How Google Builds APIs

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Joey Schorr, Yaniv Inbar

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How Google Builds APIs

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#googleapis8

How Google Builds APIs

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- Google APIs 101

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- Google APIs 101
- Making Future APIs Awesome

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- How Google *Really* Builds APIs

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REST 101

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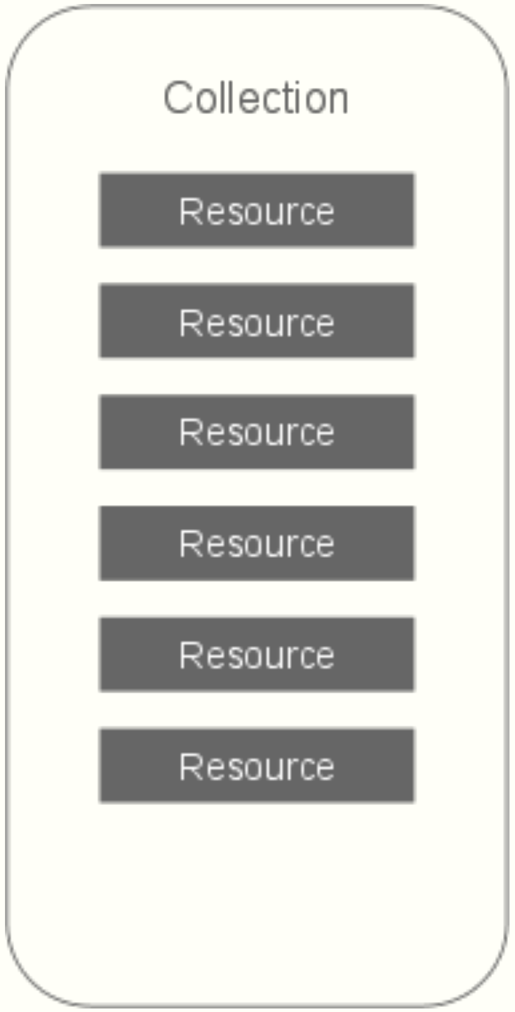
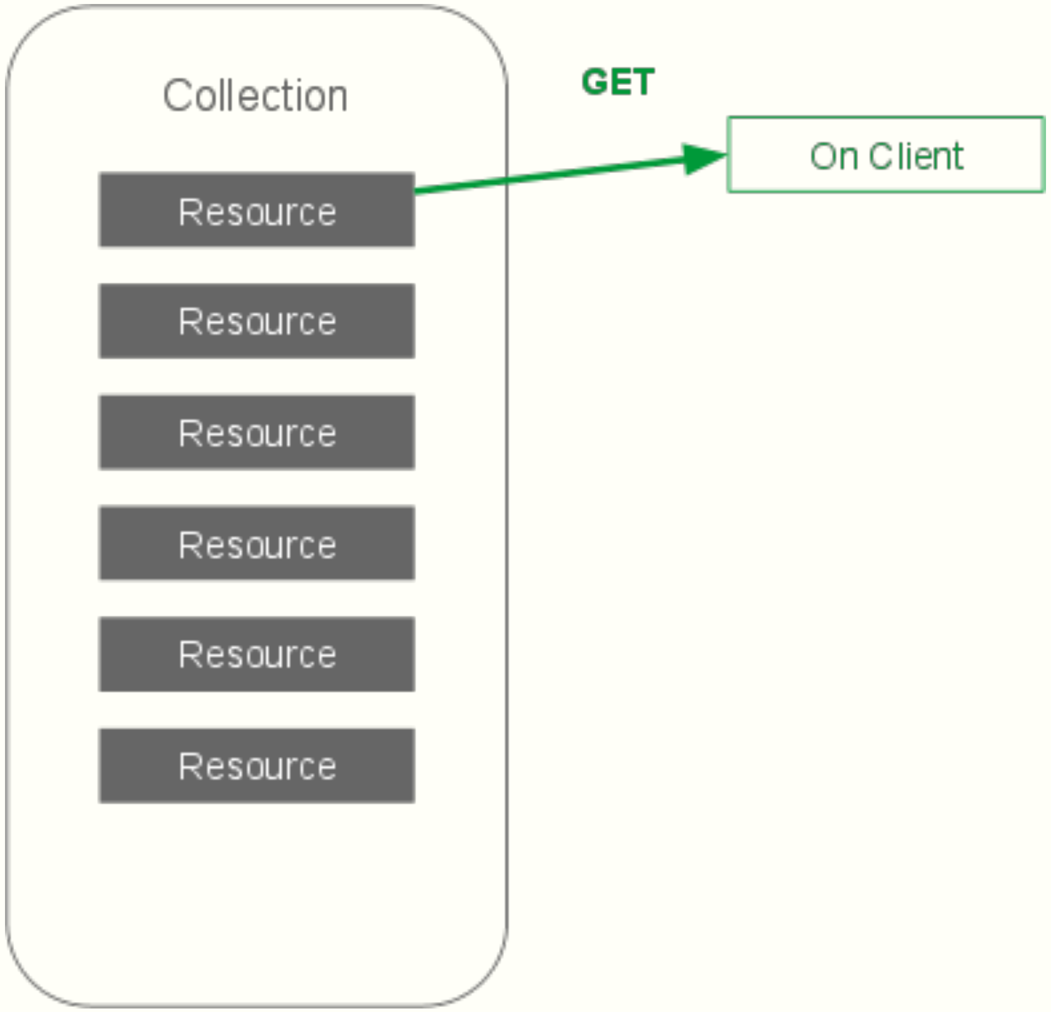
GET http://gdata.youtube.com/feeds/api/channels

- AtomPub models data as feeds of entries
- Or more generally, as collections of resources

