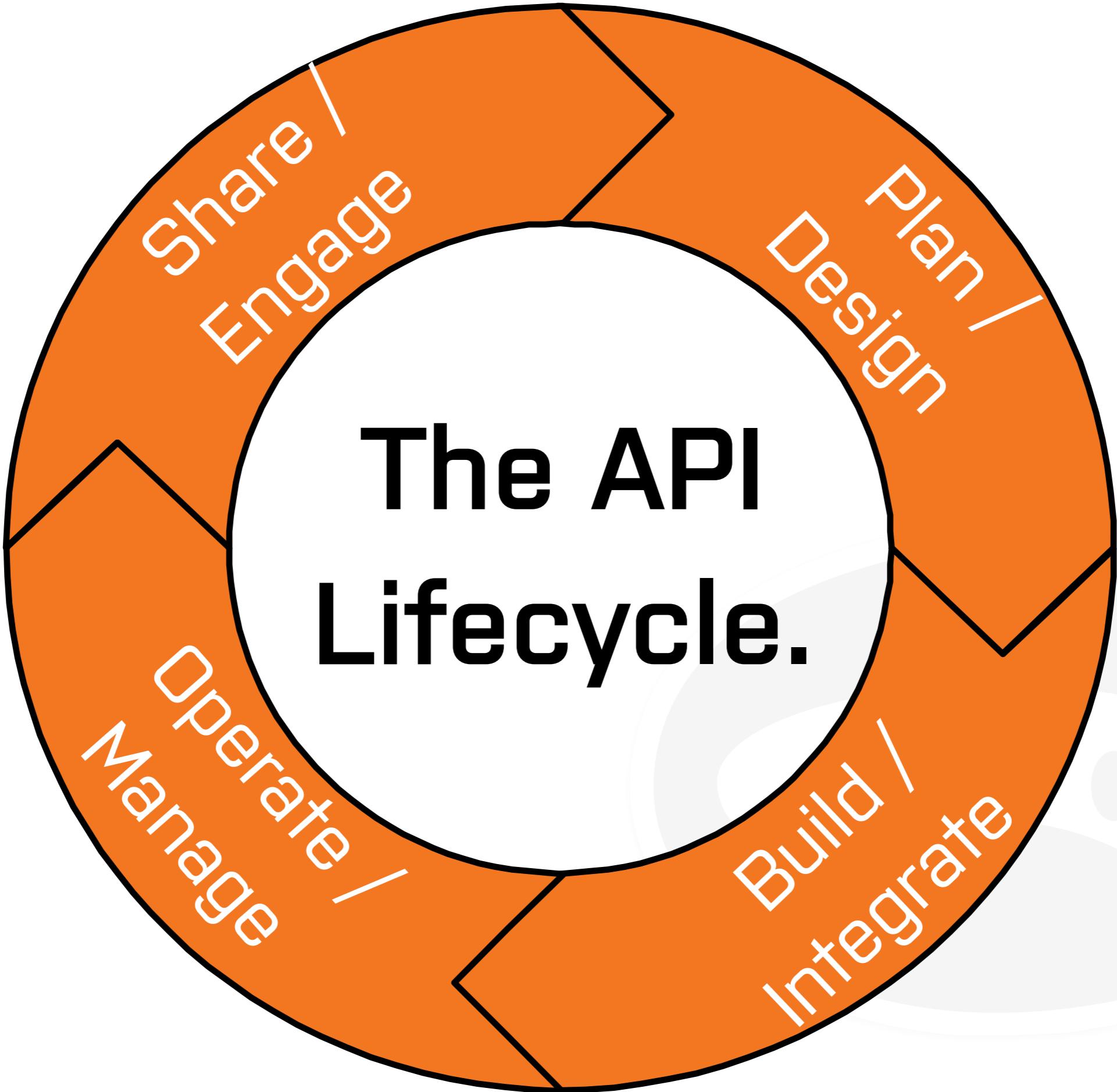
Pays

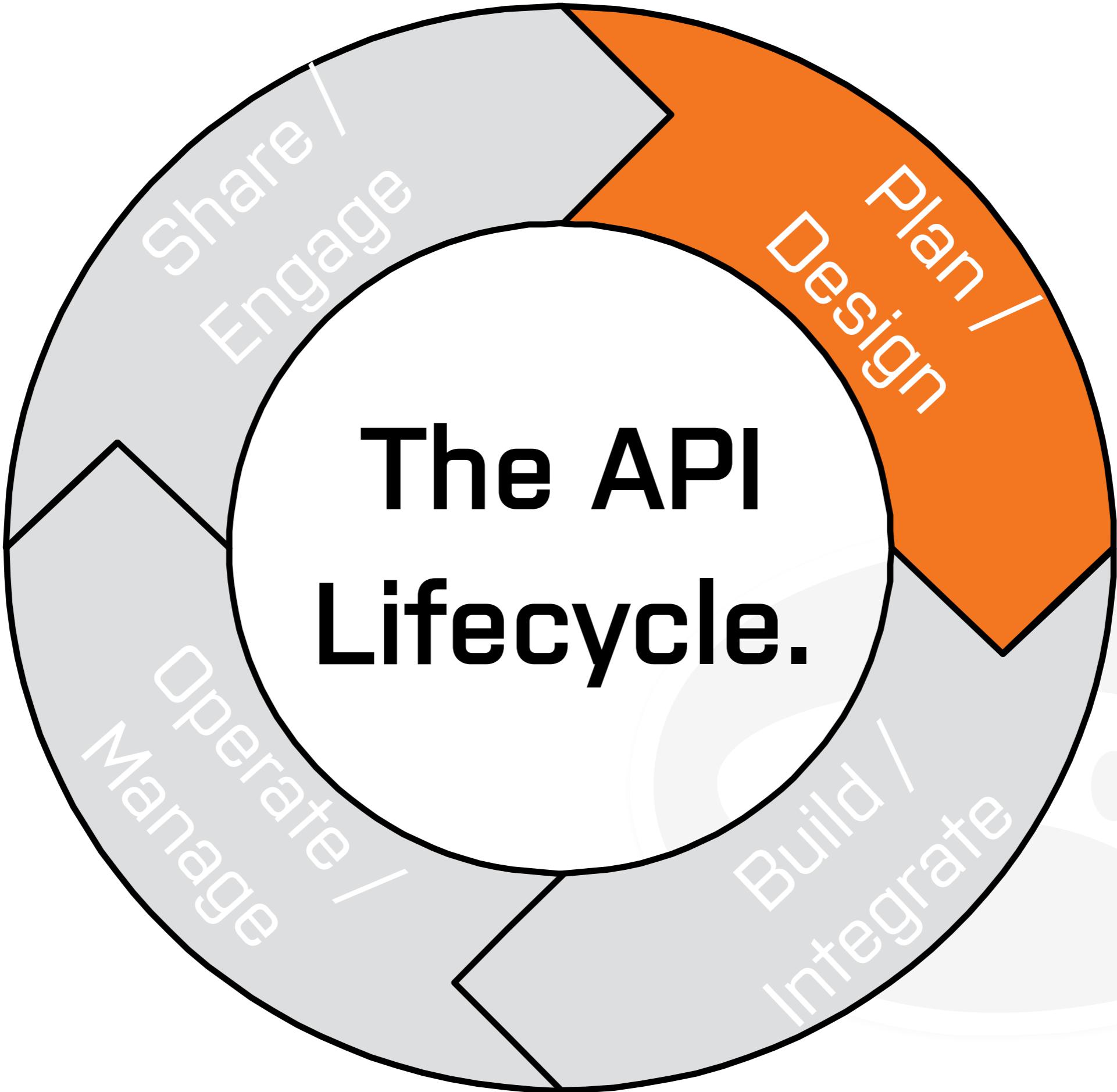
APIs enable the creation of platforms.

