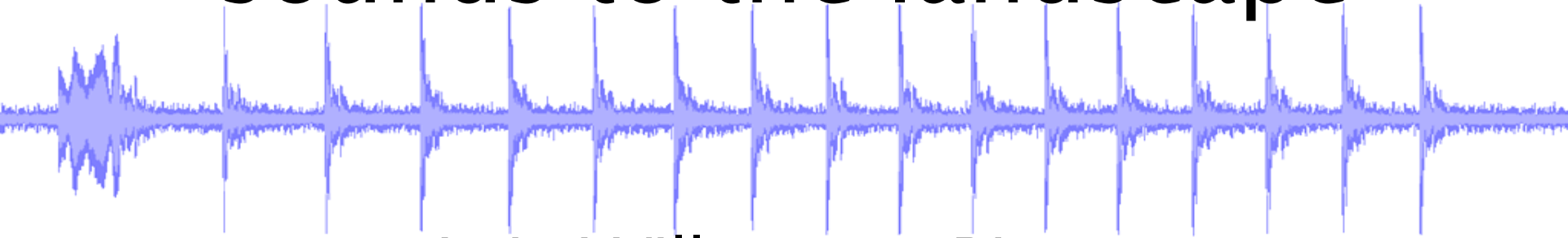


# A web-based system to link sounds to the landscape



Luis J Villanueva–Rivera























Bryan C Pijanowski

**PURDUE**  
UNIVERSITY.

Soundscape Ecology: The Complexity of  
Acoustical Patterns in Landscapes

# New tools to study soundscapes

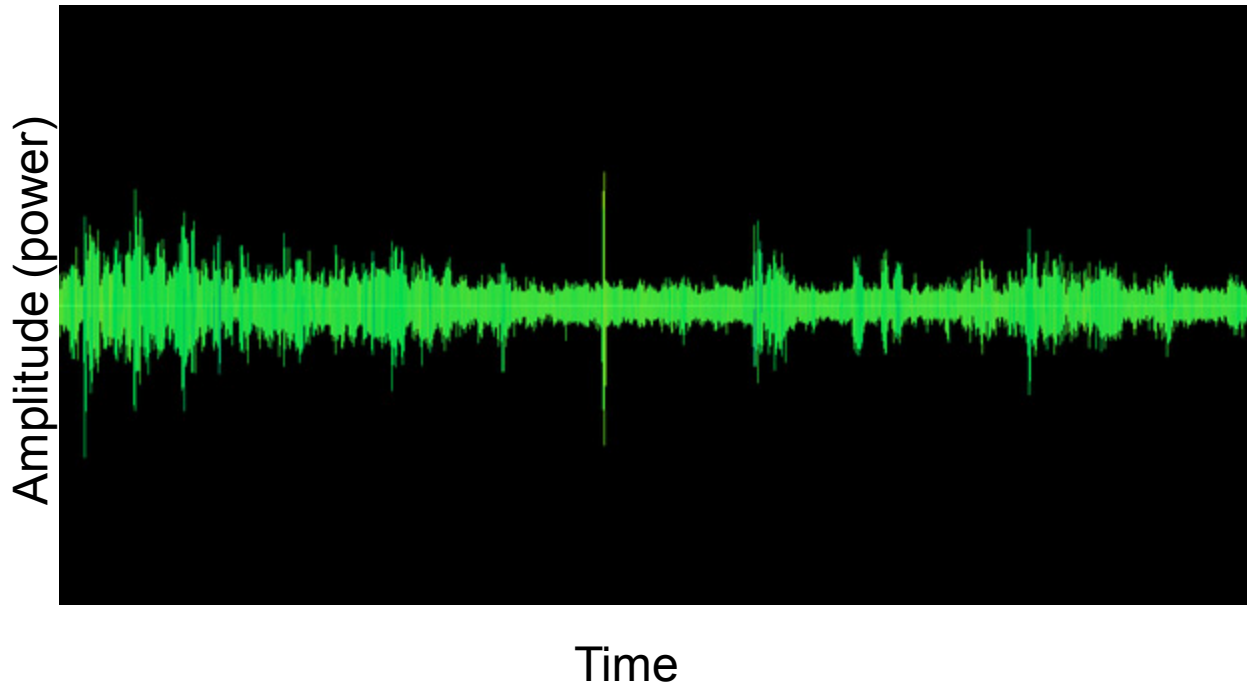
- Acoustic and bioacoustics software are limited in scope:
  - Single file workspace
- Need to store additional data
- Multiple users
- Manage large number of files

