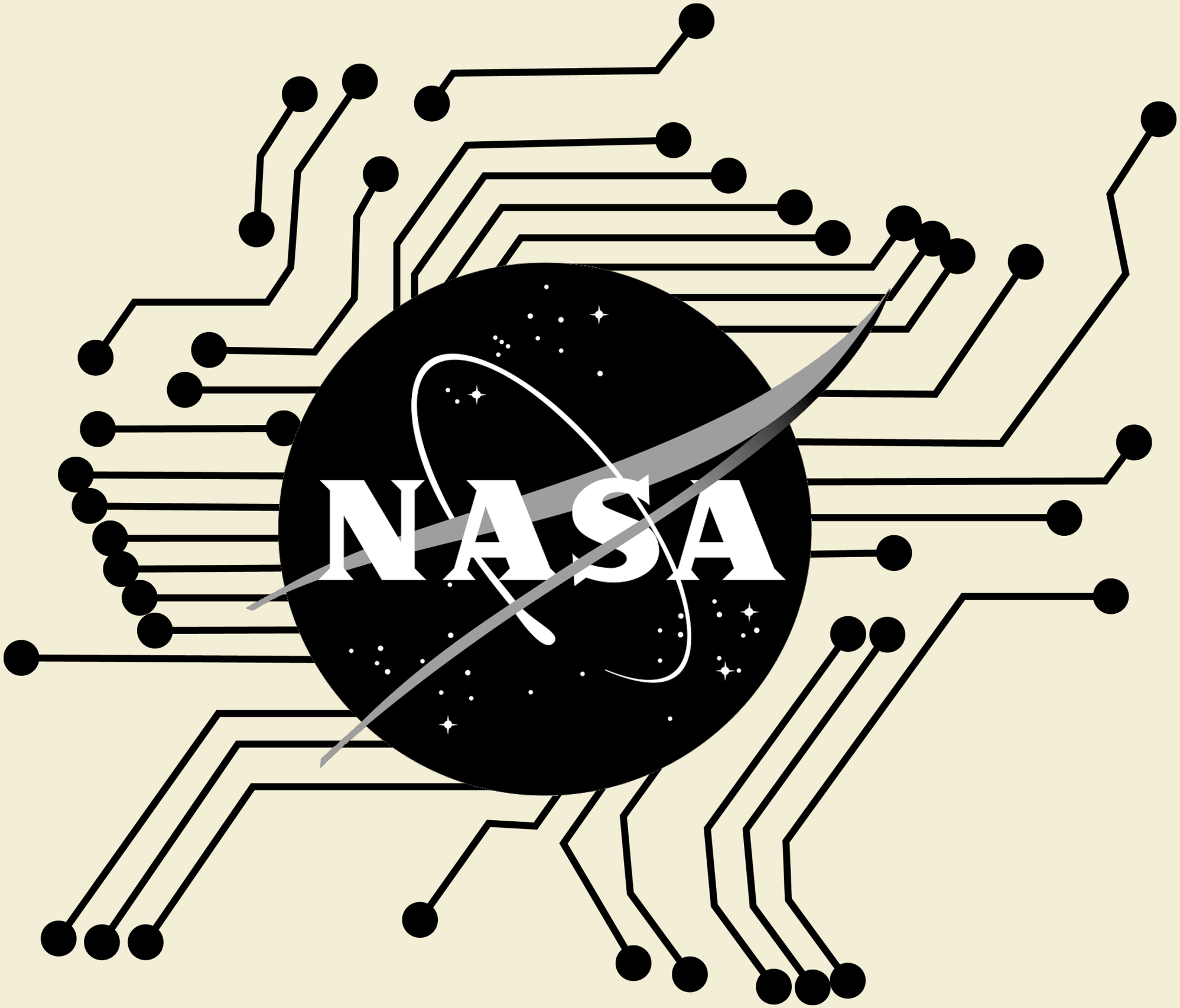
NASA

NASA’s Open API Universe

and NASA’s plan for getting there

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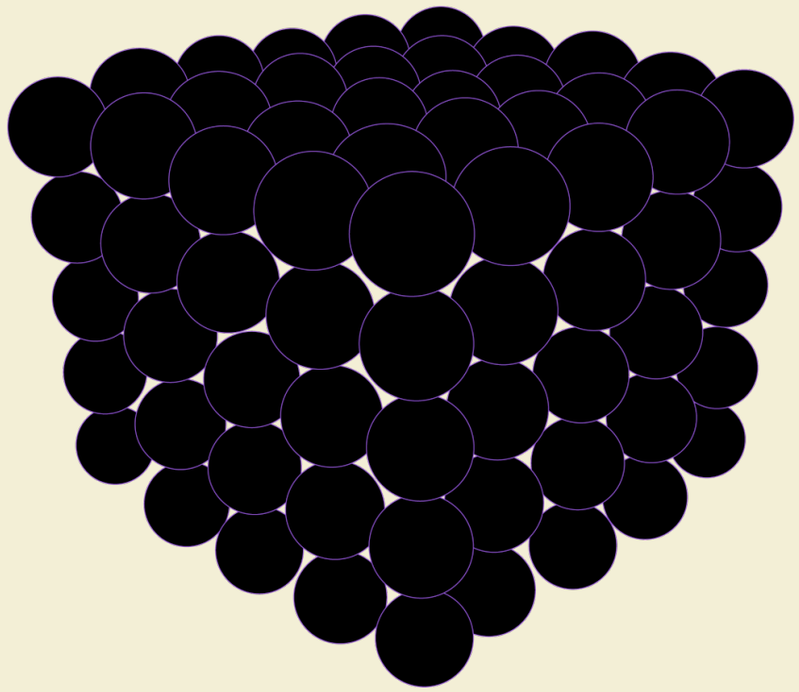
Open Innovation Program

Office of the Chief Information Officer

National Aeronautics and Space Administration

Our mission is to accelerate breakthroughs by helping innovators at NASA identify, explore and apply the emerging opportunities on the edge of business and technology in order to solve our toughest challenges.