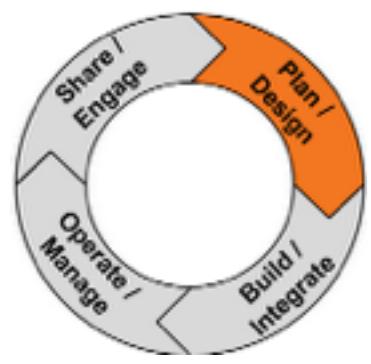
...can serve n victimized markets !



The API lifecycle and tools



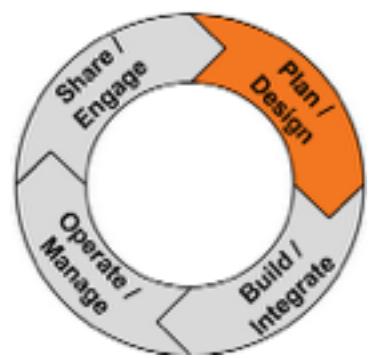




Plan / Design

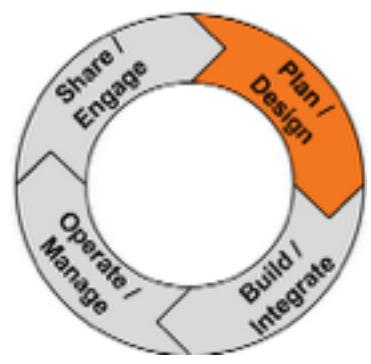
Why API?

Alignment with overall business strategy
What do we want to achieve?



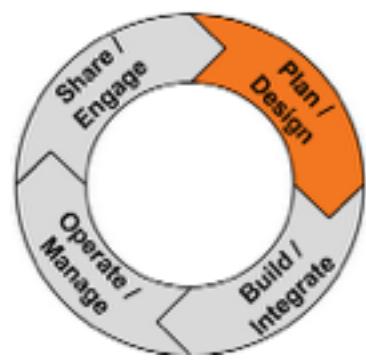
Plan / Design

- Resource modeling: Fine- vs coarse grained
- Nouns and verbs (resources/HTTP)
 - <http://www.thoughtworks.com/insights/blog/rest-api-design-resource-modeling>
- Decouple DB↔API
- "How to design APIs that last"
 - <http://apiux.com/2014/09/05/api-design-sustainability/>
- API-first design
 - <https://pop.co/blog/why-we-chose-api-first-development/>



Plan / Design

- Tools
 - * API Blueprint
 - * RAML
 - * Swagger
- See also “Where APIs and Tooling Unite”
 - <http://www.futureinsights.com/home/where-apis-and-tooling-unite.html>



API Blueprint



ManfredBo Test API
Yours

Documentation

Traffic Inspector

Editor



ManfredBo



眼光 API Blueprint Syntax Tutorial

✓ Valid API Blueprint

A

Hide Preview

Save API Blueprint

```
1 FORMAT: 1A
2 HOST: http://www.google.com
3
4 # ManfredBo Test API
5 This is a simple test API.
6
7
8 ## Bank Account [/account]
9 ### Get current account balance [GET]
10 + Response 200 (application/json)
11
12   [
13     {
14       "id": 1, "title": "Your current balance."
15     }
16   ]
17
18 ### Create new account [POST]
19 + Request (application/json)
20
21   { "title": "Create new bank account." }
22
23 + Response 201 (application/json)
24
25   { "id": 3, "title": "Create new bank account." }
```

ManfredBo Test API

This is a simple test API.