Name	Size	Type	Date Modified
 SM86_20090405_150000.flac	54.2 MB	FLAC audio	Mon 13 Apr 2009 09:25:20 PM EDT
 SM86_20090405_160000.flac	54.3 MB	FLAC audio	Mon 13 Apr 2009 09:26:23 PM EDT
 SM86_20090405_170000.flac	50.7 MB	FLAC audio	Mon 13 Apr 2009 09:27:19 PM EDT
 SM86_20090405_180000.flac	50.5 MB	FLAC audio	Mon 13 Apr 2009 09:28:19 PM EDT
 SM86_20090405_190000.flac	53.5 MB	FLAC audio	Mon 13 Apr 2009 09:29:17 PM EDT
 SM86_20090405_200000.flac	51.6 MB	FLAC audio	Mon 13 Apr 2009 09:30:17 PM EDT
 SM86_20090405_210000.flac	50.3 MB	FLAC audio	Mon 13 Apr 2009 09:31:00 PM EDT
 SM86_20090405_220000.flac	50.2 MB	FLAC audio	Mon 13 Apr 2009 09:31:15 PM EDT
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 SM86_20090406_020000.flac	50.2 MB	FLAC audio	Mon 13 Apr 2009 09:32:19 PM EDT
 SM86_20090406_030000.flac	50.2 MB	FLAC audio	Mon 13 Apr 2009 09:32:34 PM EDT
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 SM86_20090406_060000.flac	50.0 MB	FLAC audio	Mon 13 Apr 2009 09:33:35 PM EDT
 SM86_20090406_063000.flac	49.9 MB	FLAC audio	Mon 13 Apr 2009 09:33:51 PM EDT
 SM86_20090406_070000.flac	49.9 MB	FLAC audio	Mon 13 Apr 2009 09:34:07 PM EDT
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# Working with sounds