REST 101


Collection
Resource
Resource
Resource
Resource
Resource
Resource

REST 101


Collection
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GET
On Client

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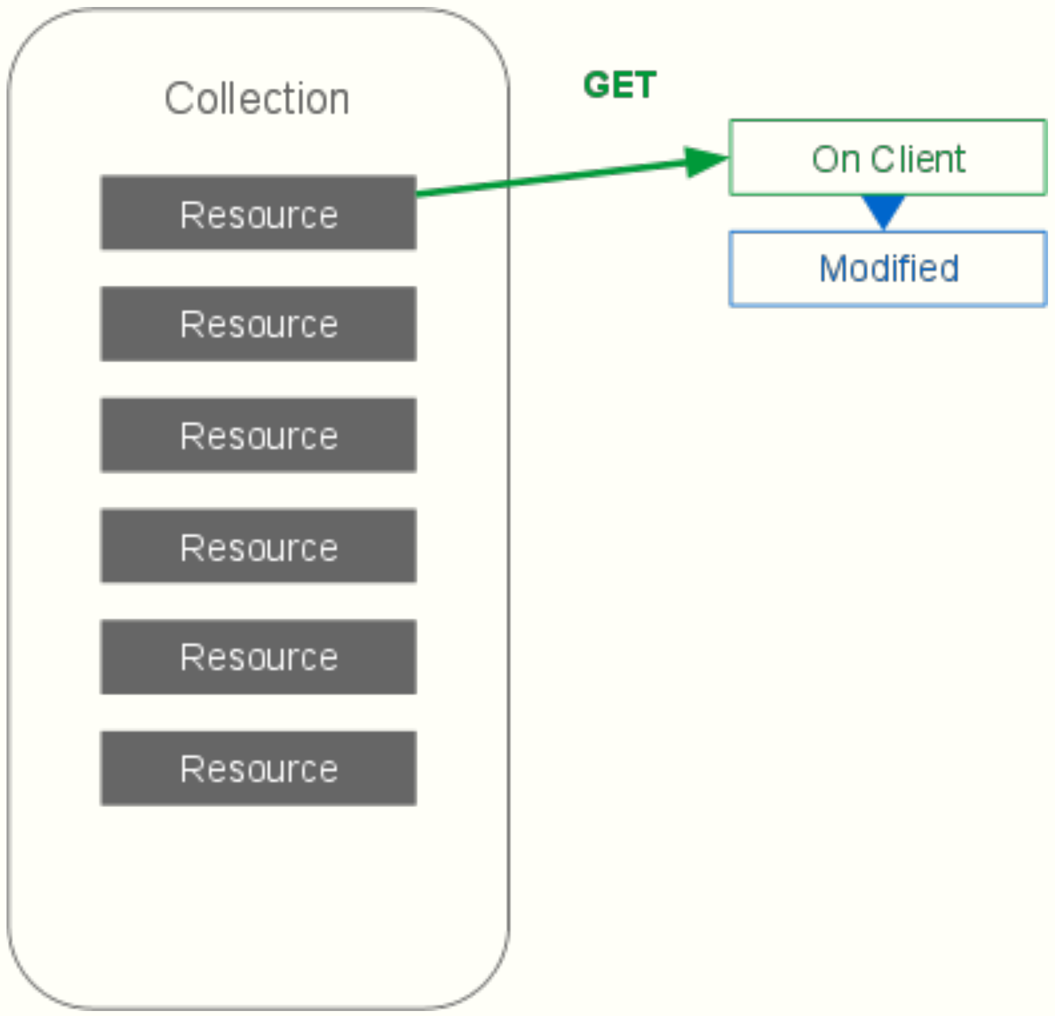
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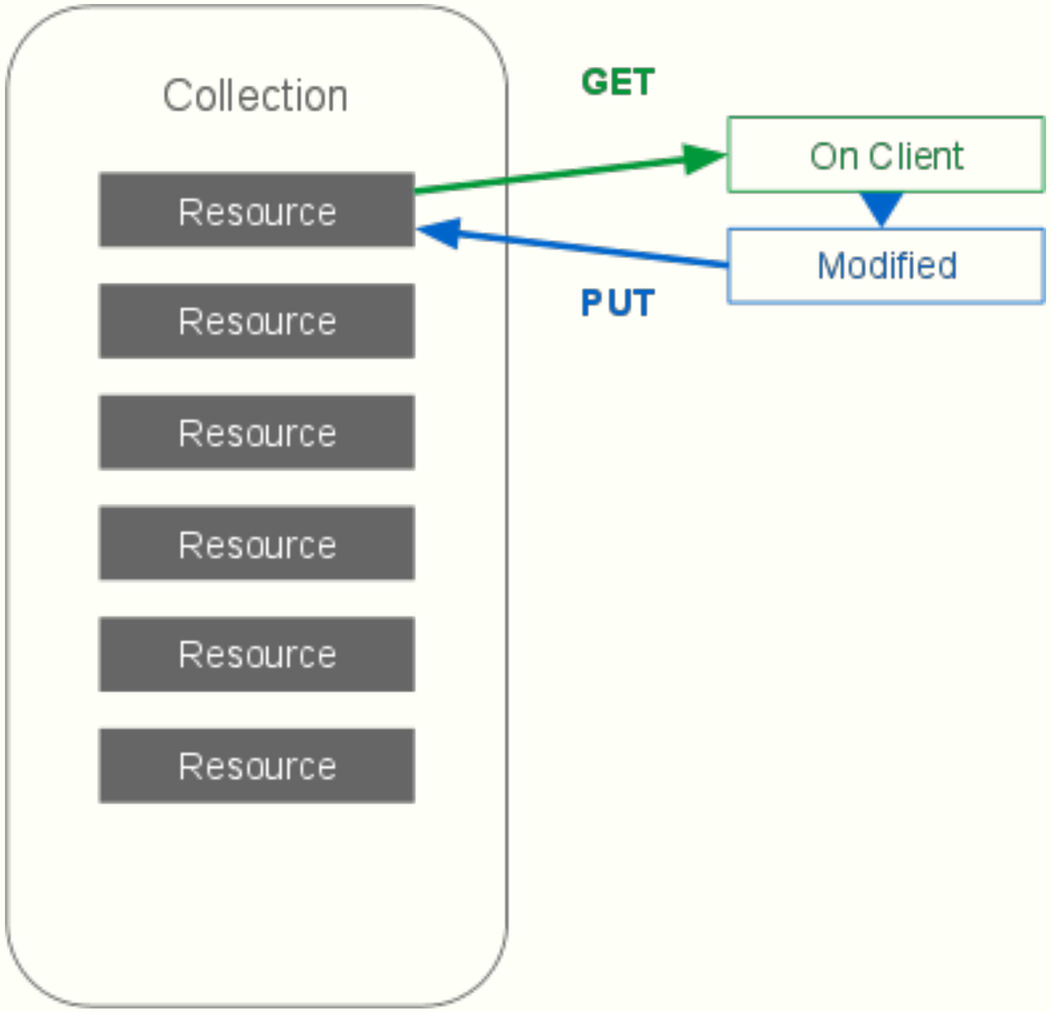
