

47th IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –  
 The Next Steps (A4)  
 Interactive Presentations - 47th IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL  
 INTELLIGENCE (SETI) – The Next Steps (IP)

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# UNIFORM AND UNIVERSAL DATA AND SIMULATION ACCESS IN SETI

## Abstract

The Search for Extra Terrestrial Intelligence (SETI) has recently entered a new era with the input of influential philanthropists and a growing interest from the scientific community. Consequently, various observatories and astronomy groups around the globe are designing and conducting their own observational SETI programs, or initiating collaborations with leading institutes.

To unite and support the worldwide SETI effort, we propose a cloud-based astronomical data standardization scheme allowing participants to access shared datasets regardless of their nature (time series, spectrograms...) or formatting (RAW, FITS, HDF5...). Uploaded datasets may either result from observations conducted with real instrumentation - as part of SETI surveys or not - or from artificially generated signals to work in a controlled environment.

The proposed platform includes distributed storage and computational resources for remote batch processing and would support machine learning training set construction and evaluation of signal detection algorithms. Interfacing processing pipelines and data becomes transparent to the user, and only processed end results are sent back to the user after computation.

We introduce here the minimum viable product for such a platform, and demonstrate a prototype based on the open source gRPC "remote procedure call" infrastructure, which transparently supports Python, C/C++, and other languages. It uses language-independent protocol buffers to specify the RPC channels and message content. As a starting point, we propose to use web pages with a specified format and standard available search engines for discovery of services. Later this may be augmented with a more formalized centralized database.