### Hashtags: #asteroid, #asteroidskies

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### Tags: Data Visualization

**Challenge Description** :

Create data aggregators and visualizations of asteroid data in meaningful ways can educate the public about the need to explore asteroids and protect the Earth from them. Extract data from existing asteroid databases and create clear, beautiful visualizations with them to show the power of asteroid exploration. You can develop code that establishes connections to asteroid data sources, create data visualizers that translate retrieved asteroid data into meaningful plots or presentations; and integrate the communications and data visualization code into an interactive educational website.

**Background**

The Minor Planet Center (MPC) is the single worldwide location for receipt and distribution of positional measurements of minor planets, comets and outer irregular natural satellites of the major planets. The MPC is responsible for the identification, designation and orbit computation for all of these objects. NASA’s Jet Propulsion Laboratory established Infographics in 2012 to crowdsource the creation of scientific works of art. People download data and pictures, create an infographic, and upload the image to the Infographics website. Another NASA website presents visualizations of orbital trajectories for more than 1,450 potentially hazardous asteroids. Other websites exist that provide details about asteroids with their potential values and profit along with an interactive visualization of the inner solar system with asteroids. Several dozen infographics exist that explain specific asteroid missions.

In June 2013 NASA announced a grand challenge to “find all asteroid threats to human populations and know what to do about them.” A large part of this Grand Challenge is to expand the role of individual inventors, tinkerers, citizen scientists, developers and technologists in participating meaningfully in addressing the work of this challenge with their individual skill sets. Asteroids are both a threat and an opportunity to the planet and humankind; the threat of their impact is one of the few natural phenomenon that we could expand our knowledge base enough to prevent devastation from.

**Solution Ideas**

Here are some ways for you to frame this solution:

Web pages, communications, and data visualization source code including communications code that extracts data from asteroid databases; web pages with information and embedded data visualizations; source code must use free languages and code libraries that do not require browser plug-ins; and source code with comments and associated documentation. Project Documentation can describe the design process for the communications code, the design process for the data visualizations with screenshots and code snippets to illustrate the design processes. Identify ideas for future work.

**Sample Resources**

Asteroid databases, Infographics, and data visualization libraries

* <http://www.minorplanetcenter.net/iau/MPCORB.html>
* <http://www.jpl.nasa.gov/infographics/>
* <http://neo.jpl.nasa.gov/orbits/>
* <http://tamc.github.io/Sankey/>
* <http://d3js.org/>
* <http://philogb.github.io/jit/>
* <http://ejohn.org/blog/processingjs/>

NASA Technical Reports or Research

* <http://www.ntrs.nasa.gov/search.jsp?print=yes&R=19910021668>
* <http://www.ntrs.nasa.gov/search.jsp?print=yes&R=19910015077>
* <http://www.ntrs.nasa.gov/search.jsp?print=yes&R=20050186564>
* <http://minorplanetcenter.net/physical_db>