



Birds of a Feather Meeting 2017



Laboratory for Advanced Visualization & Applications

University of Hawai'i at Mānoa & Hilo

Jason Leigh, Dylan Kobayashi, Francis Cristobal, Jared McLean

Electronic Visualization Laboratory

University of Illinois at Chicago

Maxine Brown, Luc Renambot, Lance Long,

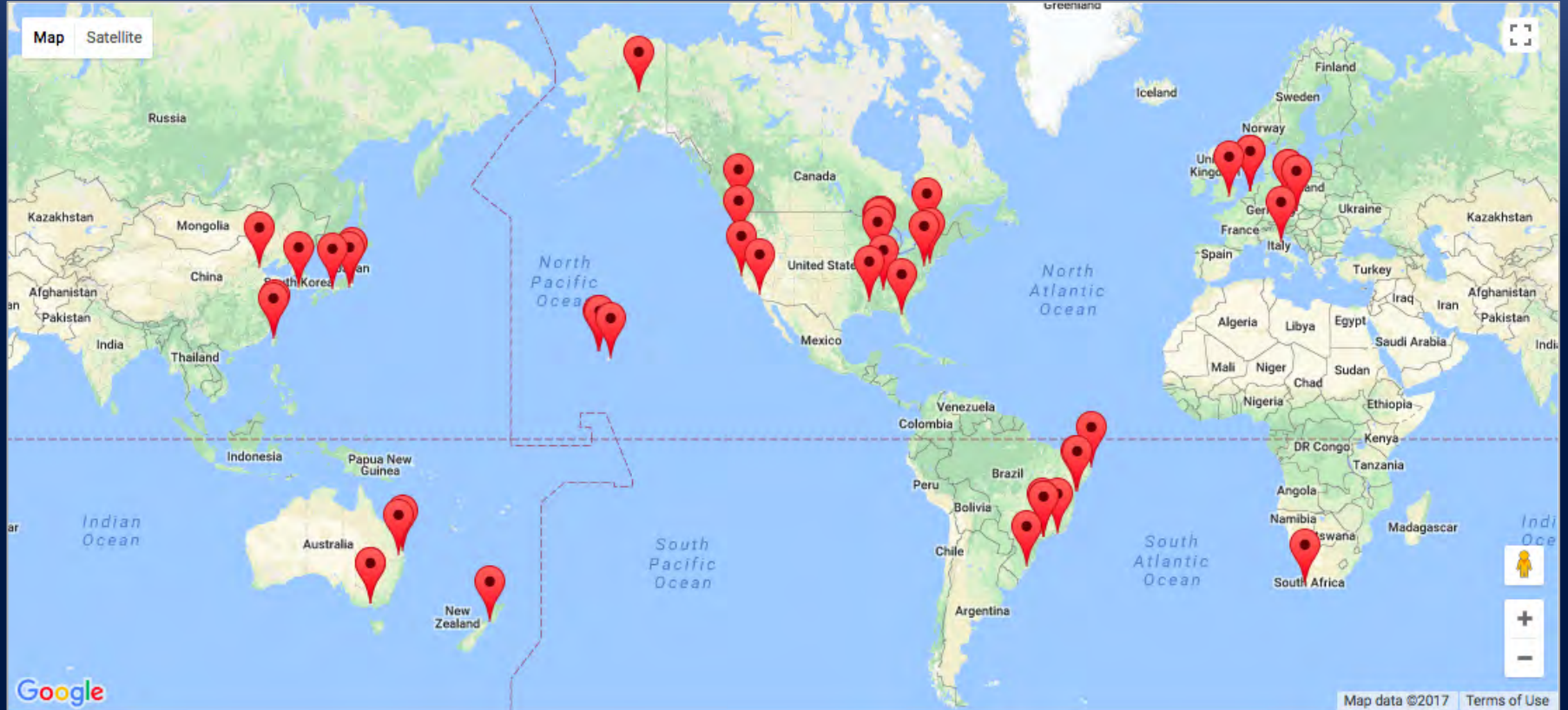
Arthur Nishimoto, Krishna Bharadwaj, Andrew Burks, Victor Mateevitsi

