Design flow

The Design Guide suggests taking the following steps when designing resource- oriented APIs (more details are covered in specific sections below):

* Determine what types of resources an API provides.
* Determine the relationships between resources.
* Decide the resource name schemes based on types and relationships.
* Decide the resource schemas.
* Attach minimum set of methods to resources.

 A typical resource-oriented API exposes a large number of resources with a small number of methods. The methods can be either the standard methods or custom methods. For this guide, the standard methods are: List, Get, Create, Update, and Delete.

### Gmail API

The Gmail API service implements the Gmail API and exposes most of Gmail functionality. It has the following resource model:

* API service: gmail.googleapis.com
* A collection of users: users/\*. Each user has the following resources.
  + A collection of messages: users/\*/messages/\*.
  + A collection of threads: users/\*/threads/\*.
  + A collection of labels: users/\*/labels/\*.
  + A collection of change history: users/\*/history/\*.
  + A resource representing the user profile: users/\*/profile.
  + A resource representing user settings: users/\*/settings.
  + Example 1: A storage service has a collection of buckets, where each bucket has a collection of objects:

| API Service Name | Collection ID | Resource ID | Collection ID | Resource ID |
| --- | --- | --- | --- | --- |
| //storage.googleapis.com | /buckets | /bucket-id | /objects | /object-id |

## Full Resource Name

A scheme-less [URI](http://tools.ietf.org/html/rfc3986) consisting of a [DNS-compatible](http://tools.ietf.org/html/rfc1035) API service name and a resource path. The resource path is also known as relative resource name. For example:

"//library.googleapis.com/shelves/shelf1/books/book2"

Collection ID

A non-empty URI segment ([segment-nz-nc](http://tools.ietf.org/html/rfc3986#appendix-A)) identifying the collection resource within its parent resource, see above examples.

Because collection IDs often appear in the generated client libraries, they **must** conform to the following requirements:

* **Must** be valid C/C++ identifiers.
* **Must** be in plural form with lowerCamel case. If the term doesn't have suitable plural form, such as "evidence" and "weather", the singular form **should** be used.
* **Must** use clear and concise English terms.
* Overly general terms **should** be avoided or qualified. For example,   
  rowValues is preferred to values. The following terms **should** be avoided without qualification:

e.g: elements, entries, instances, items, objects, resources, types, values

## Common Custom Methods

The curated list of commonly used or useful custom method names is below. API designers **should** consider these names before introducing their own to facilitate consistency across APIs.

| Method Name | Custom verb | HTTP verb | Note |
| --- | --- | --- | --- |
| Cancel | :cancel | POST | Cancel an outstanding operation (build, computation etc.) |
| BatchGet<plural noun> | :batchGet | GET | Batch get of multiple resources. (See details in [the description of List](https://cloud.google.com/apis/design/standard_methods#list)) |
| Move | :move | POST | Move a resource from one parent to another. |
| Search | :search | GET | Alternative to List for fetching data that does not adhere to List semantics. |
| Undelete | :undelete | POST | Restore a resource that was previously deleted. The recommended retention period is 30-day. |

# Standard Fields

This section describes a set of standard message field definitions that should be used when similar concepts are needed. This will ensure the same concept has the same name and semantics across different APIs.

| Name | Type | Description |
| --- | --- | --- |
| name | string | The name field should contain the [relative resource name](https://cloud.google.com/apis/design/resource_names#relative_resource_name). |
| parent | string | For resource definitions and List/Create requests, the parent field should contain the parent [relative resource name](https://cloud.google.com/apis/design/resource_names#relative_resource_name). |
| create\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The creation timestamp of an entity. |
| update\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The last update timestamp of an entity. Note: update\_time is updated when create/patch/delete operation is performed. |
| delete\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The deletion timestamp of an entity, only if it supports retention. |
| expire\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The expiration timestamp of an entity if it happens to expire. |
| start\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The timestamp marking the beginning of some time period. |
| end\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The timestamp marking the end of some time period or operation (regardless of its success). |
| read\_time | [Timestamp](https://github.com/google/protobuf/blob/master/src/google/protobuf/timestamp.proto) | The timestamp at which a particular an entity should be read (if used in a request) or was read (if used in a response). |
| time\_zone | string | The time zone name. It should be an [IANA TZ](http://www.iana.org/time-zones) name, such as "America/Los\_Angeles". For more information, see https://en.wikipedia.org/wiki/List\_of\_tz\_database\_time\_zones. |
| region\_code | string | The Unicode country/region code (CLDR) of a location, such as "US" and "419". For more information, see http://www.unicode.org/reports/tr35/#unicode\_region\_subtag. |
| language\_code | string | The BCP-47 language code, such as "en-US" or "sr-Latn". For more information, see http://www.unicode.org/reports/tr35/#Unicode\_locale\_identifier. |
| mime\_type | string | An IANA published MIME type (also referred to as media type). For more information, see https://www.iana.org/assignments/media-types/media-types.xhtml. |
| display\_name | string | The display name of an entity. |
| title | string | The official name of an entity, such as company name. It should be treated as the formal version of display\_name. |
| description | string | One or more paragraphs of text description of an entity. |
| filter | string | The standard filter parameter for List methods. |
| query | string | The same as filter if being applied to a search method (ie [:search](https://cloud.google.com/apis/design/custom_methods#common_custom_methods)) |
| page\_token | string | The pagination token in the List request. |
| page\_size | int32 | The pagination size in the List request. |
| total\_size | int32 | The total count of items in the list irrespective of pagination. |
| next\_page\_token | string | The next pagination token in the List response. It should be used as page\_token for the following request. An empty value means no more result. |
| order\_by | string | Specifies the result ordering for List requests. |
| request\_id | string | A unique string id used for detecting duplicated requests. |
| resume\_token | string | An opaque token used for resuming a streaming request. |
| labels | map<string,string> | Represents Cloud resource labels. |
| deleted | bool | If a resource allows undelete behavior, it must have a deleted field indicating the resource is deleted. |
| show\_deleted | bool | If a resource allows undelete behavior, the corresponding List method must have a show\_deleted field so client can discover the deleted resources. |
| update\_mask | [FieldMask](https://github.com/google/protobuf/blob/master/src/google/protobuf/field_mask.proto) | It is used for Update request message for performing partial update on a resource. This mask is relative to the resource, not to the request message. |
| validate\_only | bool | If true, it indicates that the given request should only be validated, not executed. |