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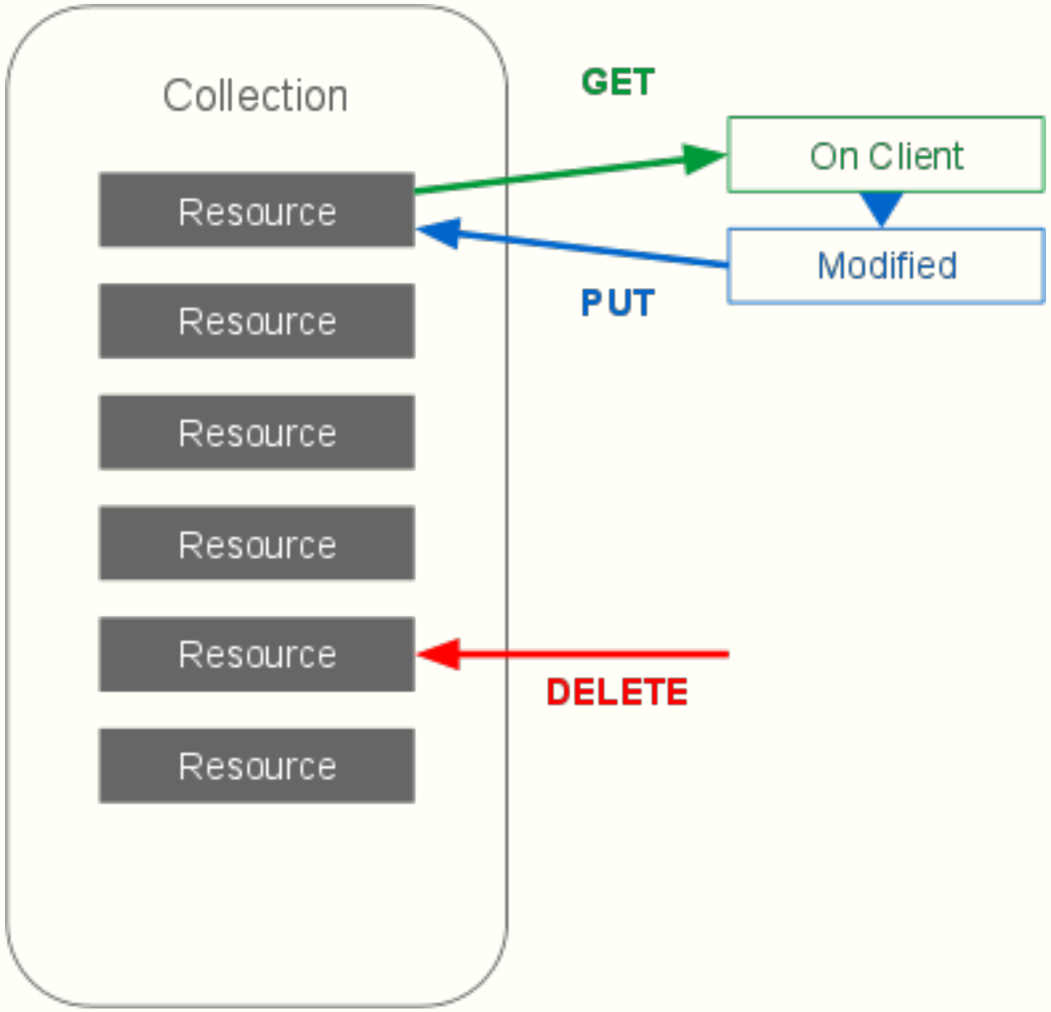
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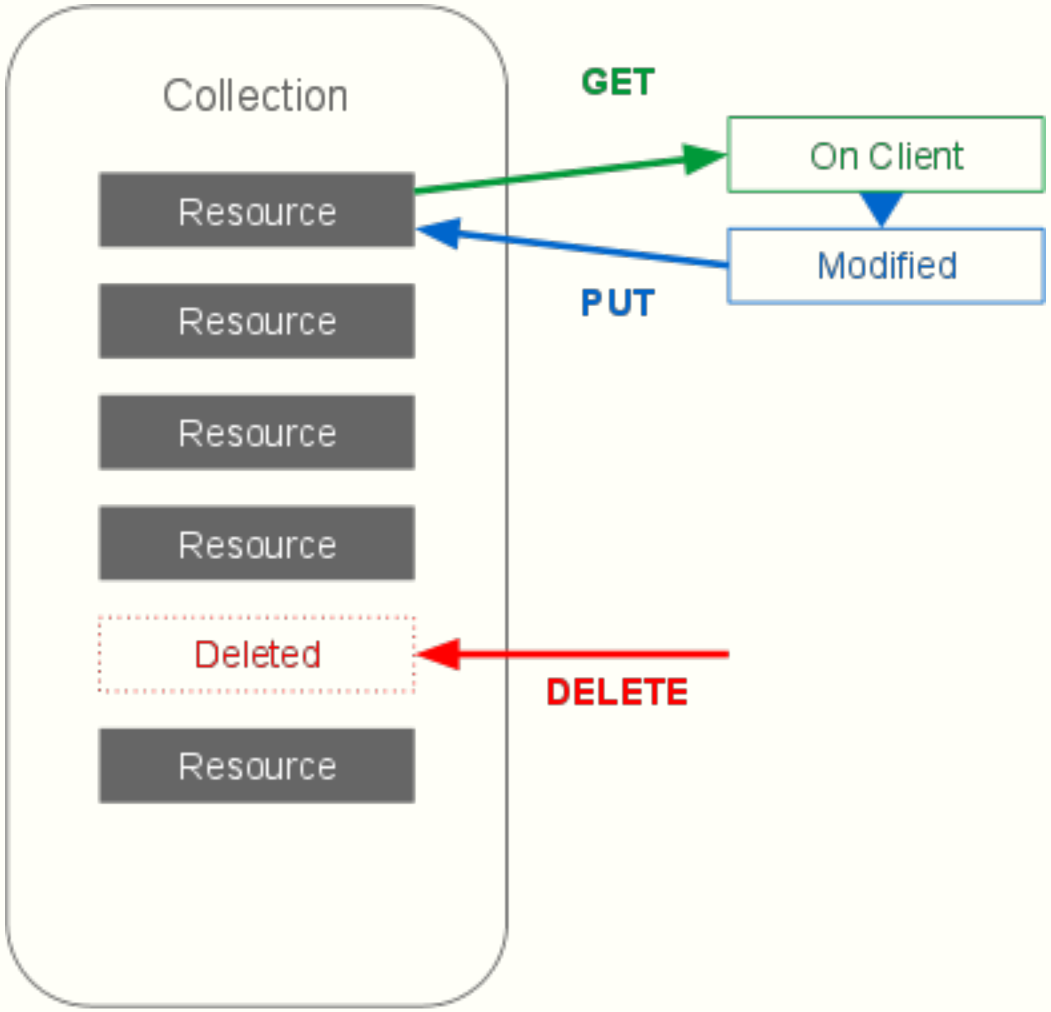
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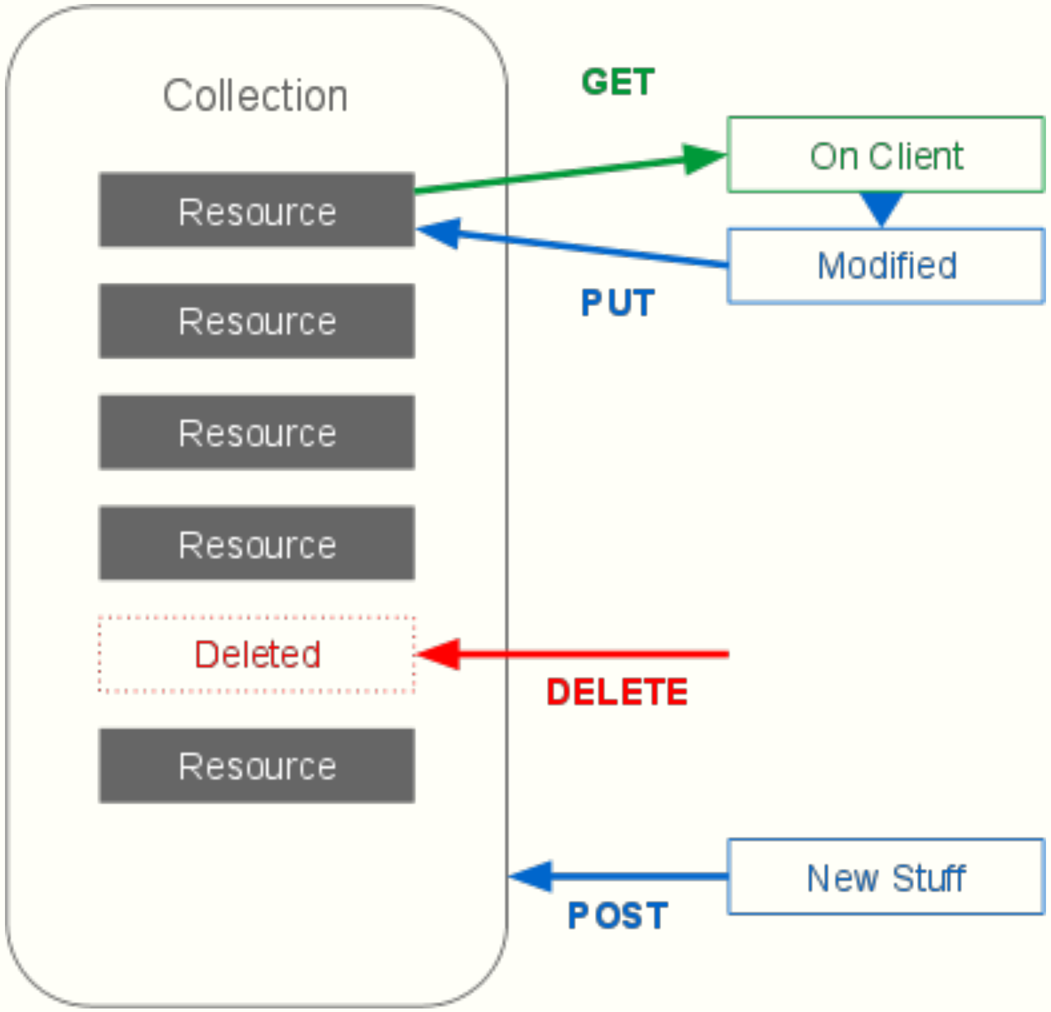
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New Stuff