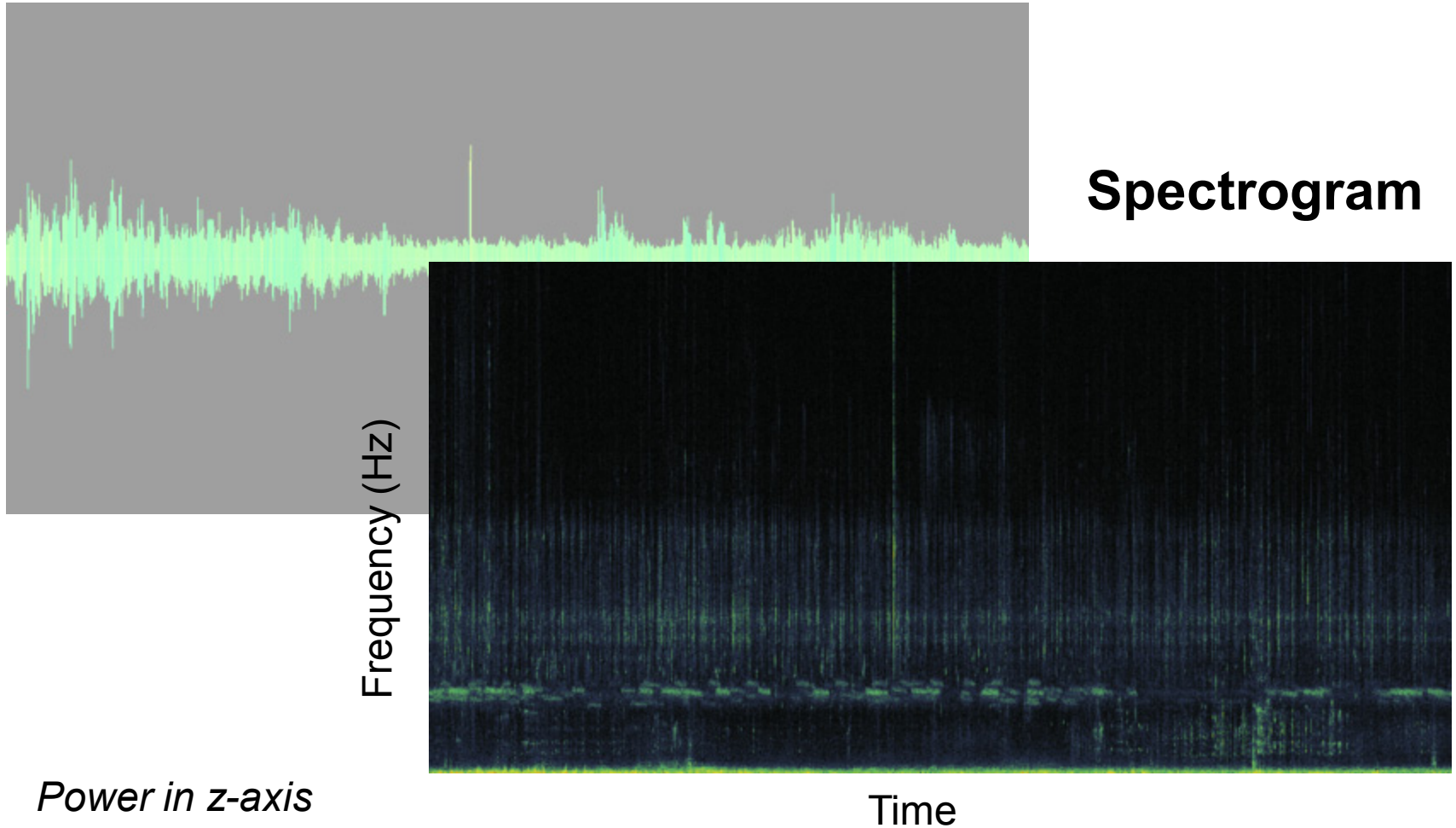


# Working with sounds



**Waveform**

# Working with sounds



# Pumilio

- Free and open source web-based sound archive
  - Interface: PHP and JavaScript
  - Several libraries
  - Database: MySQL
- Front-end for sound and analysis tools
  - SoX, FLAC, LAME