Bank Account

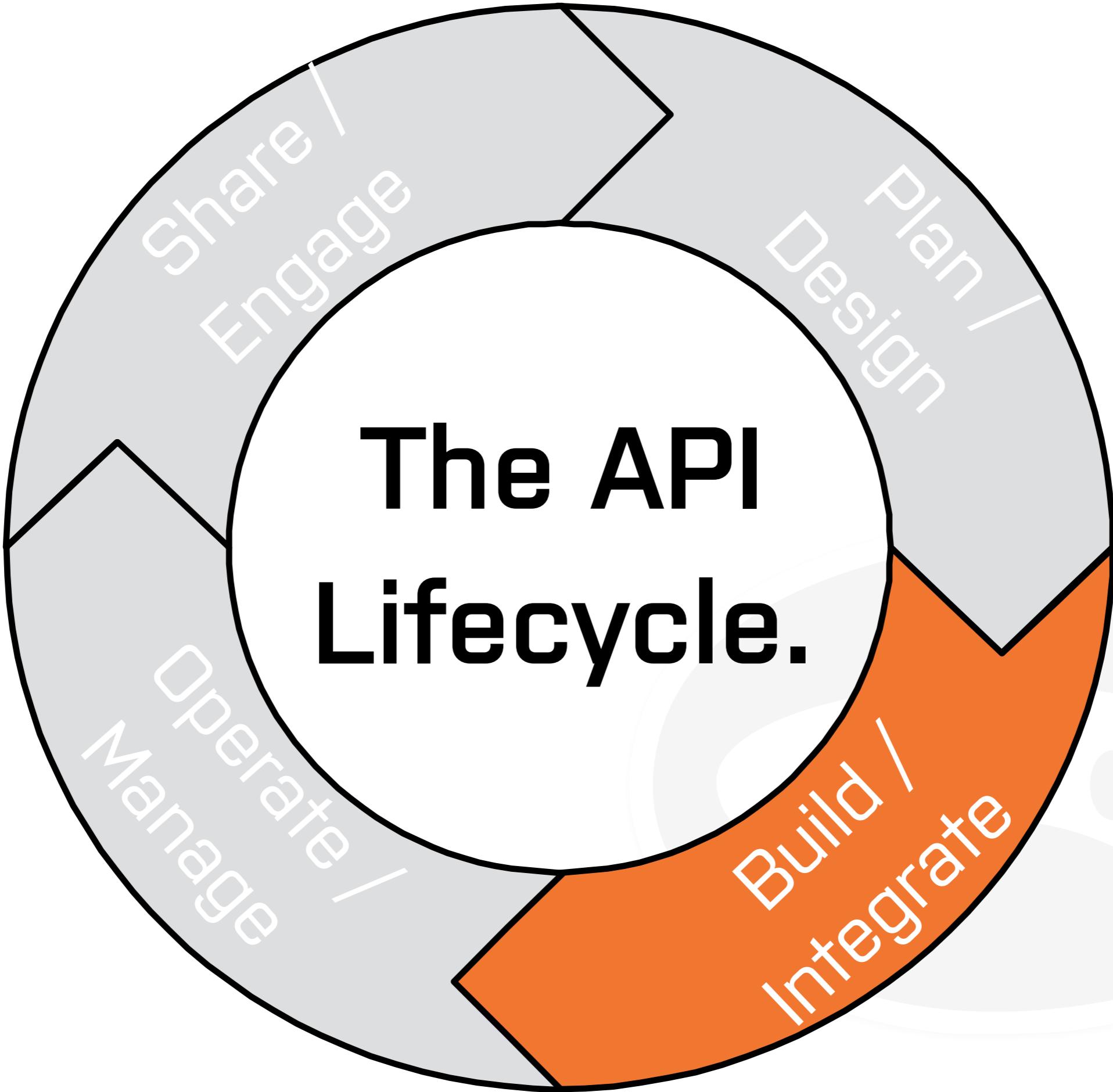
Get current account balance

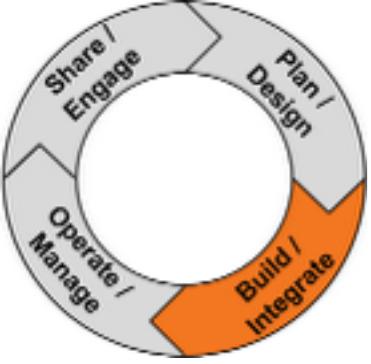
GET /account

Create new account

POST /account

Notes Collection





Coding tools

- **Ruby**
 - Grape <http://www.confreaks.com/videos/475-rubyconf2010-the-grapes-of-rapid>
 - Sinatra <http://www.sinatrarb.com/>
- **PHP**
 - slim <http://coenraets.org/blog/2011/12/restful-services-with-jquery-php-and-the-slim-framework/>
- **Node.js:**
 - Express.js, Fortune.js
 - Restify <http://mcavage.me/node-restify/>
- **ASP.net**
- **Python:**
 - Flask Web framework for Python: <http://flask.pocoo.org/>
 - Django for Python: <http://www.djangoproject.com/>
- **Java:**
 - JAX-RS
 - REST.li <http://rest.li/index.html>





express

```
var express = require('express');
//Create new instance of Express object
var app = express();

app.get('/api', function(request,
response) {
    //Do something to read a resource
});

app.post('/api', function(request,
response) {
    //Do something to create a resource
});

app.put('/api', function(request,
response) {
    //Do something to update a resource
});

app.delete('/api', function(request,
response) {
    //Do something to delete a resource
});

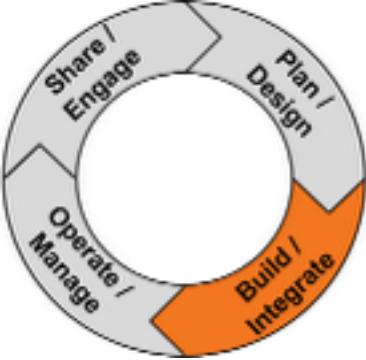
//Start the server
app.listen(3000);
```



express

```
app.get('/api/account', function(request, response) {  
  //Set content-type  
  response.type('application/json');  
  //Send text response  
  response.status(200).send(  
    { message: 'Your balance is: ' + balance });  
  //...  
});
```

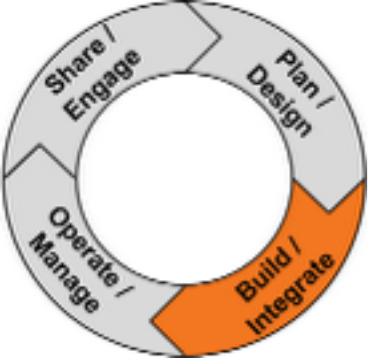
```
app.put('/api/account', function(request, response) {  
  //Get the change in balance  
  balance = parseInt(request.body.updatebalance);  
  //Update the balance...  
  
  //Notify client  
  response.status(200).send(  
    { message: 'Your new balance is: ' + balance }));  
  //...  
});  
  
//...
```



A demo: 'Health' API

Here are some sample routes

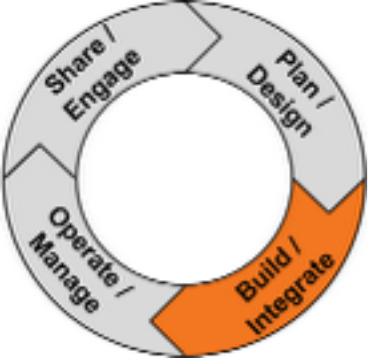
- `/api/meals.json` => all meal categories
- `/api/activities.json` => all activity categories
- `/api/food/:id.json` => all foods within the given category (meal)
- `/api/activity/:id.json` => all activities within the given category
- `/api/user/:id.json` => a specified user's details, including any goals within their plan
- <https://github.com/3scale/workshop-apistrat2014>
- Deployed on Heroku:
 - <https://nicolashealthapi.herokuapp.com> (UNSECURED!!)



A demo: 'Health' API



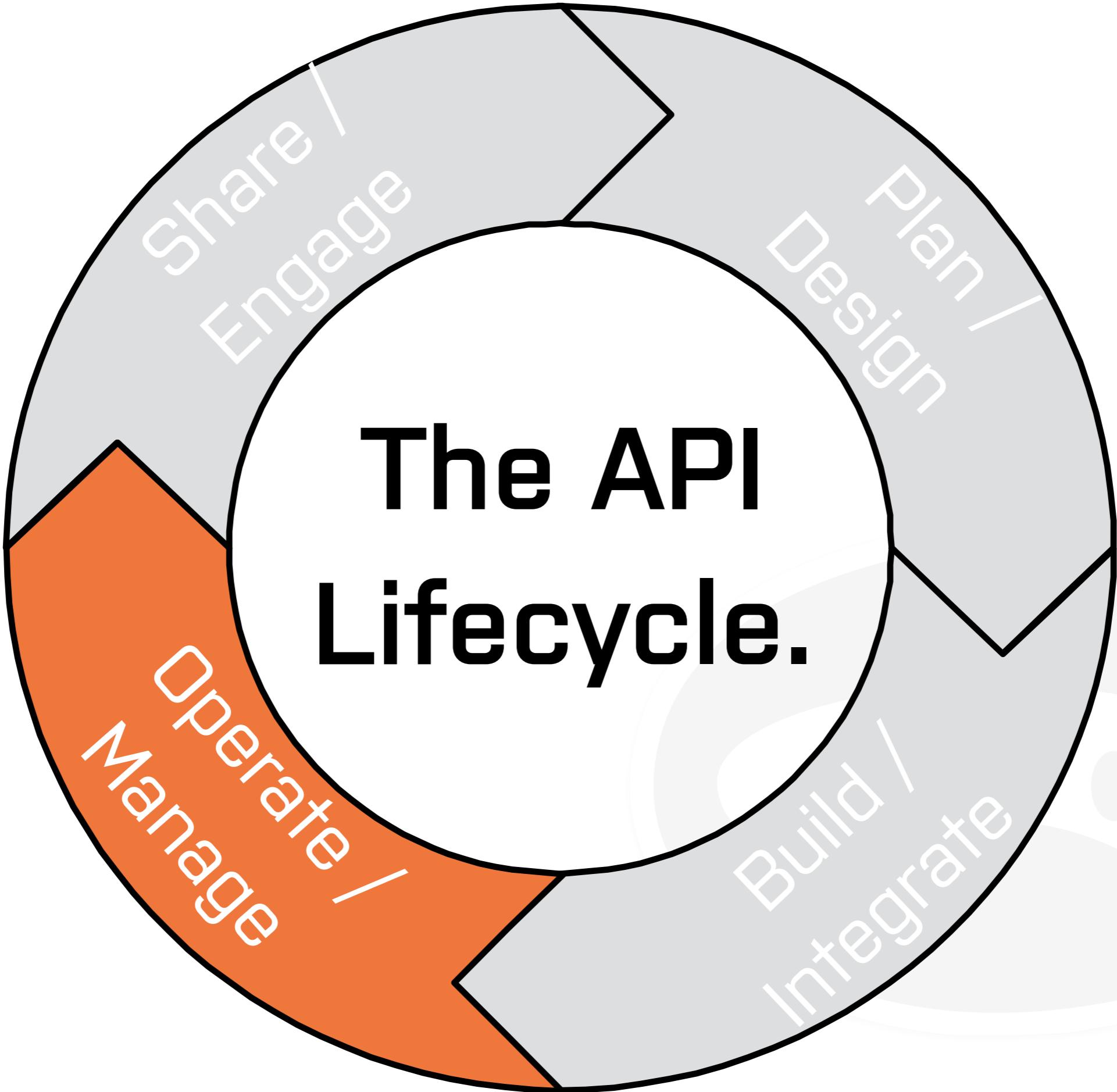
- Test with Postman
- <http://www.getpostman.com>
- [test live APIs quickly]