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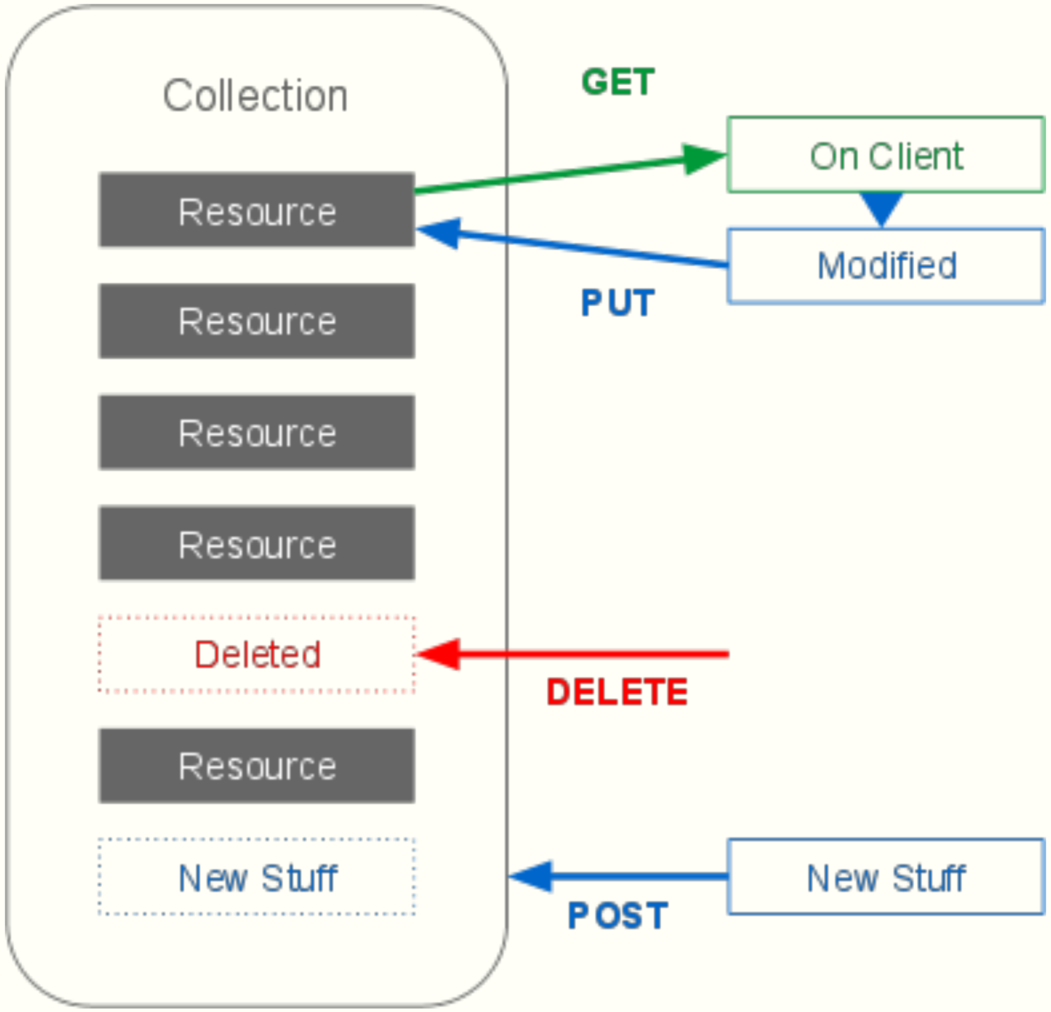
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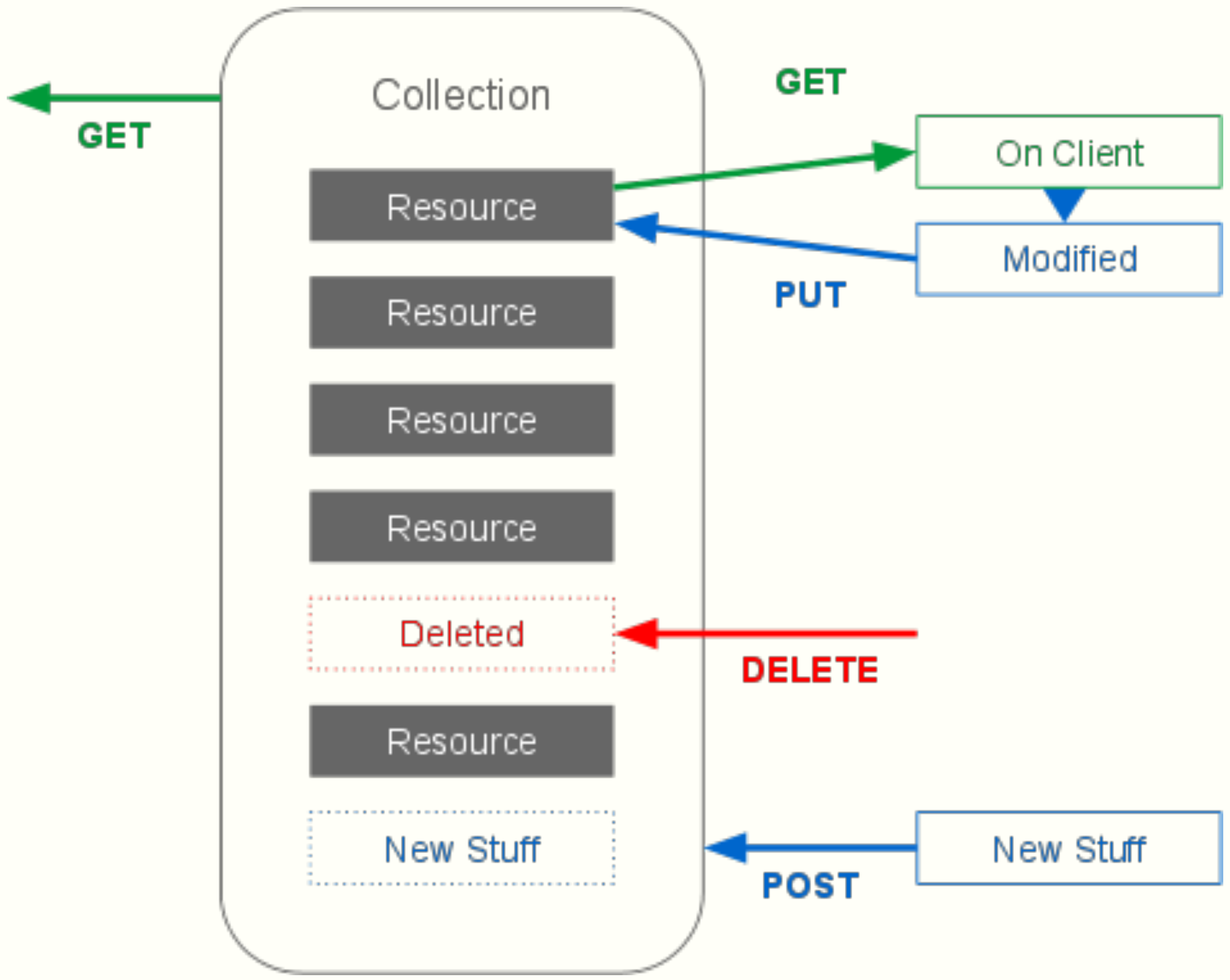
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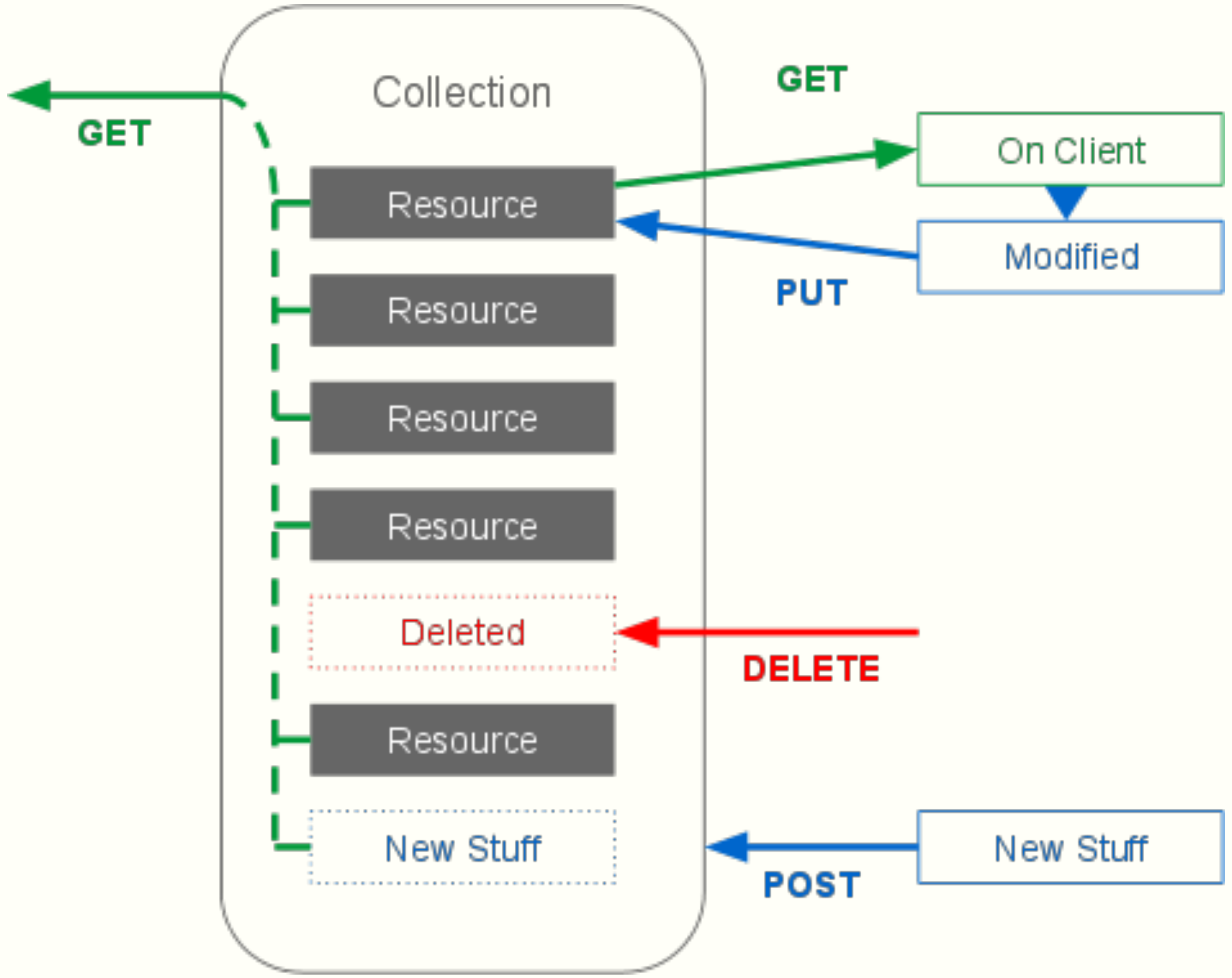
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Google Data