Kristine Lee

SAGE2 Community Update

SAGE2 User Community 2017

84 Sites: 42 International + 42 National



SAGE2 User Community 2017

84 Sites: 42 International + 42 National

AUSTRALIA

- Monash University
- RMIT, (VX)Lab
- University of Sunshine Coast (3)
- University Southern Queensland
- University of Technology Sydney

BRAZIL

- Bahia School Medicine & Public Health
- Catholic University of Salvador
- Federal University Paraíba, LAViD
- Federal Univ. Rio Grande do Sul
- Mackenzie University, LabCine
- National Institute of Space Research
- RNP, Rio de Janeiro (2)
- University of Campinas, Cinema
- University of Sao Paulo, LARC
- University of Sao Paulo, LASSU (2)

CANADA

- Ciena Research Labs
- Simon Fraser University, IRMACS

CHINA

- Tianjin University of Technology

CZECH REPUBLIC

- CESNET and Czech Technical University, SAGElab
- CESNET, Mobile SAGE
- Masaryk University, Cyber-Exercise & Research Platform Proj.
- Masaryk University, Lab of Adv. Networking Technologies (2)
- Mavenir, Network Ops Center

ITALY and SWITZERLAND

- University Urbino and ETH Zürich

JAPAN

- National Institute of Advanced Industrial Science & Technology (2)
- NTT Network Innovation Labs
- Osaka Univ., Cyber Media Center

KOREA

- Gwangju Institute of Science & Tech

NETHERLANDS

- Air France-KLM, CIO Tech Office
- SURFsara, Collaboratorium
- University of Amsterdam, SNE

NEW ZEALAND

- REANNZ

SOUTH AFRICA

- University of Cape Town, Informatics and Visualisation Lab

TAIWAN

- National Center for High-performance Computing
- National Chung Hsing University

UNITED KINGDOM

- Imperial College London

UNITED STATES

- Adler Planetarium
- Argonne National Laboratory, ALCF
- Caterpillar Inc.
- Catherine Cook School
- Chaminade University of Honolulu
- Digital Manufacturing and Design Innovation Institute (DMDII)
- Hawaii State Energy Office
- Jackson State University, ECE
- Kamehameha School
- NASA Marshall Space Center, SPoRT
- Northwestern University, iCAIR
- Stanford University, HIVE
- University of Alaska Fairbanks, DTN
- Univ. of Calif, San Diego, Calit2-QI

- Univ. of Florida Gainesville, ACIS
- University of Hawai'i at Hilo (3)
- Univ. of Hawai'i Mānoa, C-MORE
- University of Hawai'i Mānoa, HIGP
- University of Hawai'i at Mānoa, Information Technology Center
- University of Hawai'i Mānoa, i-LAB
- Univ. of Hawai'i at Mānoa, LAVA (3)
- University of Hawai'i at West Oahu, Academy for Creative Media
- University of Illinois Chicago, ACM/LUG Student Chapters
- University of Illinois Chicago, Comm.
- Univ. of Illinois Chicago, EVL (5)
- University of Illinois Chicago, Maker Space
- University of Illinois at Chicago, Innovation Center
- Univ. Illinois Chicago, Ophthalmology
- Univ. Illinois Chicago, Pathology (2)
- Univ. Illinois Urbana-Champaign, NCSA
- University of Maryland, Baltimore County, ARC
- University of Oregon
- Univ. of Pennsylvania, Idea Factory

SAGE2 User Sites 2017 Examples International



AUSTRALIA, Monash Univ.,
Monash Immersive
Visualisation Platform



CHINA, Tianjin University of
Technology



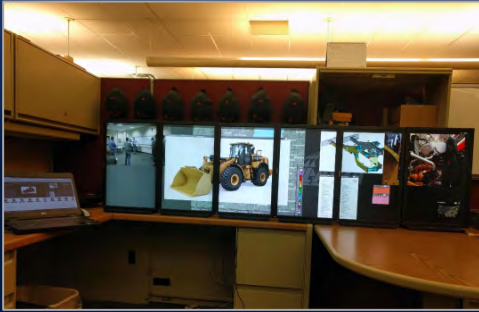
JAPAN, National Institute of
Advanced Industrial Science
and Technology (AIST)



