

# The Nitty Gritty of "REST" for AEC

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By Adam Sheather Automation & Bimbeats

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**AUTONOMATION**

About Me.

22 yrs Experience

Almost 20 yrs Revit (2003)

Revit API (2009)

Ex AECOM, GHD, YTL (Malaysian  
Builder), Vinzero

Technician to Trainer/Implementer to  
Developer to Manager to CEO...sorta ;)

CEO Bimbeats and Autonomation



# What is REST?

## **REST is an Architectural Style for style for Hypermedia Systems**

GraphQL is more like SQL then REST its great for getting json data. REST can return images, videos, XML, json any resource, any format.

## **REST stands for Representational State Transfer**

The new representation places the client application into a new state.

le I ask for a List of Projects, the Website receives the list and updates the table with the list of projects.

# Why use REST?

**Discoverability** - The developer creates the rules through REST, Databases require Interpretation

**Intentional Updates/GateKeeping** - Objects in REST are always manipulated from the URI in the way the developer intended

**Data Separated from Logic** - Change database and backend logic and data without changing how other developers access your data via REST.

**Provide Hypermedia** - Not just Data, Images, Video, Files etc...

**Not Just Data! Can be Logic!** - Integrate Calculations, Summaries, not just fetch/retrieve.

# REST is simple

1. Application State and Functionality is divided into Resources
2. Every resource is uniquely access using a universal syntax (URI)
3. All resources share the same interface (Getting an image vs returning data)
4. URI's are assigned to individual records and transferred between Server and Client.
5. REST uses a Client/Server approach
6. REST is stateless