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Google Data ≈ Atom

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  - Atom Publishing Protocol (RFC5023)

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- **Extended the core features**
  - Query parameters
  - Concurrency
  - Batch

Google Data

- More than 25 APIs
- More than 2B hits per day across all APIs.

The Future Google APIs

- **We're moving to a brand new API infrastructure**

The Future Google APIs

- **We're moving to a brand new API infrastructure**

- You might already be using it...

Google moderator

Google buzz

Google latitude

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- Google APIs 101
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The Future Google APIs

- Rough edges in Google APIs
    - Output formats
    - Calling styles
    - Client libraries

Output Formats

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```
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    &alt=xml
```

bit.ly/nopartial

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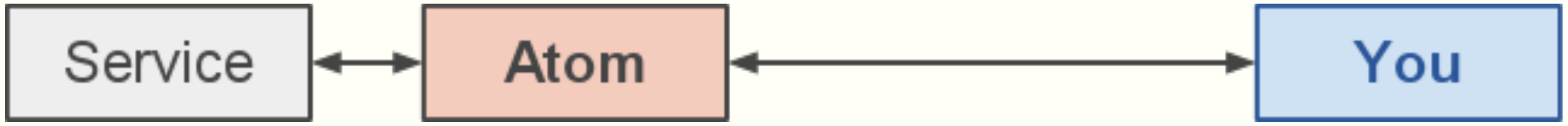

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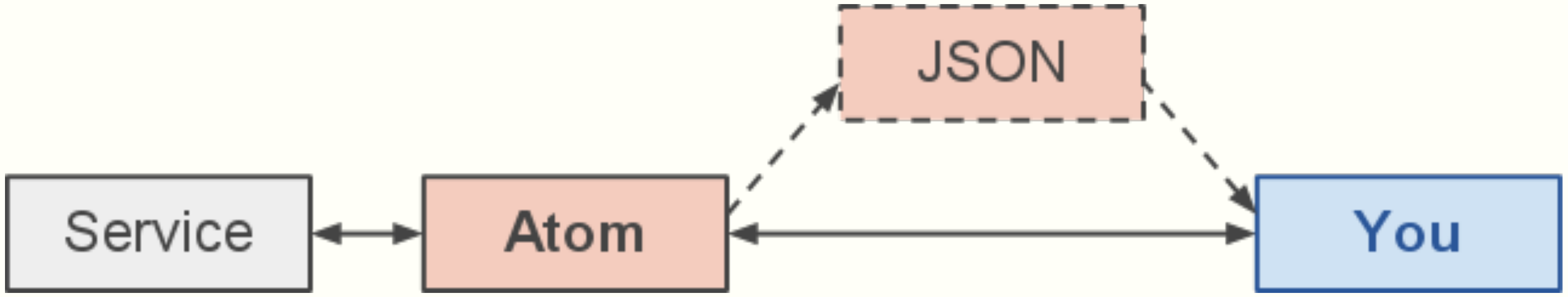