The Open Innovation Program is responsible for implementation of the agency's **Open Government Plan and Digital Government Strategy**, with aggressive goals towards releasing more high value data sets online, pushing forward the use of open source technology, and creating participatory opportunities to engage citizens in NASA's mission.

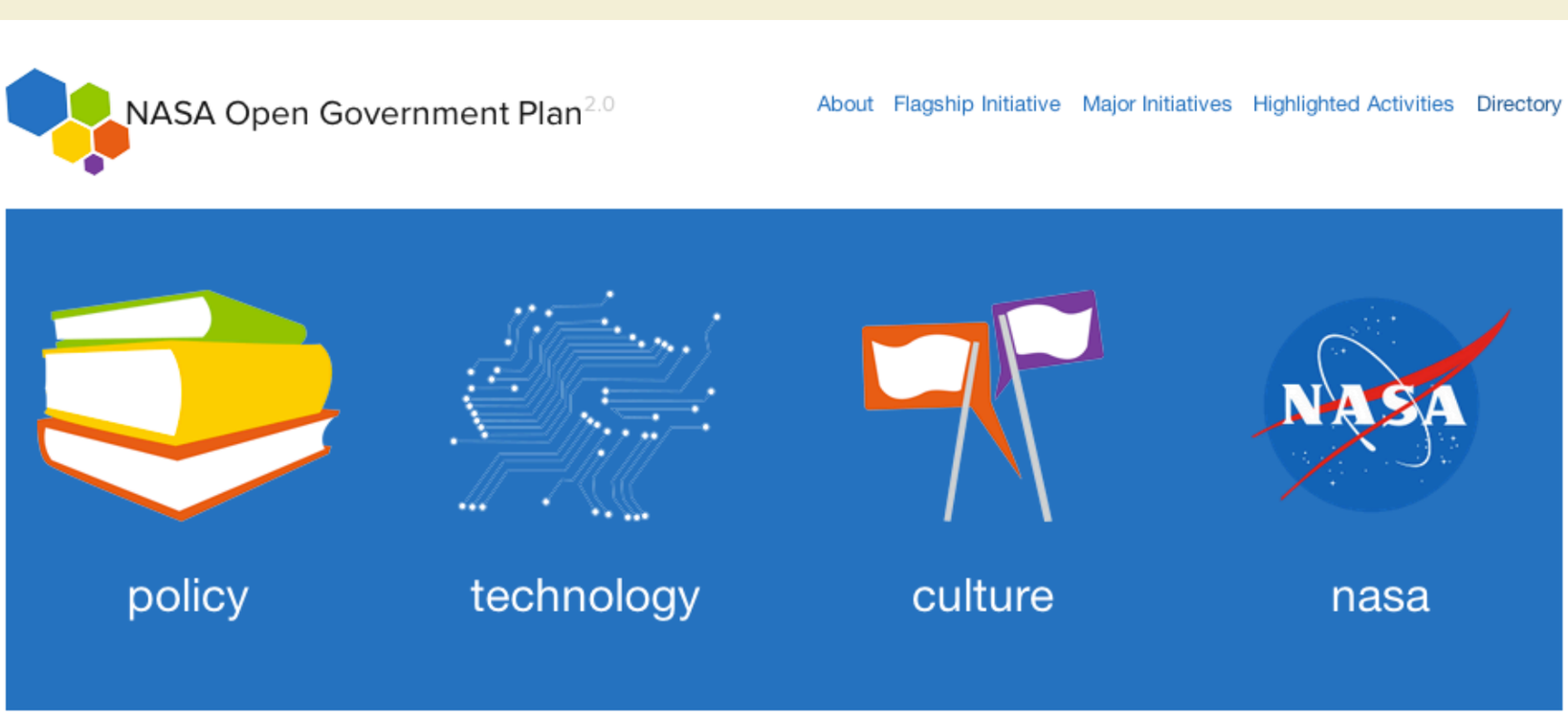
We are also really interested in understanding how government can apply **the art and science of mass collaboration** to more effectively engage citizens with the purpose of furthering NASA's mission.