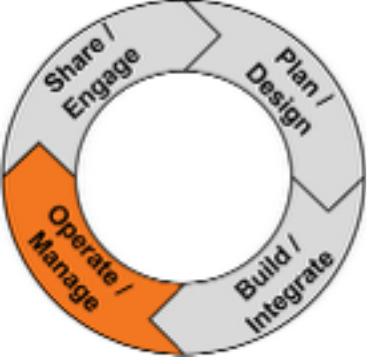


Unsecured API – What's the problem?

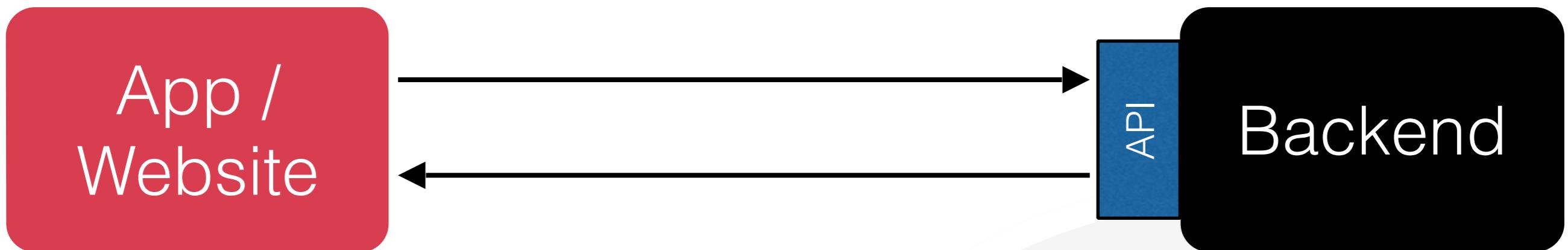
No knowledge about:

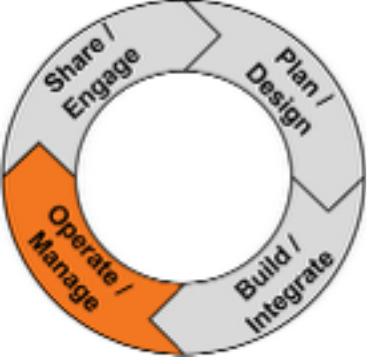
- Who accesses the API?
- What are they doing with the API?
- How to block someone?
- What traffic occurs when by whom?





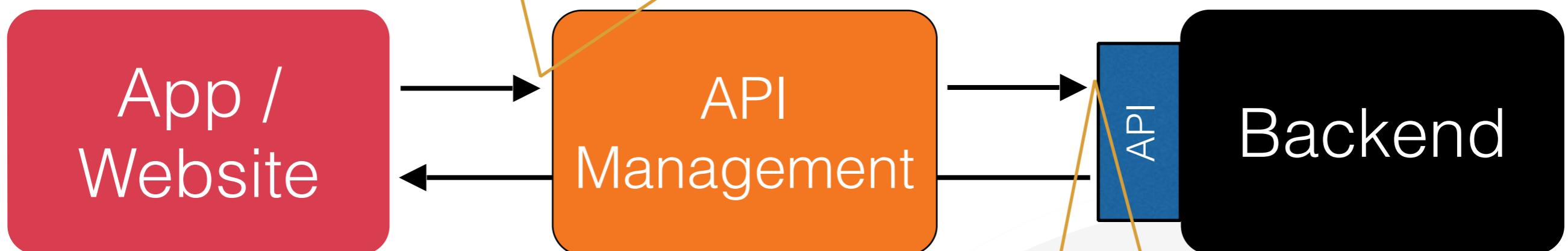
Operate / Manage



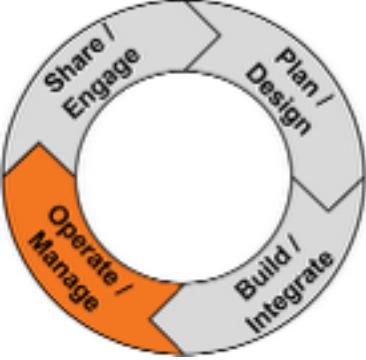


Operate / Manage

<http://api.2445581123523.proxy.3scale.net:80>

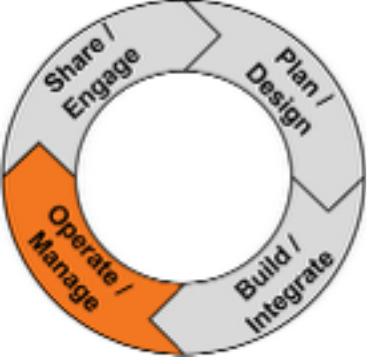


<http://manfredhealthapp.herokuapp.com>



Demo 1: Securing the API via API Management

The screenshot shows the 3SCALE API Management interface. The top navigation bar includes links for Dashboard, Accounts, Applications, Finance, Monitoring, API (which is highlighted in orange), CMS, and Settings. Below the navigation is a secondary header with API and Active Docs tabs. The main content area is titled "Service 'API' > Integration". On the left, a sidebar menu under "Integration" lists Settings, Naming, Alerts, Application plans, and End user plans. The main panel contains instructions to integrate your API through a code plugin or an open-source proxy. It features two tabs: "Plugin" (selected) and "Proxy". The "Plugin" tab shows a Ruby dropdown. The "Proxy" tab is partially visible. A diagram illustrates the integration flow: "Private API host*" (API endpoint) connects to a "PROXY" (proxy endpoint), which then connects to a "Public proxy endpoint*". The "Private API host*" field is set to <https://manfredhealthapp.herokuapp.com>, with a note to "Use Hello World API". The "Public proxy endpoint*" field is set to <http://api.2445581123523.proxy.3scale.net>, with a link to "Sandbox proxy deploy history". At the bottom, there's a "MAPPING RULES" section.