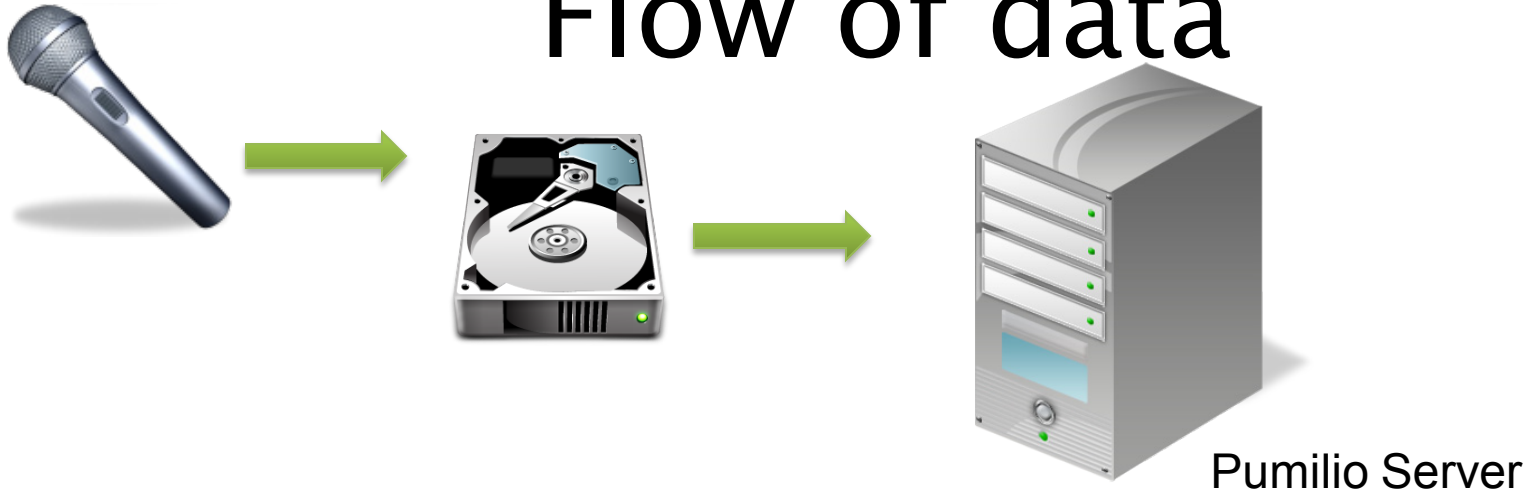


# One example

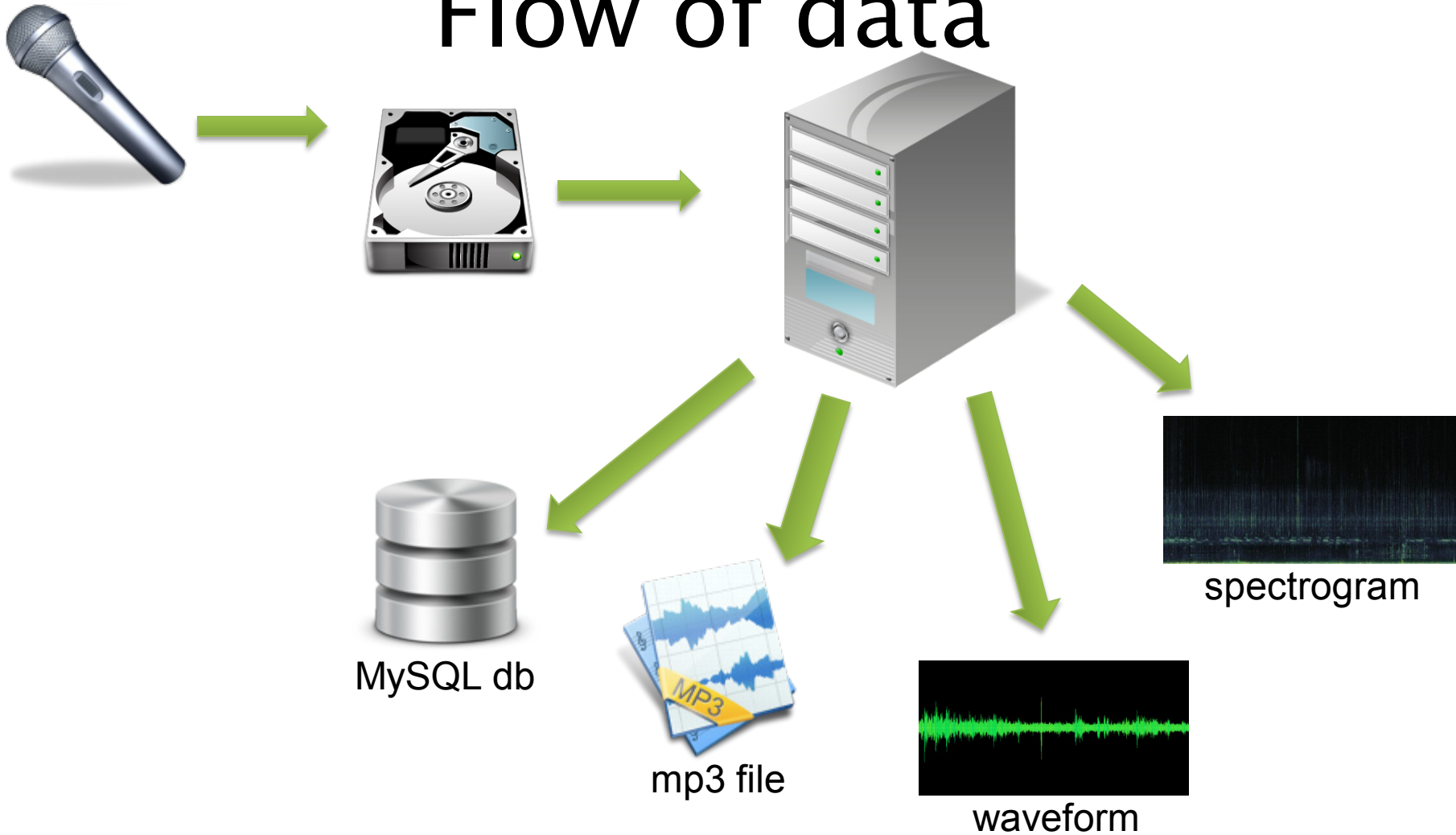
- Study of the Soundscape in the Tippecanoe County
  - 2009: 50,094 files (3.25 TB)