## Actions / HTTP Verbs

GET = READ or COPY

POST = CREATE or PASTE AFTER

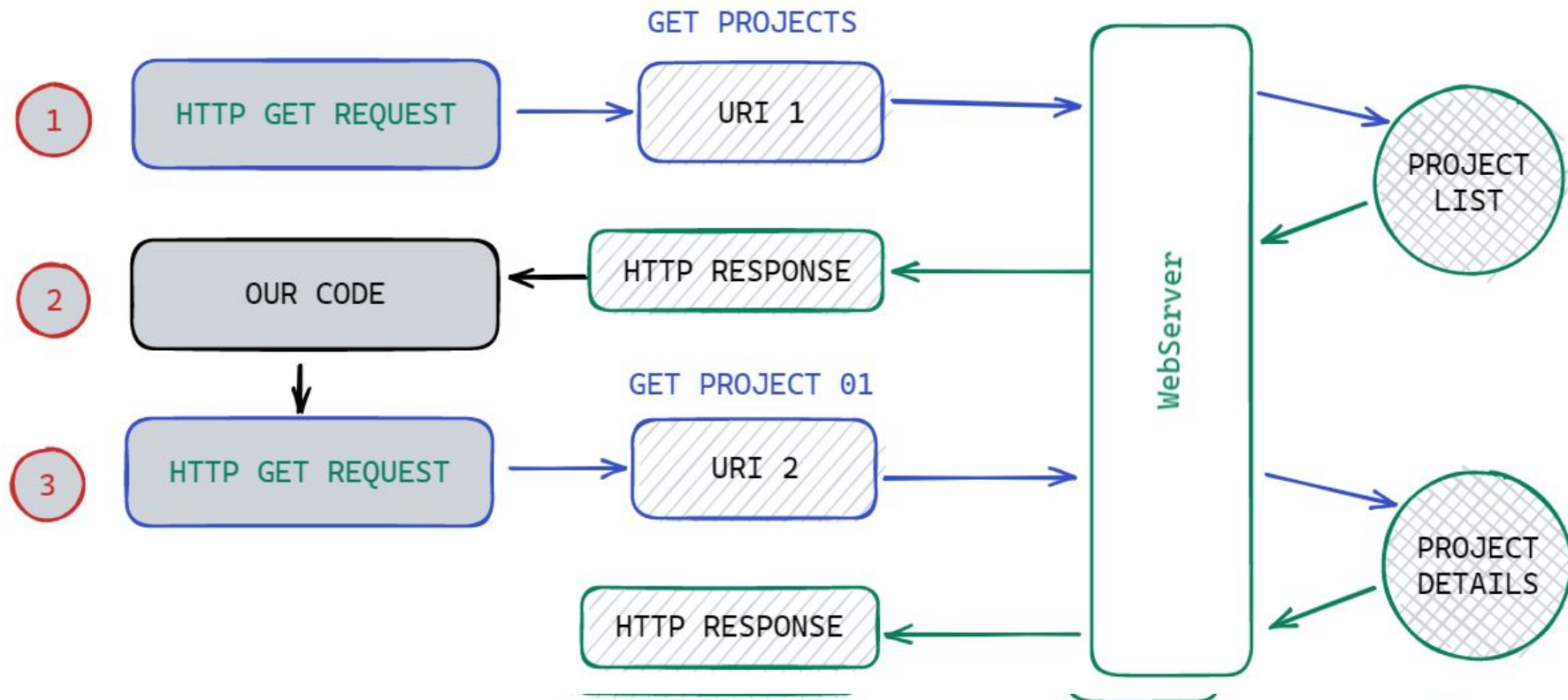
DELETE = DELETE or CUT

PUT = UPDATE OR PASTE OVER

## Typical Approach

1. Get a List of Things **GET (URI's)**
2. Get Details about a Thing **GET (URI)**
3. Submit and Update to the Thing **POST (URI)**
4. Remove a Thing **DELETE (URI)**

# The Actions





# Return a list of Projects (HEADERS)

So we can a list of projects

<http://www.demo.com/projects>

We can a list of projects in xml

<http://www.demo.com/projects?flavour=xml>



We can also get a single project

<http://www.demo.com/projects/0001>

# Key Codes

- 200 OK - Request Succeeded
- 201 Created - Usually a response to a POST request
- 400 Bad Request - Your REST request is not formatted correctly
- 401 Unauthorized - You don't have the right credentials
- 403 Forbidden - Your credentials do not have the right permissions
- 404 Not Found - Your resource does not exist in the system
- 500 Internal Server Error - Something broke in the server

# REST Responses (Status Codes)

- **1xx: Informational** – Communicates transfer protocol-level information.
- **2xx: Success** – Indicates that the client's request was accepted successfully.
- **3xx: Redirection** – Indicates that the client must take some additional action in order to complete their request.
- **4xx: Client Error** – This category of error status codes points the finger at clients.
- **5xx: Server Error** – The server takes responsibility for these error status codes.

## In Summary

- HTTP used as the transfer protocol
- Client/Server Interaction Style
- Stateless Requests (The client is the only thing that changes state)
- Uniform Interface: GET, POST
- Named Resources: URIs
- Vendor Agnostic

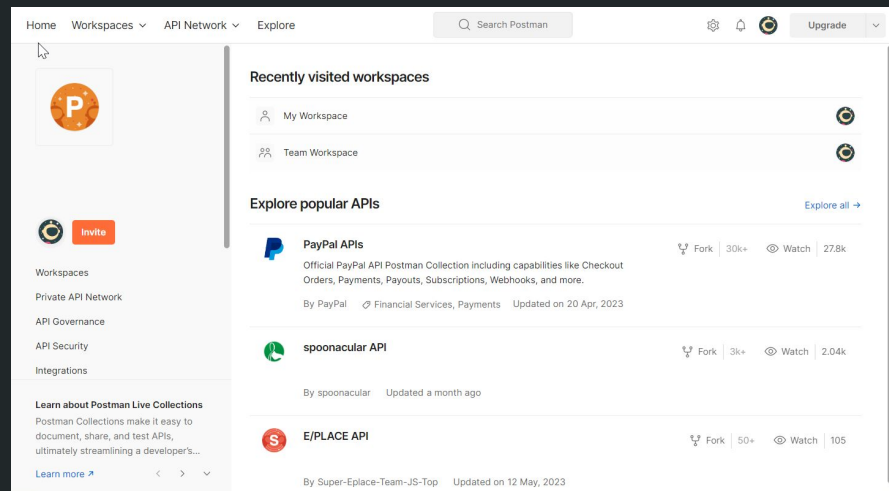
### Example

[https://aps.autodesk.com/en/docs/data/v2/reference/http/hubs-hub\\_id-projects-GET/](https://aps.autodesk.com/en/docs/data/v2/reference/http/hubs-hub_id-projects-GET/)

# POSTMAN

Github for REST

<https://www.postman.com/>



# FASTAPI TUTORIAL

Vercel and PlanetScale REST Example Project

Sign up to

<https://vercel.com/>

<https://planetscale.com/>

Vercel: Front End and Serverless  
web service

Full CI-CD

Automatic Updates

PlanetScale: SQL Server again full  
service management

Supabase/Firebase are other good  
services!

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