Demo 2: API Analytics via API Management

3SCALE

Dashboard Accounts Applications Finance **Monitoring** API CMS Settings

Analytics Traffic Errors

Stats for service 'API'

Back

Stats

Usage

Top Applications

Hours of day

Days of week

Alerts

Request Log

API Usage 50 hits

Metrics Methods

Year Month Week Day

1 Oct

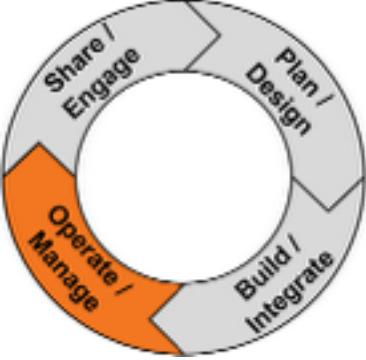
Date	Hits
6. Oct	9
13. Oct	23

Methods

GET meals 5 hits

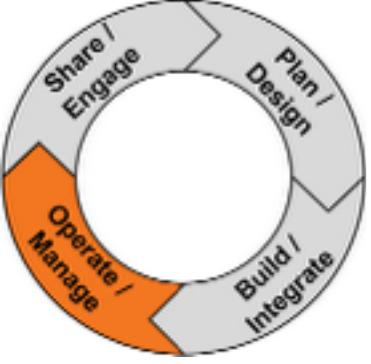
Using time zone (GMT+00:00) UTC

Download CSV

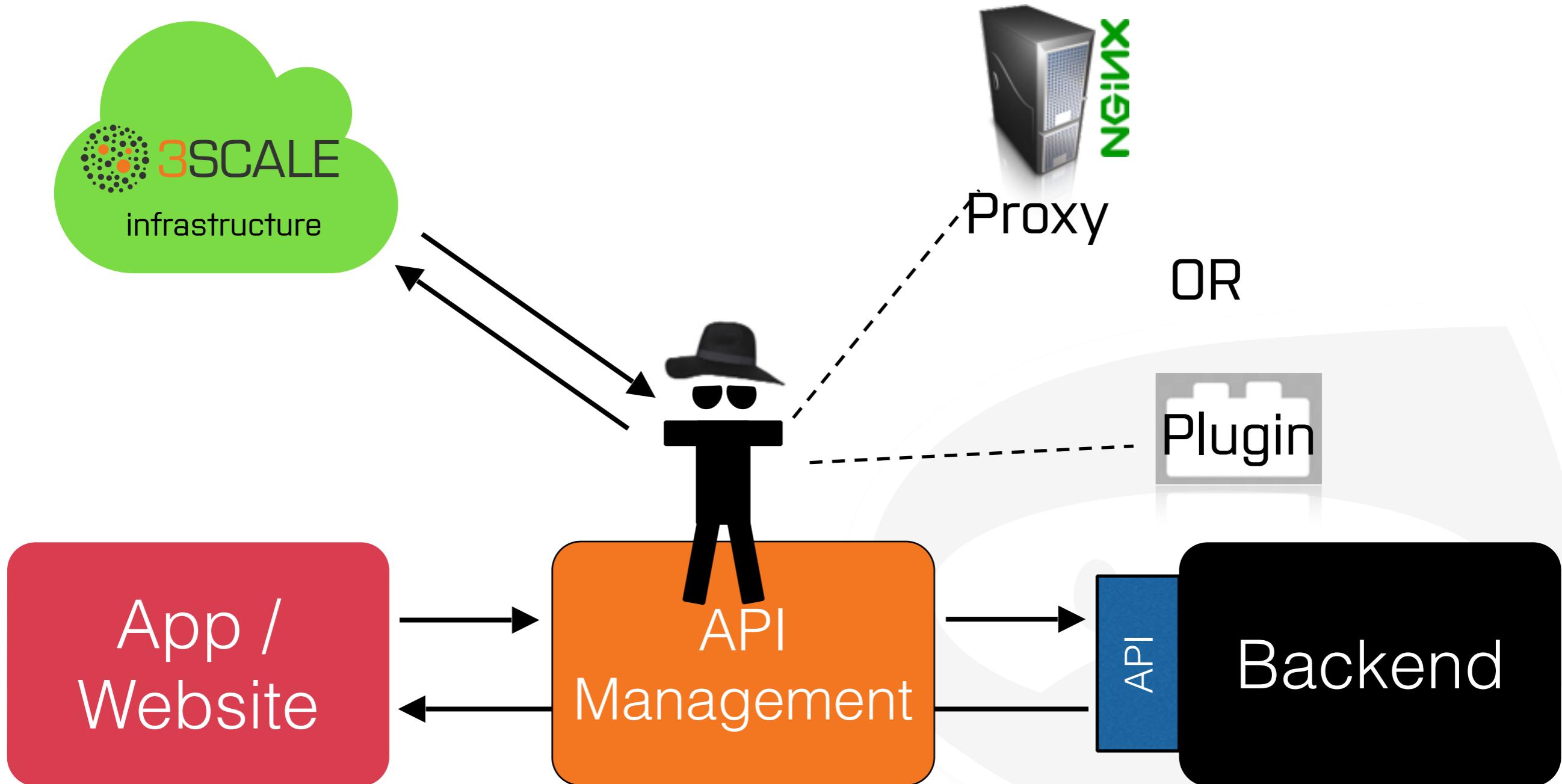


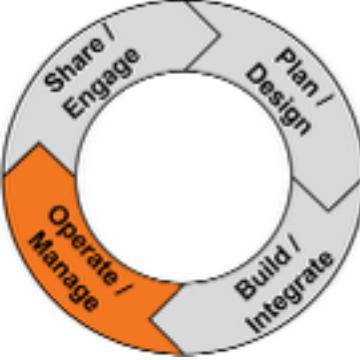
What's left to do ?

Your own deployment of the traffic agent.