TAIWAN, National Chung Hsing
University

SAGE2 User Sites 2017 Examples

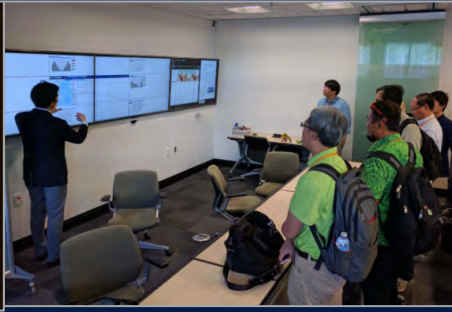
National



USA, Caterpillar Inc.



USA, Univ. Alaska Fairbanks,
Decision Theater North



USA, University of Florida
Gainesville, ACIS



USA, University of Hawai'i at
Hilo, Mookini Library



USA, Univ. of Hawai'i Mānoa,
Information Technology Center
SAGE BOF 2017



USA, University of Illinois
at Chicago, Innovation
Center



USA, Univ. Oregon, Allan
Price Science Commons &
Research Library



USA, Univ. Pennsylvania,
Biomedical Informatics, Idea
Factory
www.sagecommons.org

2017 Survey Statistics

- 67% educational institutions, ~10% national labs, ~10% companies
- 40% of organizations have more than 1 wall
- Evenly spread between Windows & Linux
- Over 55% use 1 PC
- Main uses are for lecturing, presentations, holding meetings
- Favorite Features: Ability to drag content from laptop to wall, desktop sharing, collaborative interaction, ease of deployment, multiple pointers, web-based, remote interaction, ability to create custom 3D (WebGL) applications

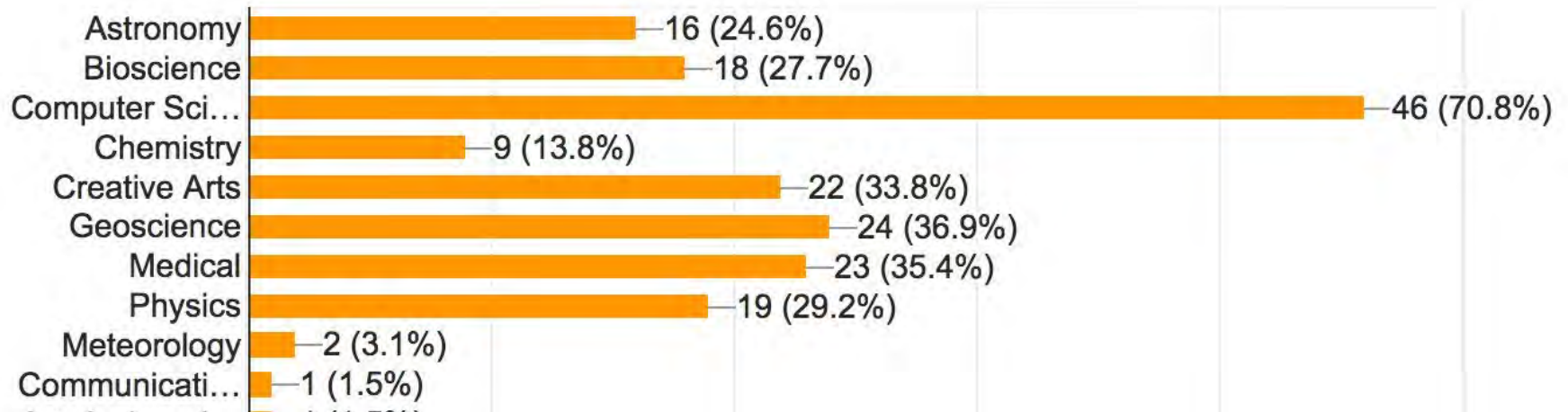
For more survey results: <http://bit.ly/2z2vAYg>

Type of Content

What type of content is displayed on your wall?