open.NASA.gov

A collaborative platform for the open government community to share success stories and projects they are working on.

open.NASA.gov/plan

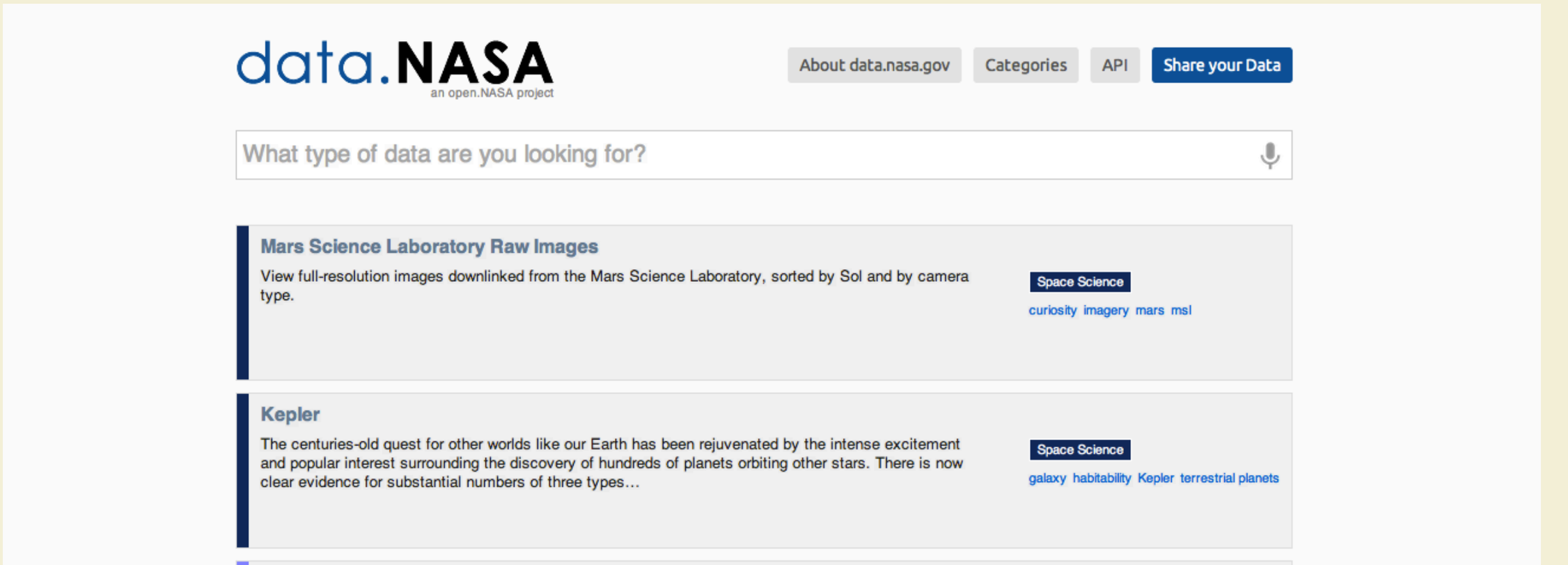
Version 2.0 of the NASA Open Government plan collects the many new activities that exemplify the evolution of openness in NASA's policy, technology and culture – and provides citizens the opportunity to respond and engage.