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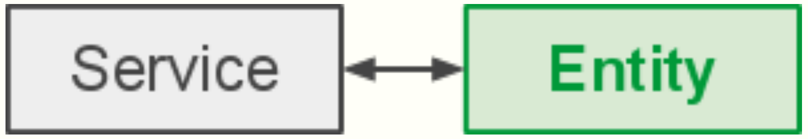

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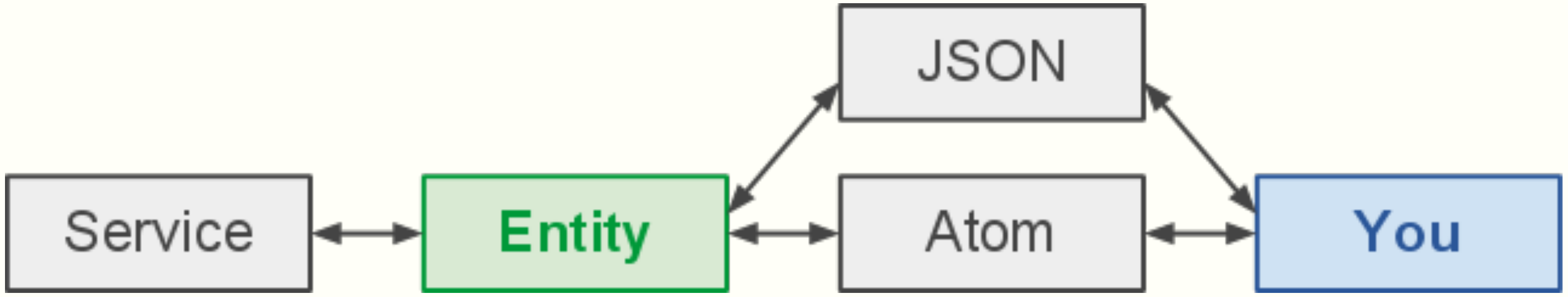

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http://www.googleapis.com/buzz/v1/activities
/markstahl/@public?q=google&max-results=1
&**alt=atom**

bit.ly/buzzatom

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bit.ly/buzzjson

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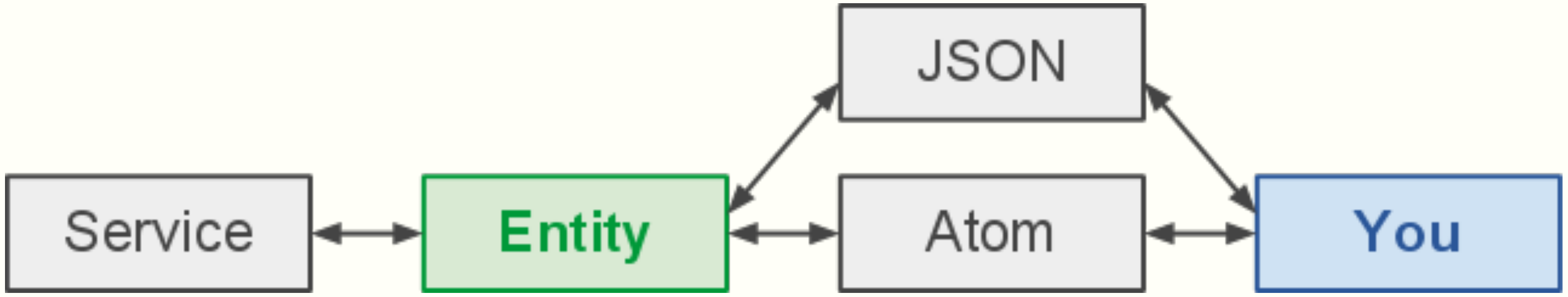

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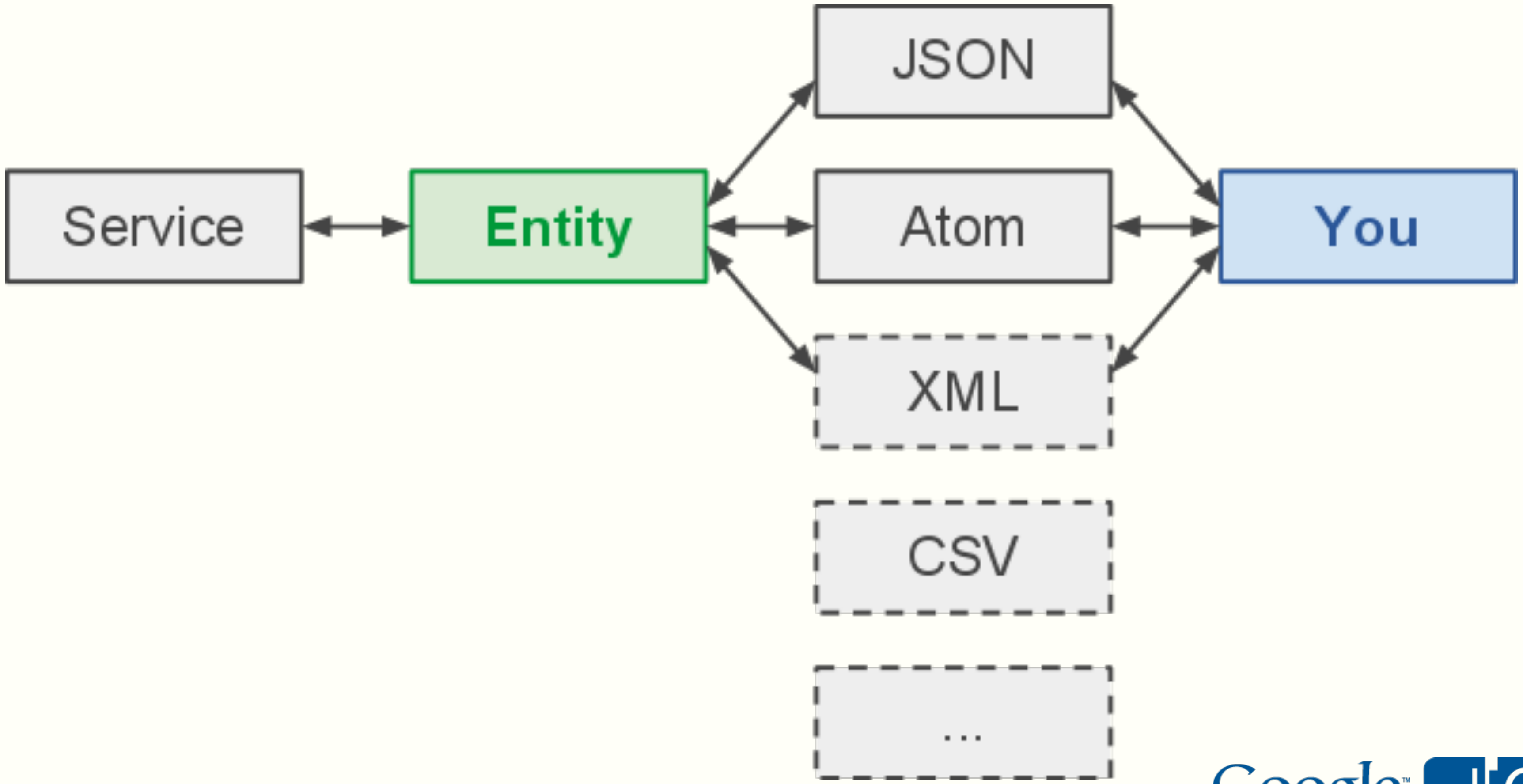

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PicasaWeb
Client

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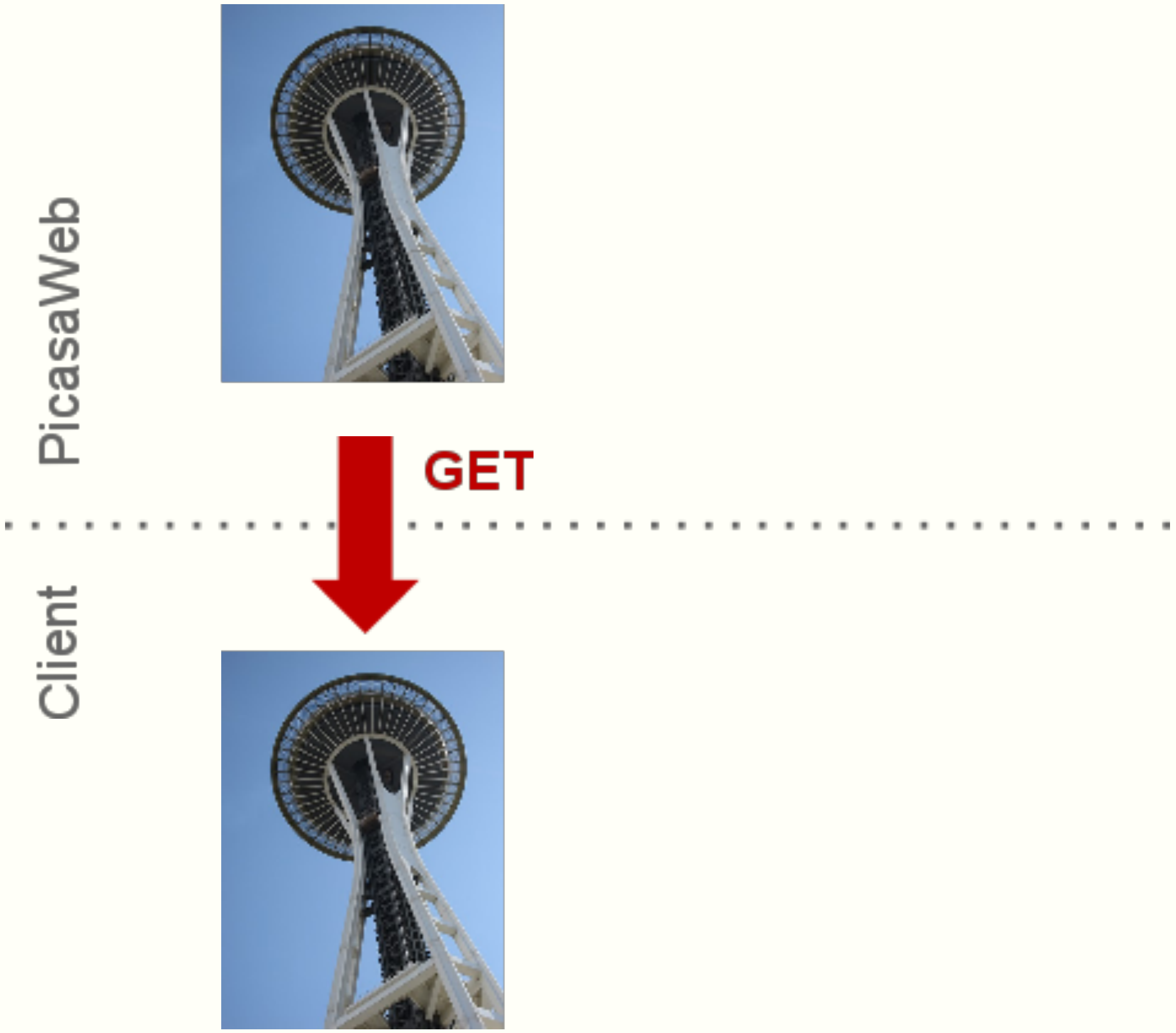

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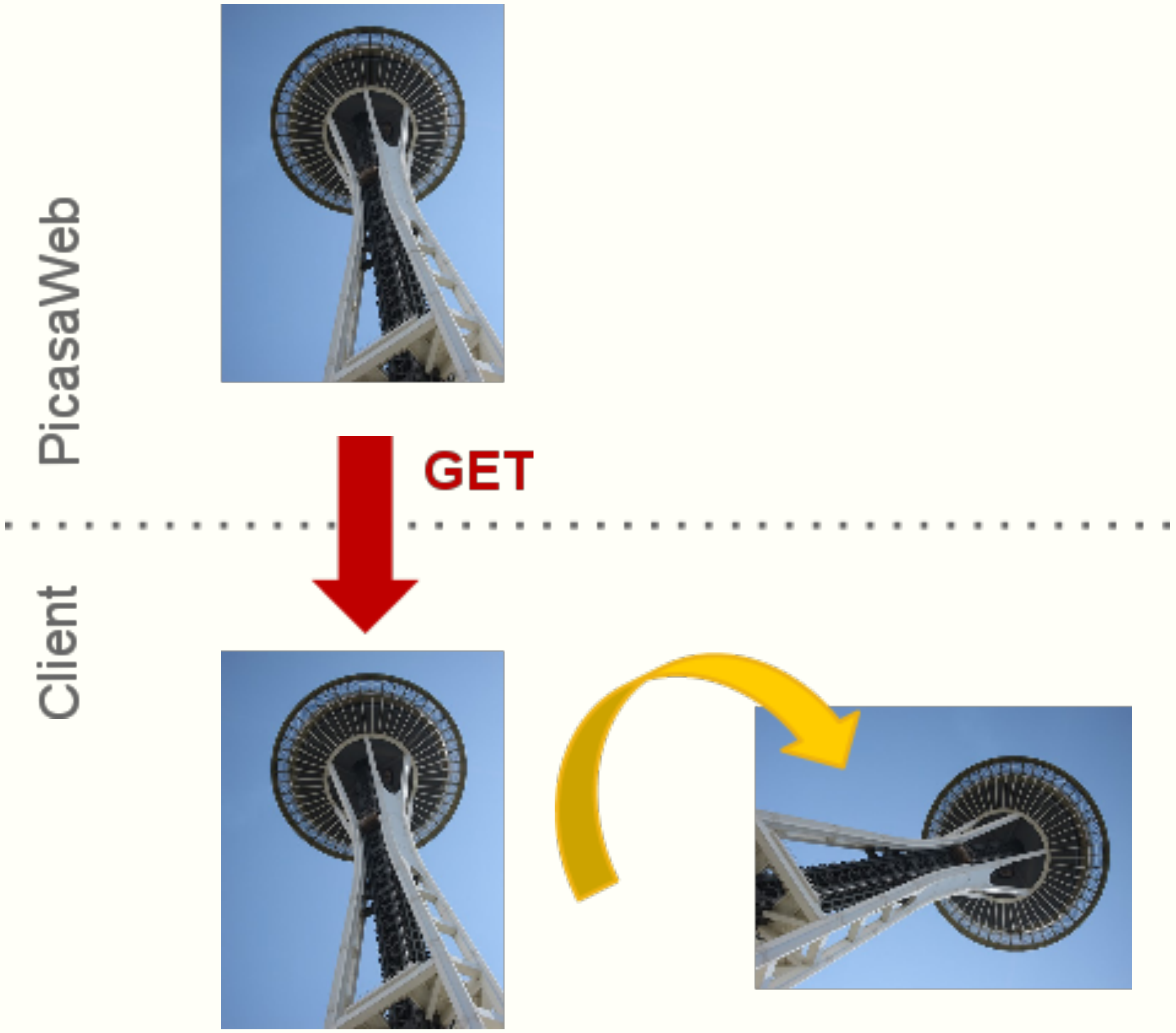

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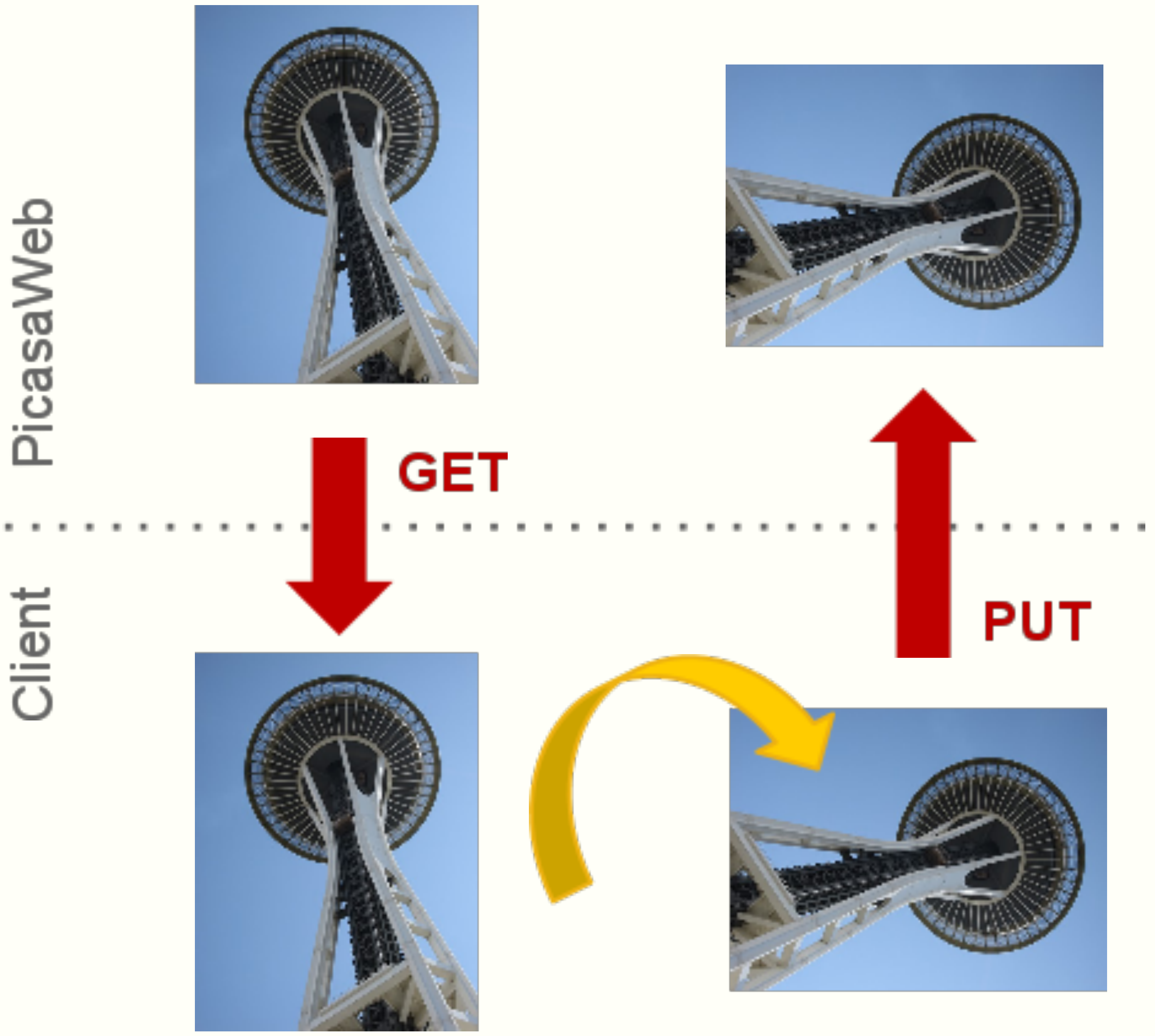

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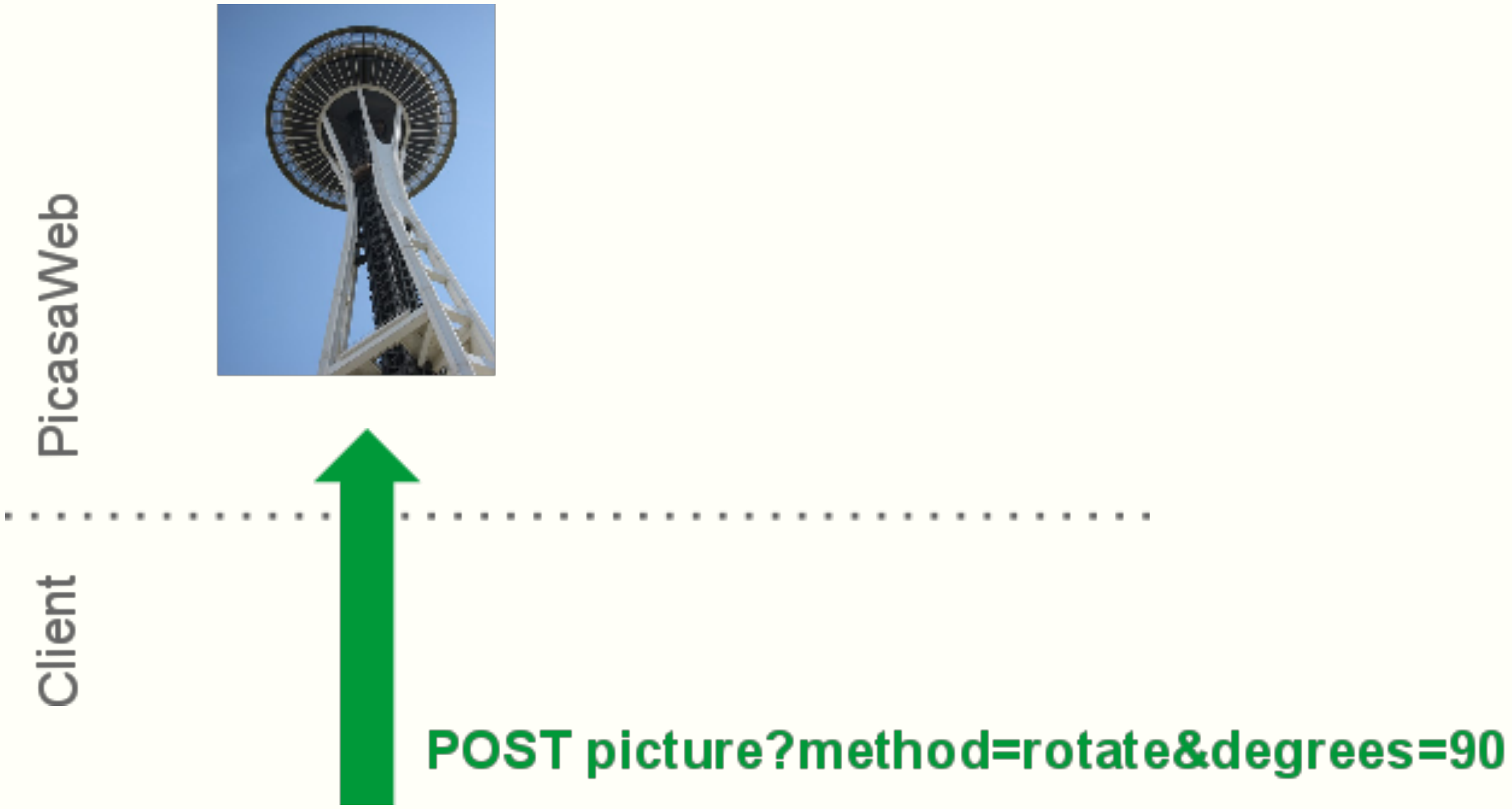

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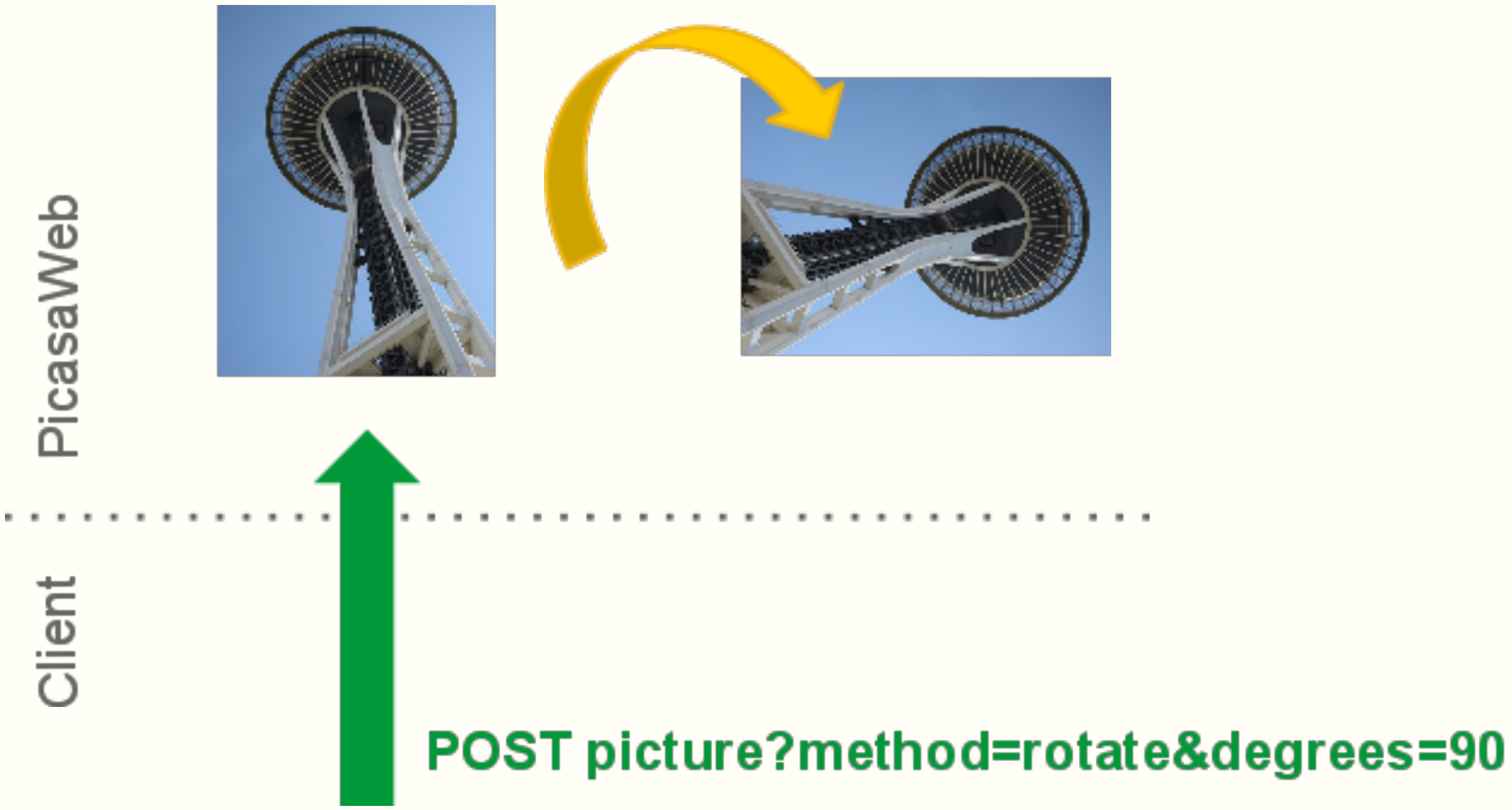