Deployment



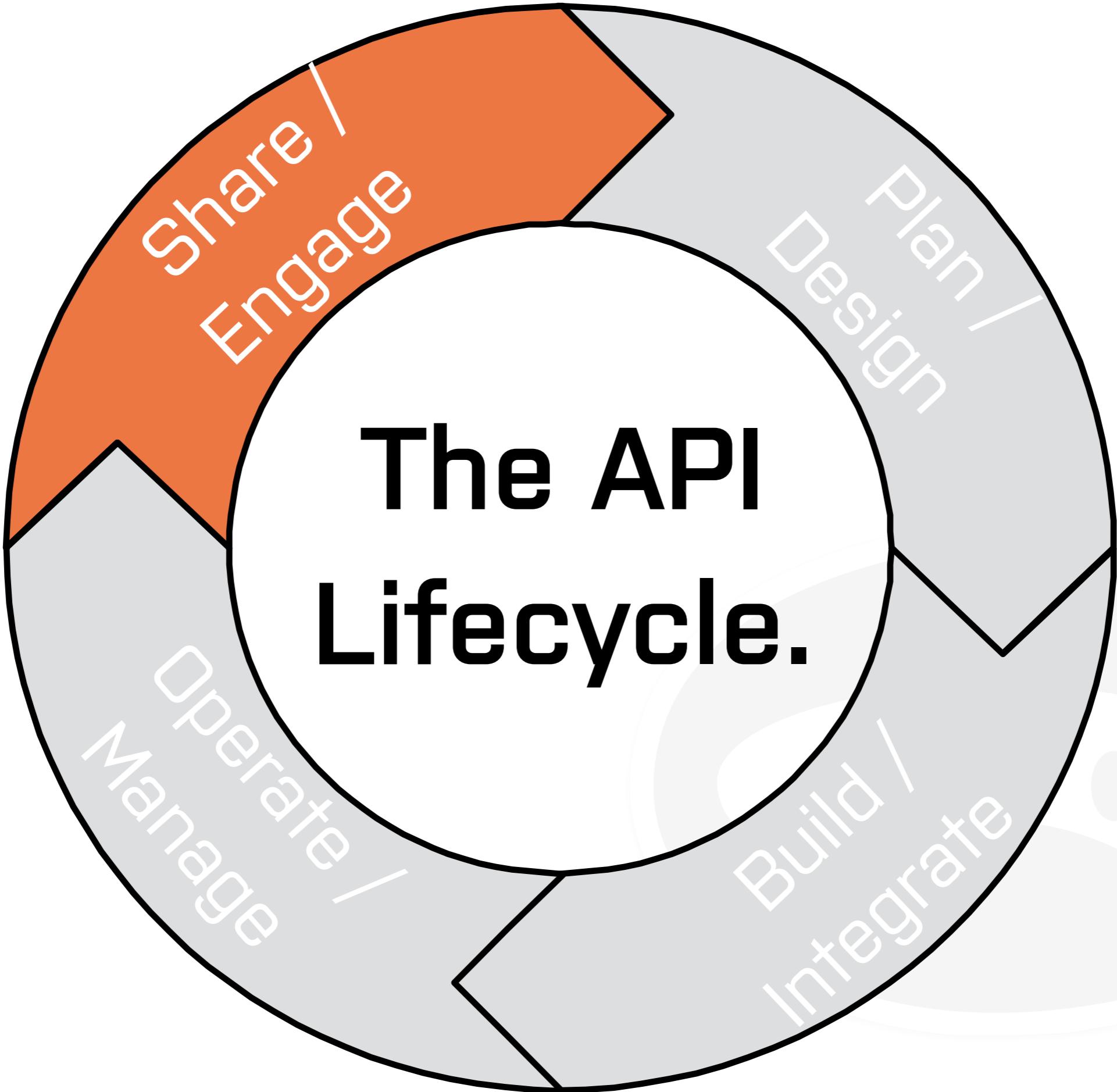


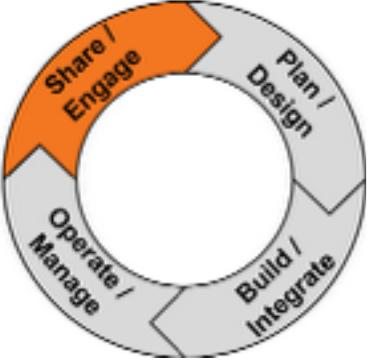
Minimum API Operations

Access Control: authentication and authorization to identify the originator of incoming traffic and ensure only permitted access.

Rate Limits and Usage Policies: usage quotas and restrictions on incoming traffic to keep loads predictable.

Analytics: data capture and analysis of traffic patterns to learn how the API is being used.

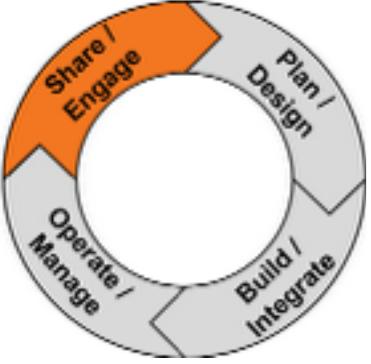




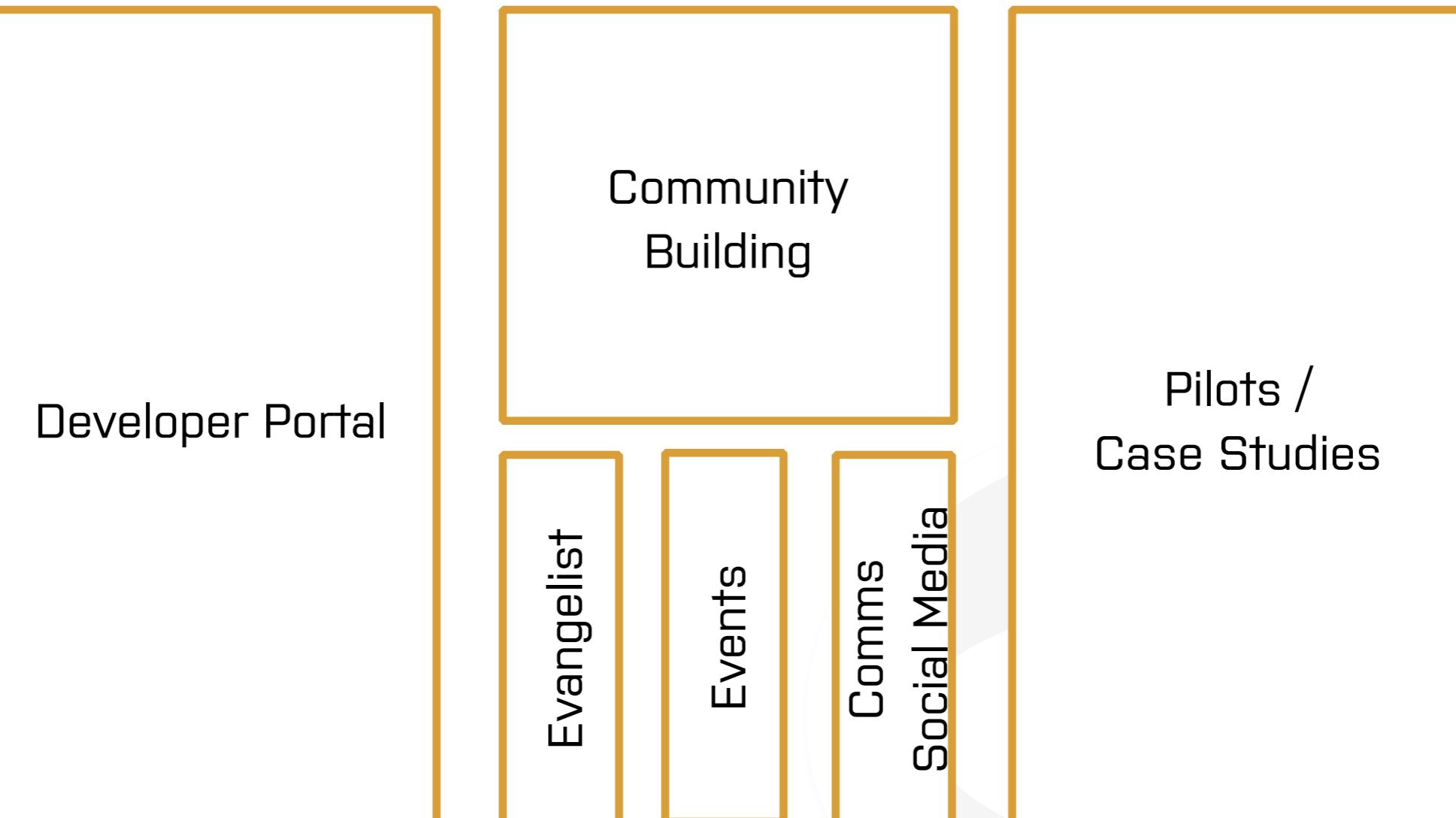
Share / Engage



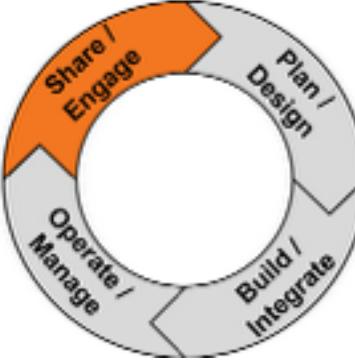
Image source:
<http://dx.jeremiahlee.com/>



Acceleration



Measure



Demo 3: API Documentation via API Management

Documentation

Use our live documentation to learn about Demo API

Operations

Health API

Gets all available meals

/api/meals.json **GET**

Description

This operation returns all meals

PARAMETER	VALUE	DESCRIPTION
user_key	5de2602290dc62809ea5283	Your access API key

Send Request

Gets all available activities

/api/activities.json **GET**

Gets all food items under the given meal category

/api/food/{id}.json **GET**

Gets all activities under the given activity category

/api/activity/{id}.json **GET**

Out-of-the-box
API Management
**For API
Providers**



3scale.net

API Management
For Developers



APITOOLS

www.apitools.com

Market Education &
Evolution



apistrategyconference.com



apicodex.3scale.net

{API}Search
APIs.io

Take-aways

There can be an enormous benefit in APIs -- shown by many successful examples.