The key principles of Open Government – participation, collaboration and transparency - have been embedded in NASA operations for more than 50 years. As NASA continues to implement the Open Government Directive, we have developed version 2.0 of our Open Government Plan to serve as a model –

data.NASA.gov

NASA launched a data API around its online archive of NASA data sets in August 2011. The data.nasa.gov API provides a RESTful interface, with responses in JSON for the NASA data archives.



The data API provides access to data sets in a variety of categories including aeronautics, climate, earth science, engineering, institutional, life sciences, operations and space sciences.

API

All API access is over http and starts with:

```
http://data.nasa.gov/api/
```

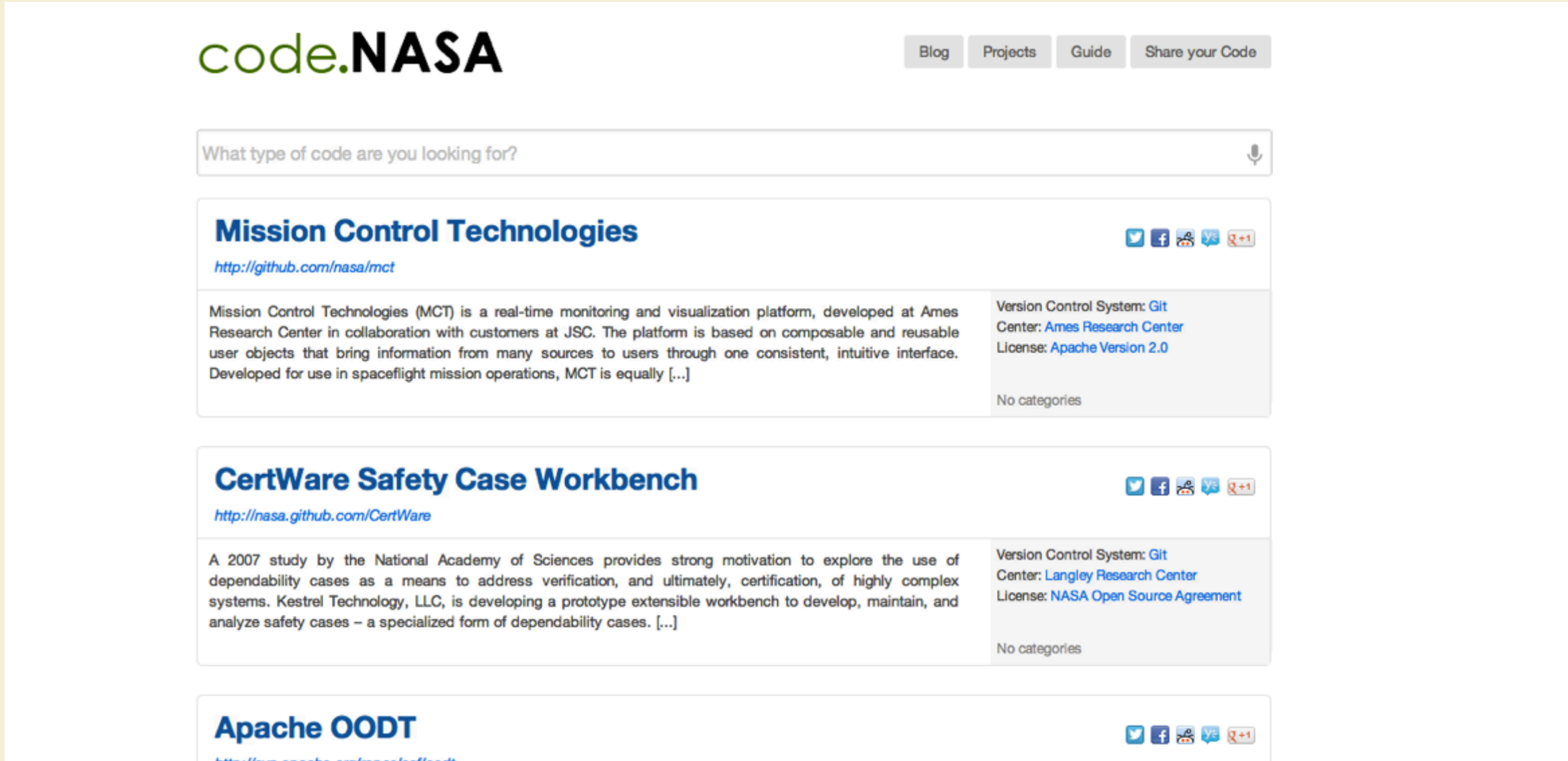
The standard response format is JSON. Here's an example of what a request for the Great Images in NASA dataset would look like:


```
{
"status": "ok",
"post": {
"id": 619,
"slug": "great-images-in-nasa",
"url": "http:\/\/data.nasa.gov\/great-images-in-nasa\/",
"title": "Great Images in NASA",
"title_plain": "Great Images in NASA",
"content": "

GRIN is a collection of over a thousand images of significant historical interest scanned at high-resolution
in several sizes. This collection is intended for the media, publishers, and the general public looking for
high-quality photographs.<\/p>\n",
"excerpt": "GRIN is a collection of over a thousand images of significant historical interest scanned at high-
resolution in several sizes. This collection is intended for the media, publishers, and the general public
looking for high-quality photographs.",
"date": "2011-09-19 06:26:13",
"modified": "2011-09-19 06:26:13",
"categories": [
{
"id": 322,
"slug": "catalog",
"title": "Catalog",
"description": "#8485FF",
"parent": 0,
"post_count": 9
```