POST picture?method=rotate&degrees=90

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- **Using custom verbs**
  - POST /tasks/@me/{taskId}?method=markDone

Calling Styles

- **Issue: RPC is the basis of many API Standards**

Calling Styles

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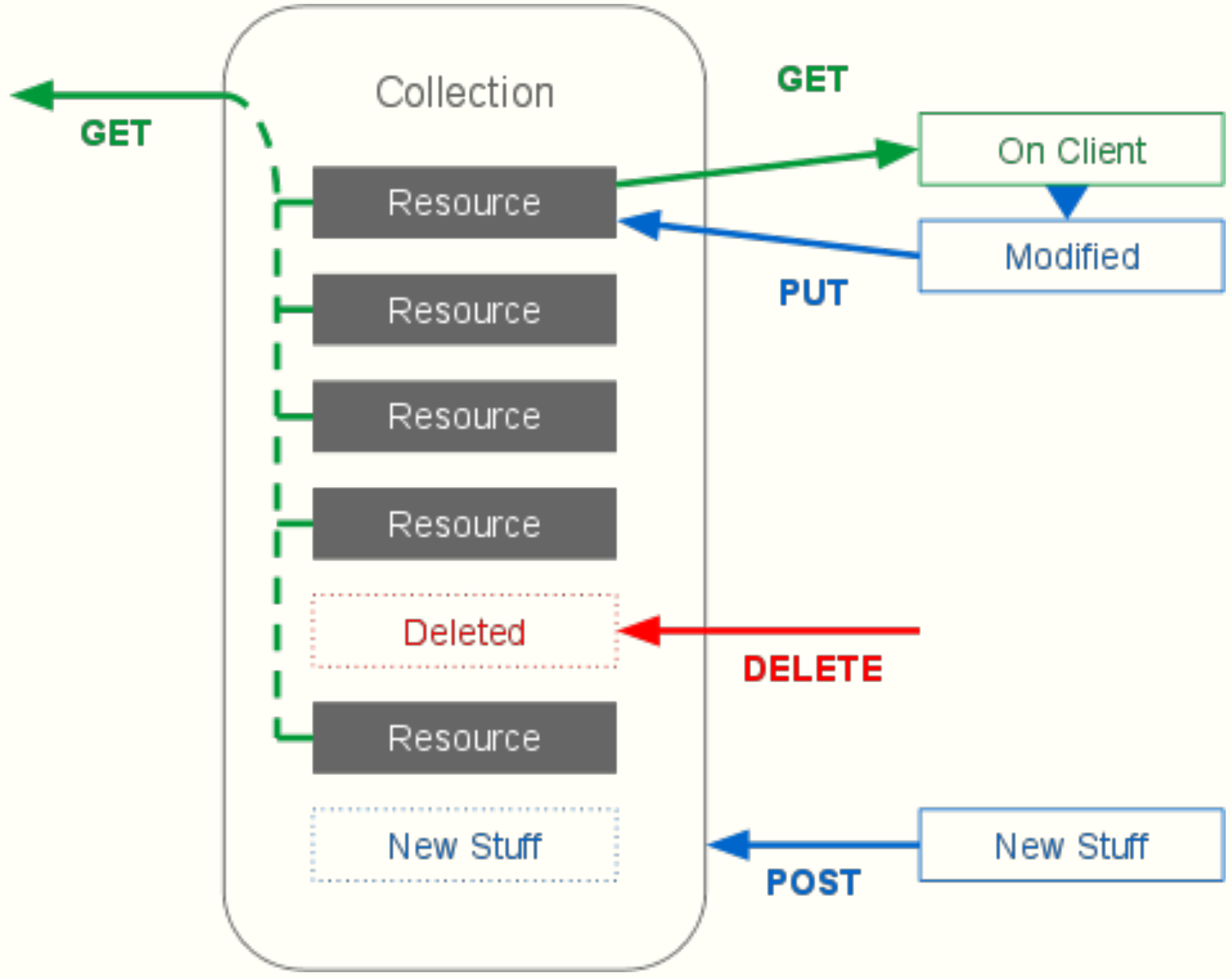

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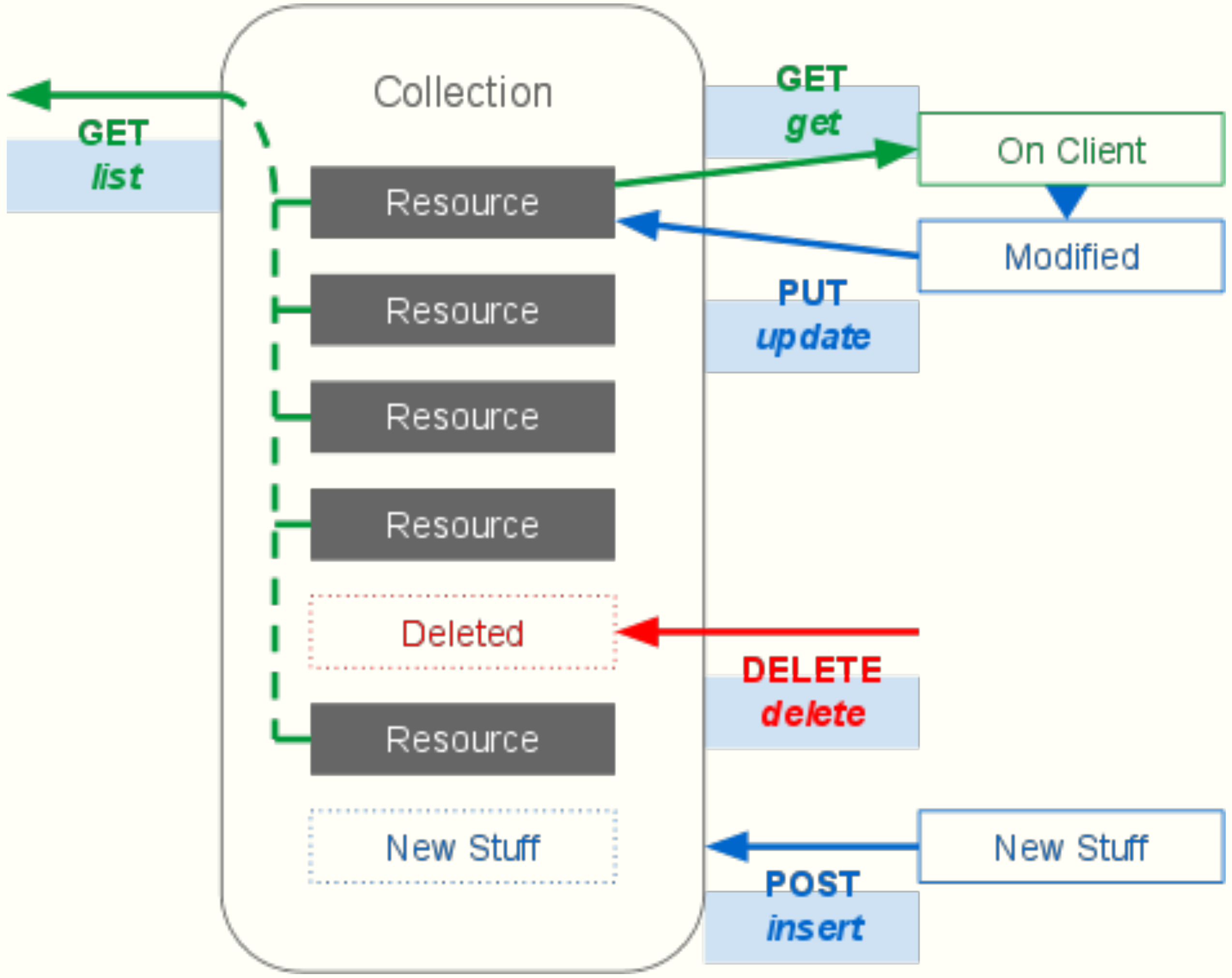

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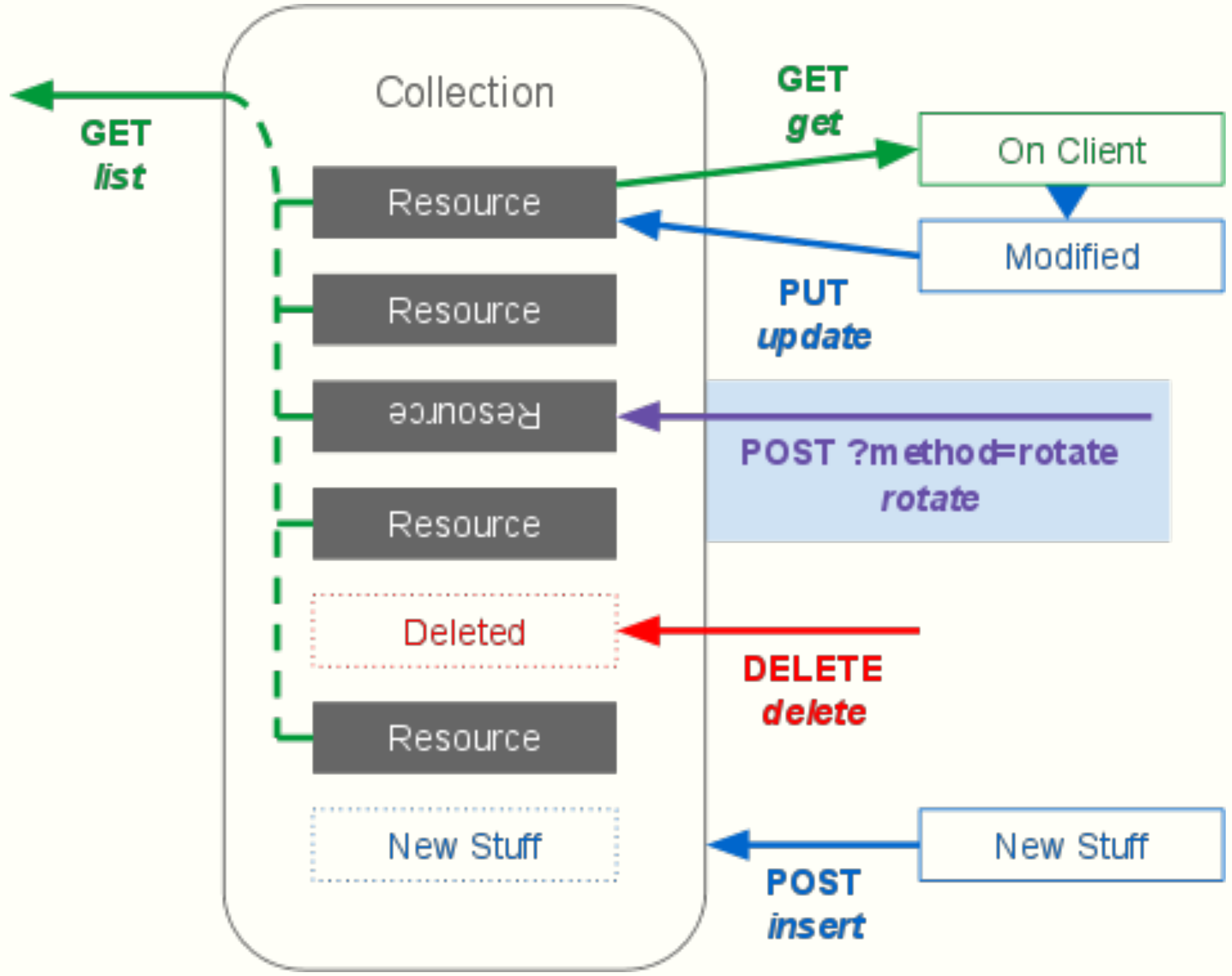

Client Libraries

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Client Libraries

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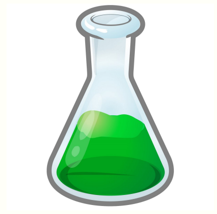
- Discovery Document
    - JSON object
    - Describes resources, URLs, verbs, parameters, (schemas)
    - Always up to date
- **Discovery is just another API**

http://www.googleapis.com/directory/v0.1/describe?api=discovery&apiVersion=v1

bit.ly/buzzdiscovery



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- **Release once ... Works with Any API**

Java Client Demonstration

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  - **Resource URLs are discovered dynamically**
  - **Very little Buzz specific code**
  - **Runs on Android**
- **Go check it out yourself!**
- Sample: bit.ly/iobuzz
- Library: bit.ly/javalib

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- **How we're fixing those issues**

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  - Client libraries don't stay on the cutting edge

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  - Allow operations on partial data
  - Provide multiple read-write formats
  - Augment REST with custom verbs, provide REST and RPC
  - Dynamic discovery and "generic" client libraries

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  - Define collections and verbs (using protocol buffer RPC)
- Configure the API Stack
  - Map REST paths, RPC methods, query parameters
  - Add common functionality: auth, caching, logging, ...
- **Write Output Templates**
  - Set up external data representation
  - JSON, Atom, XML, ...

API Configuration Tool Demonstration

How Google *Really* Builds APIs

- You just saw the simple three steps:
    - Service implemented
    - API stack configured
    - Output templates written

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