It needs to be crystal clear what you want to achieve. The API needs to be aligned with the business strategy.

APIs enable Asymmetric Business Models to tackle many markets.

Carefully consider all four stages in the API lifecycle.

Exposing data or services via APIs alone is not enough. Make sure you secure, monitor and manage APIs.

APIs for your Business

+

Stages of the API Lifecycle

- Q&A

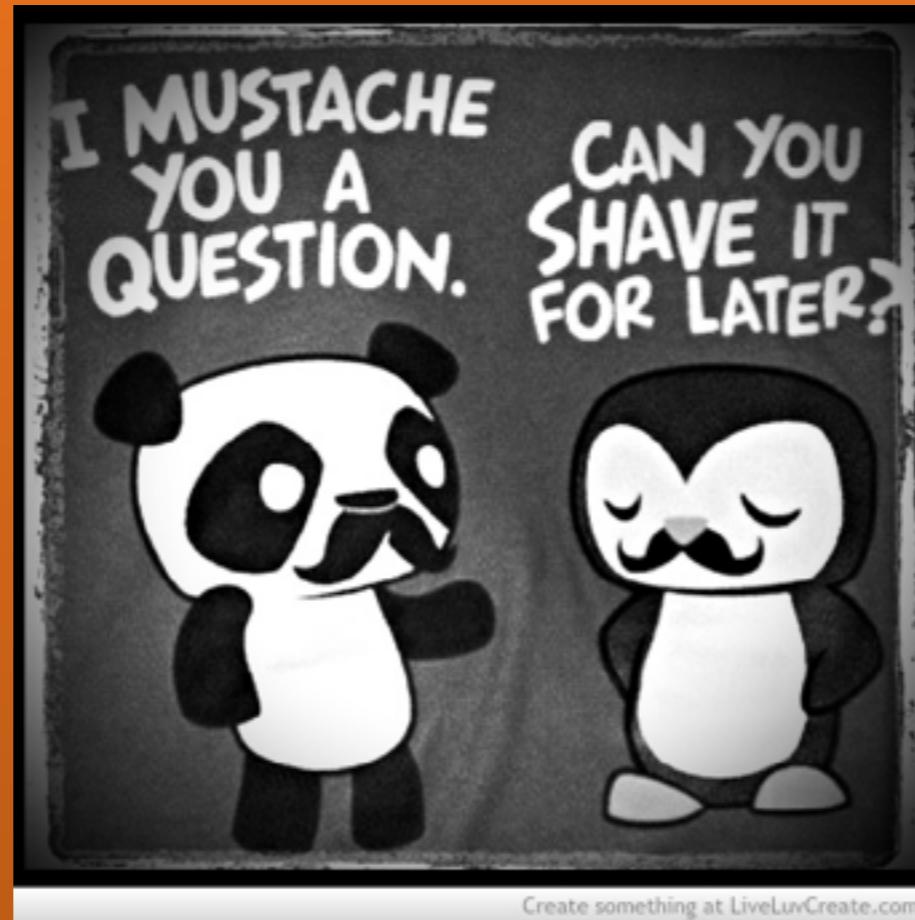
- Manfred Bortenschlager
- manfred@scale.net
- I work at 3scale.net
- Out-of-the-box API Management
- @3scale



APIs for your Business

+

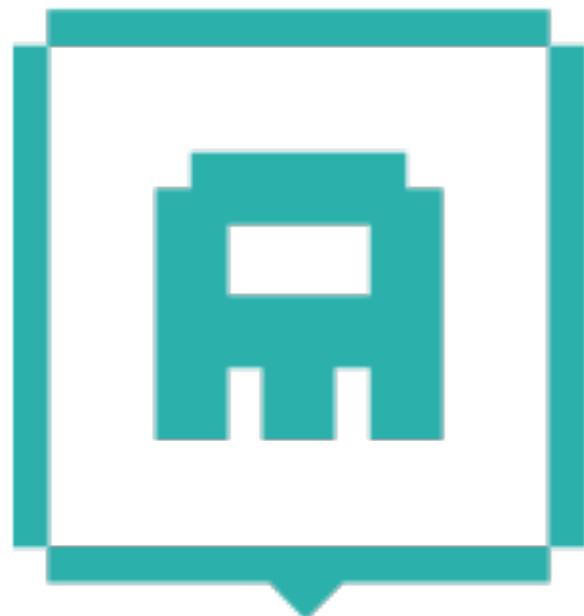
Stages of the API Lifecycle



Nicolas Grenié

*Hacker in Residence at 3scale.net
Out-of-the-box API Management
@3scale*

*API Workshop at TheFamily
Paris, December 5, 2014*



APITOOLS

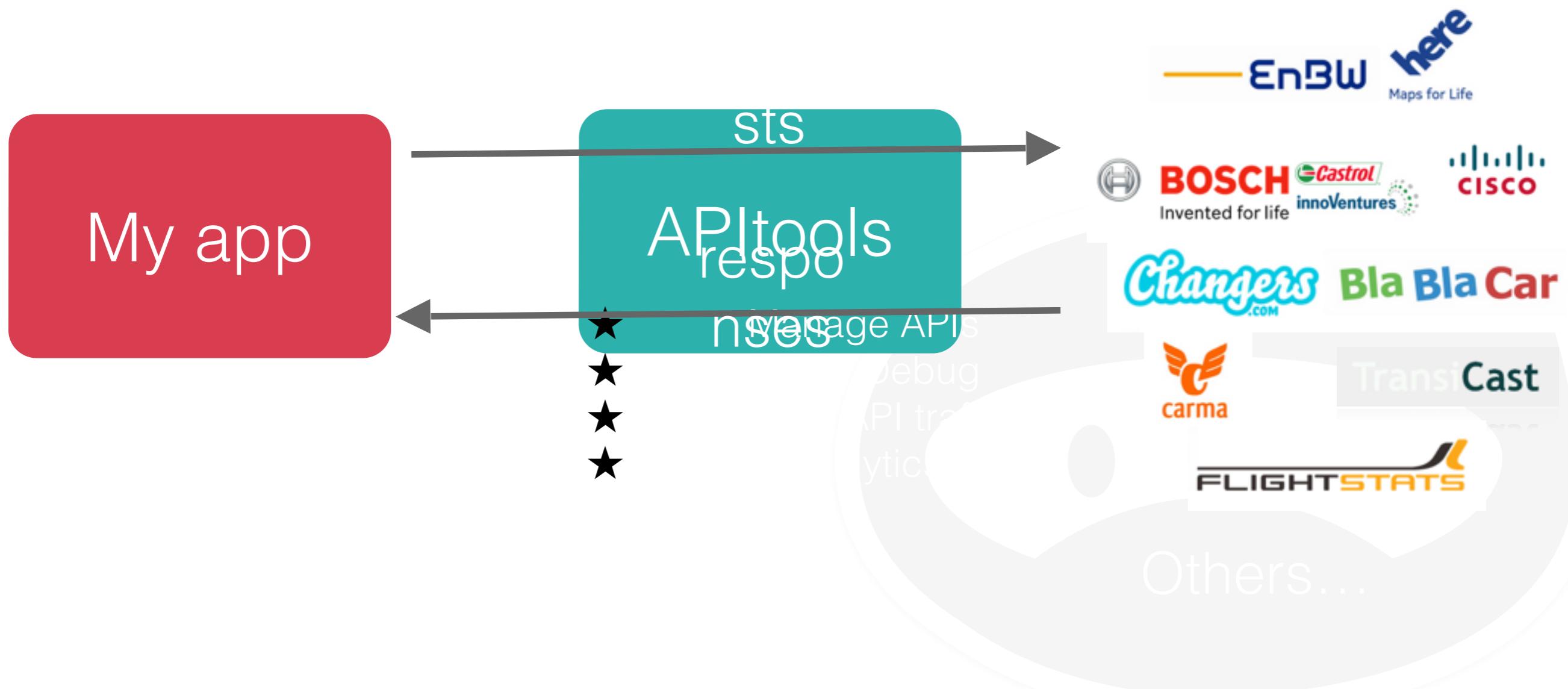
- www.apitools.com

APItools.com

- 1. Managing & Monitoring APIs
- 2. Modifying API calls



How does it work ?