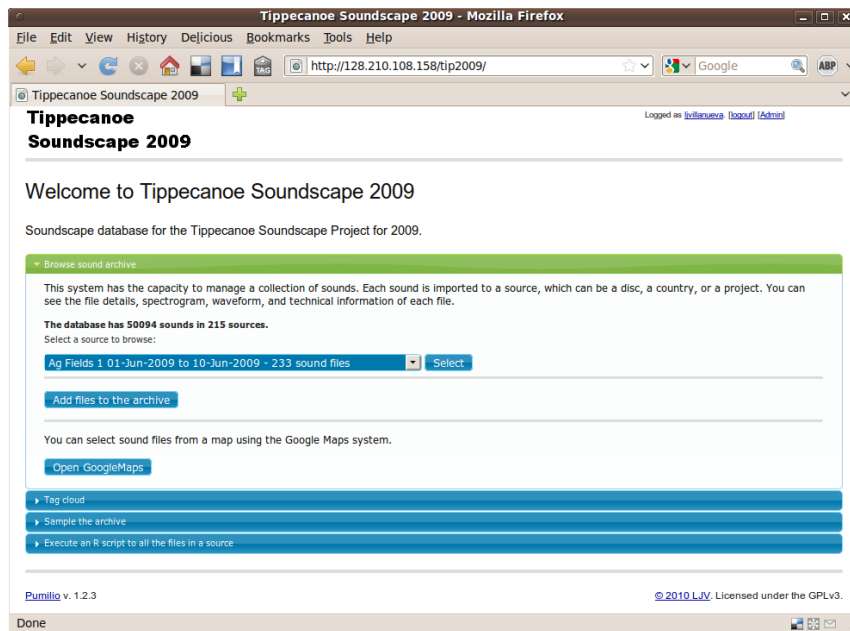
# Flow of data



# Flow of data



# Flow of data



# Flow of data



# Demo

# Current Status

- SourceForge Project  
(<http://pumilio.sourceforge.net>)
  - Live demo
- VMWare Virtual Machine demo
- Optional plugins (R scripts)
- Runs in Ubuntu Linux



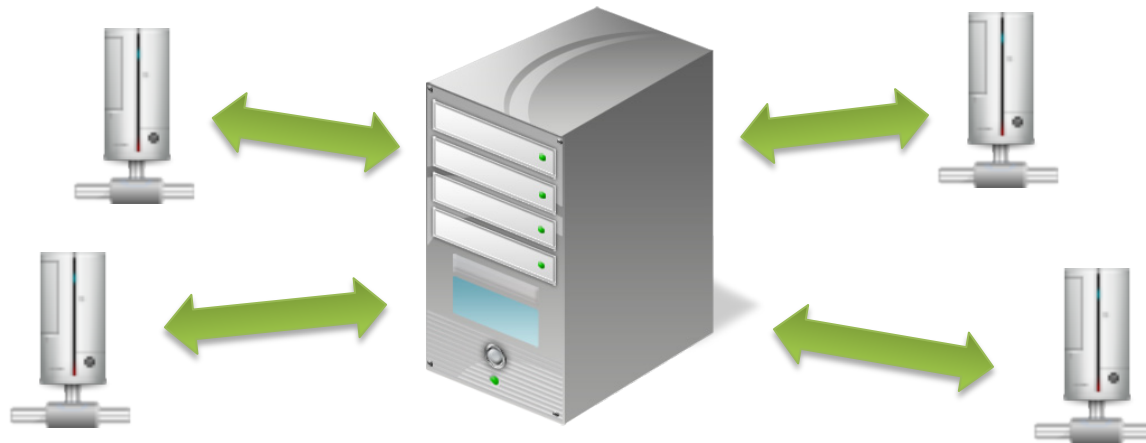
# Future Plans

- Windows version
- Export data to spatial formats (OGR library)
- Scripts for distributed computing



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# Acknowledgements

- NASA–MSU Professional Enhancement Award
- HEMA Lab
- Discovery Park
- Purdue University
- Free and open source software community