code.NASA.gov

An directory of open source software released by NASA.



worldwind.NASA.gov

An open source virtual globe developed by NASA and the open source community, featuring an API for rendering Earth and other planets.

World Wind is a collection of components that interactively display 3D geographic information within Java applications or applets. Applications and applets use World Wind by placing one or more `WorldWindow` components in their user interface. The World Wind components are extensible. The API is defined primarily by interfaces, so components can be selectively replaced by alternative components.

To use World Wind as an applet, see the package `gov.nasa.worldwindx.examples.applet`.

`WorldWindow` is an interface. Toolkit-specific implementations of the interface are provided for Swing/AWT and, in the future, SWT-Eclipse. See `WorldWindowGLCanvas`.

In addition to `WorldWindow`, there are five major World Wind interfaces. They are:

- `Globe` — represents a planet's shape and terrain.
- `Layer` — applies imagery or information to a `Globe`.
- `Model` — aggregates a `Globe` and the `Layers` to apply to it.
- `SceneController` — controls the rendering of a `Model`.
- `View` — interactively controls the user's view of the model.

In typical usage, applications associate a `Globe` and several `Layers` with a `Model` They then pass that model to a `SceneController` that displays the globe and its layers in a `WorldWindow`. The scene controller subsequently manages the display of the globe and its layers in conjunction with an interactive `View` that defines the user's view of the planet.

The objects implementing the above interfaces may be those provided by World Wind or those created by application developers. Objects implementing a particular interface may be used wherever that interface is called for. World Wind provides several `Globe` objects representing Earth, Mars and the Earth's moon, and provides basic implementations of `Model`, `SceneController` and `View`.

Most of World Wind's components are defined by interfaces. This allows application developers to create their own implementations and easily integrate them into World Wind.

The `WorldWind` Class

TODO

Multiple World Wind Windows

TODO

Data Retrieval

World Wind works with enormous quantities of data and information, all of which exist primarily on remote data servers. Retrieval and local caching of that data is therefore a primary feature of World Wind. The classes that implement retrieval are `Retriever` and `RetrievalService`.

INTERNATIONAL SPACE APPS CHALLENGE

111 organizations, 25 cities, 17 countries,
2,083 participants, 71 challenges, 101 solutions
in 48 hours

Exo°

Open Planet API

A powerful tool that provides access to exoplanet data through a simple RESTful API.