By adding a new service- an API your app is using- you will be able to track, transform, and analyze the traffic between your app and this API on Apitools.

Substitute the **URL of the API** by your [Apitools URL](#) service URL to make the requests through our servers and stay in absolute control.



Adding a service (API you are using)

- 🔍 Pick a name and indicate the URL of the API your app is using.
- 🚀 Your Apitools URL will proxy your app API calls.
- 🐦 Just testing out? Try one of the API examples below.

Name

Flightstats API

Choose a meaningful description for your service. For example, Twitter API or Facebook API

API URL

<https://api.flightstats.com/>

For example <https://api.github.com>

Apitoools URL

369007f0-fca39e604acf.my.apitoools.com

[Edit](#)[Save](#)

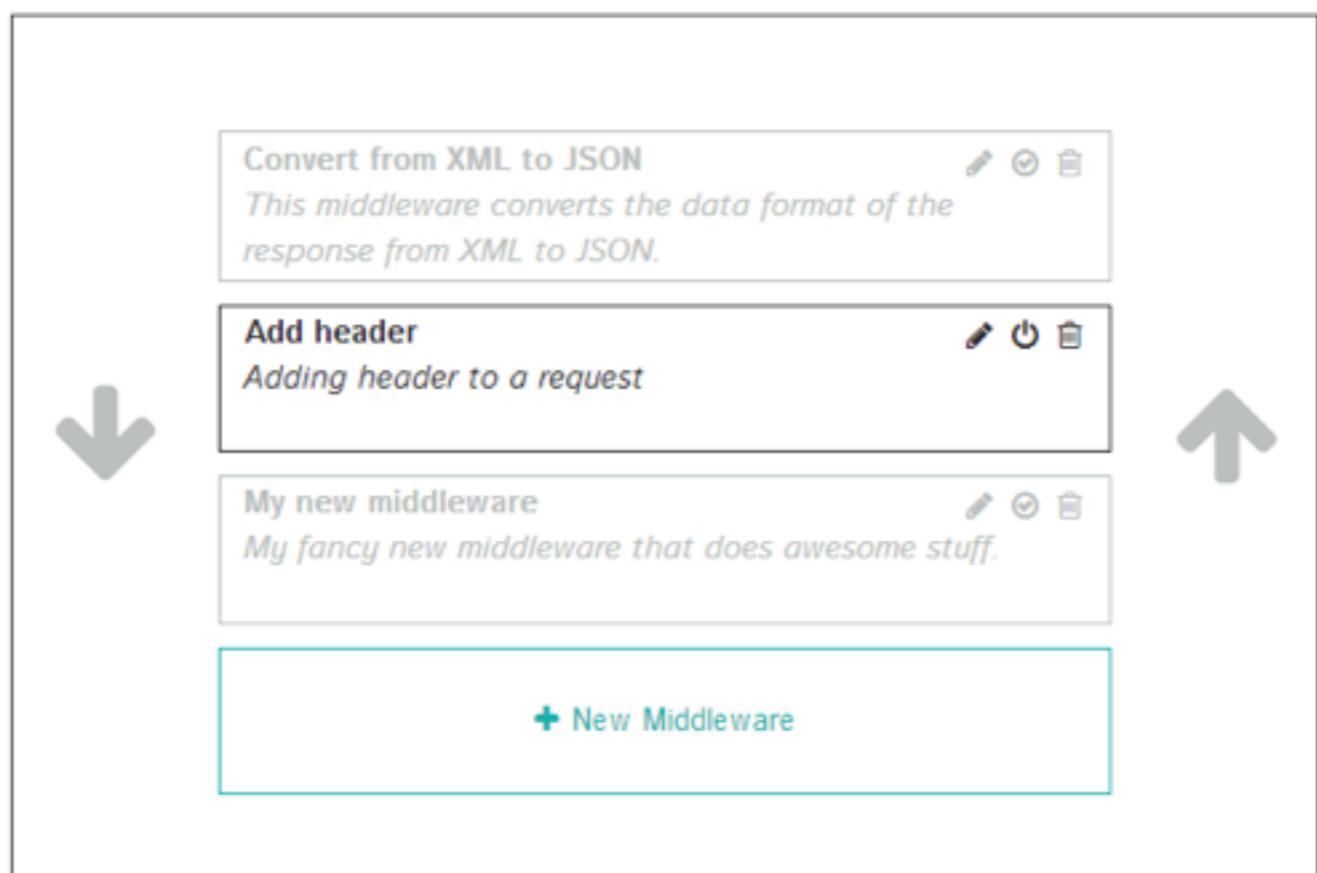


You can think of the 'Pipeline' as [Rack stack](#) or [NodeJS Connect](#). Also check our documentation on Processing Pipeline.

Check the [Learn Lua in 15 minutes](#). For our documentation check [Middleware Guide](#).



Your APP



Middleware list

[Set Accept-Encoding ... by @3scale](#)

sets the 'Accept-Encoding' header to 'identity'. This deacti...

[Change query params by @3scale](#)

Add or remove query parameters of the request.

[Accept-Encoding head... by @3scale](#)

removes the 'Accept-Encoding' header, deactivating response ...

[Anonymizer by @3scale](#)

removes sensitive information from the request before storin...

[View More](#)

You can think of the

'Pipeline' as Rack

NodeJS Connect

check our docum

Processing Pipeli

Check the Learn

documentation c

Your APP

Middleware list

Add header

Adding header to a request

Code

```
1 return function (request, next_middleware)
2   -- request.headers.authentication = 'this-is-my-key'
3
4   request.headers.appId = 'a80d92d0'
5   request.headers.appKey = 'a25135e45f713f82d115e999357714e8'
6
7   return next_middleware()
8 end
9
```



Traffic

Errors

Starred

Add Custom

Clear Search

Wipe All

Traces are recorded requests and responses made through Apitools.



You can filter traces and store/save them. Or you can select some and let us find similar ones for you.

Debug your API calls

Traces are requests made by your app to an API service, recorded on Apitools.

Here you can see traces of the Flightstats API service.

- ▶ Click on a trace to expand it's information.
- ★ Hovering on each trace will display different actions.
- 📘 Visit the 'Active docs' to learn about a specific endpoint.

New filter

Search

Newest first

GET /flex/airlines/rest/v1/json/all

200 777 ms 4 minutes ago



GET /

200 796 ms 5 minutes ago



GET /

200 1097 ms 24 days ago



GET /favicon.ico

404 400 ms 24 days ago



GET /favicon.ico

500 0 ms 24 days ago



Tools for Developers

- APItools
 - <https://www.apitools.com/>
- Postman
 - <http://www.getpostman.com/>