ISS Live

Design and implementation of REST API for ISSLive data consisting of space station system parameters and crew timeline data. Also included an SDK and a demo webapp to help application developers use the REST API easily.

Opportunity

There is a huge opportunity for anyone with interest to help NASA make its data more accessible through API's.

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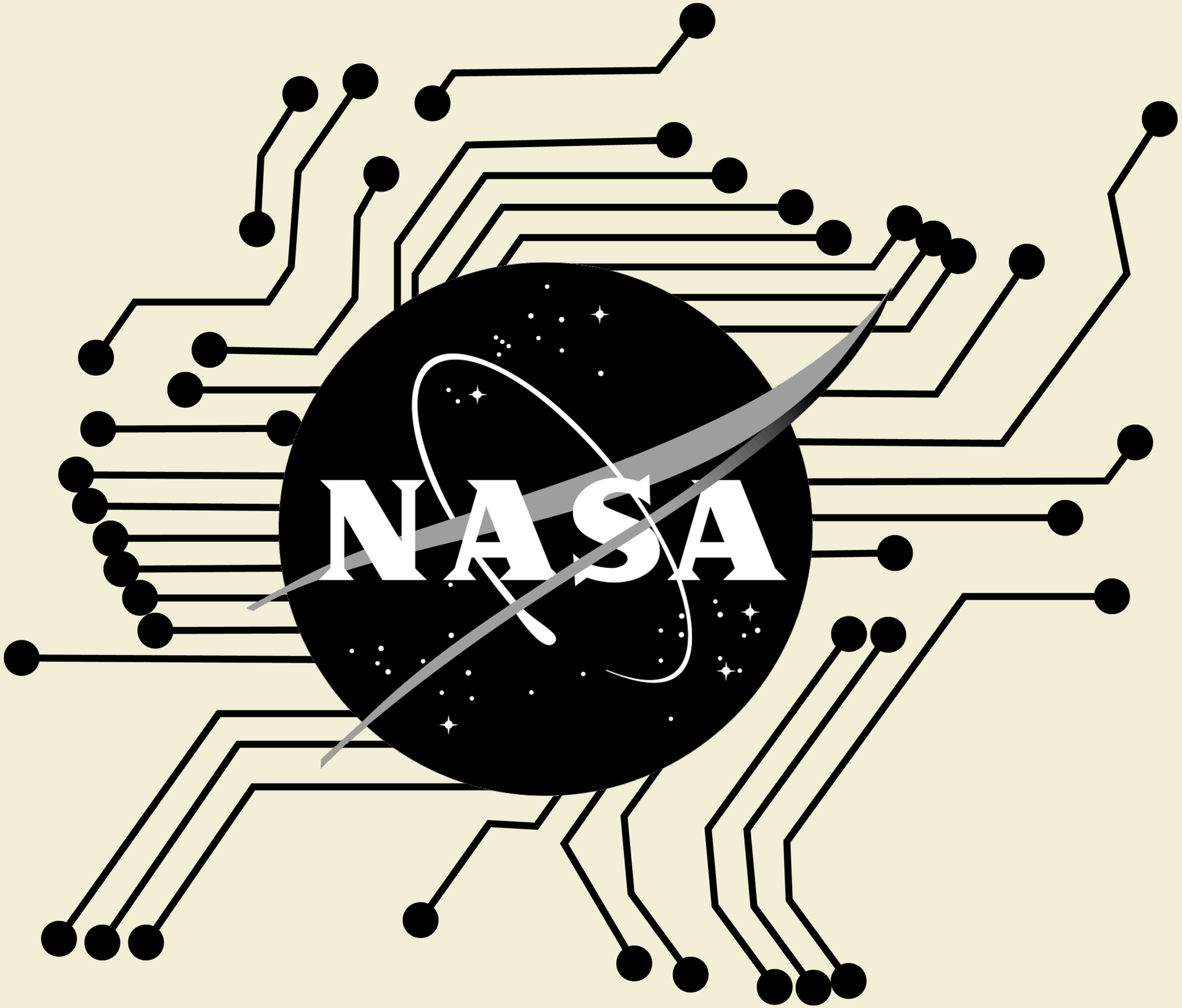
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