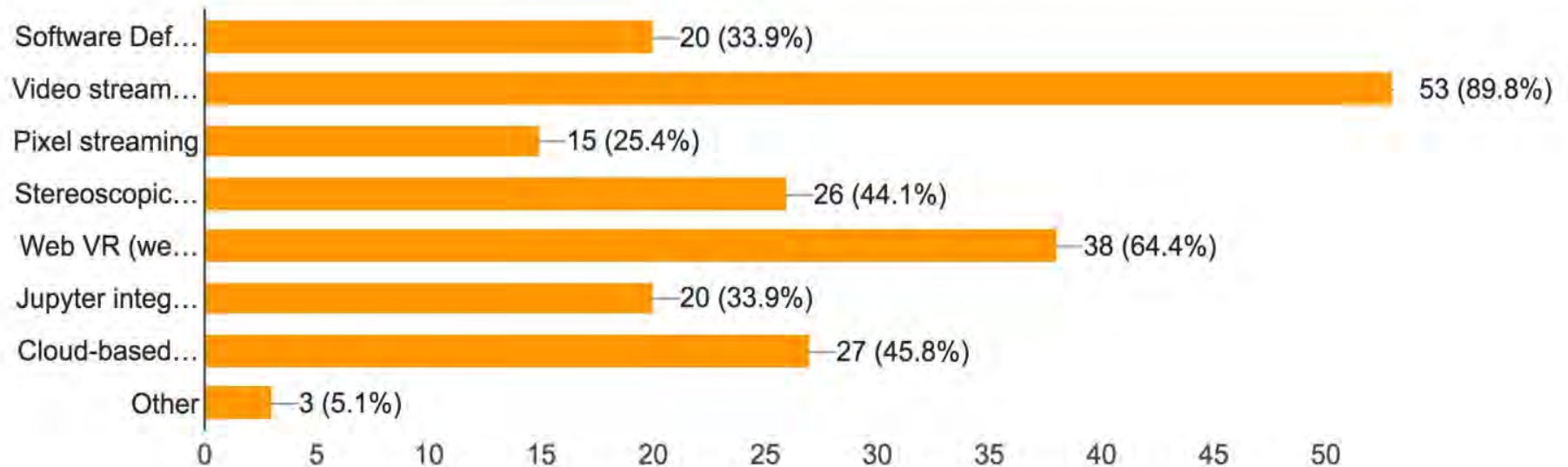


65 responses



Desired Future Features

Are there new SAGE2 capabilities you would like to see? (59 responses)



Web Apps Survey

<http://sage2.sagecommons.org/SAGE2-Apps-edited.htm>

Agricultural Research Service, AgroClimate, Appear.in, ArcGIS open data portal, Arctic DEM Explorer (ArcGIS), AWWapp, Bio.js, BoxDICOM, Canva, ChartAccent, Chicago Data Portal, Circos, Cornerstone, Crime Mapping, CyberGIS, CytoScape, D3.js Snippet, Earth: Wind, Weather, Ocean map, Emperor, Epiviz, Excellence, Networks, Exoplanet Data Explorer, FleetMon, Flowing Data, Google Docs, Google Hangout, Google Public Data Explorer, Google streetview, Grafana, Institute of health metrics and evaluation, JBrowse, Jupyter, MetaViz, Nano Hub, NASA Worldwind, National Academies Press, NGL Viewer, NOAA History Hurricane Track, NORSE, Ocean Data View, Ocean Data Viewer, Open Health Imaging Foundation, Open Street Map, Papaya, Pathway diagrams, Pileup.js, Polar Geospatial Center, Potree, Protein Data Bank (PDB), PubMed, Shadertoy, ShareLaTeX, SizzLine, Skype, Slack, SlideShare, Smelly Maps, SuAVE, TerraFly, The Climate Explorer, Tinkercad, United States Census - DataViz, USGS latest earthquakes map+data, VTK.js, Weather underground, Worldwide Telescope html5 version

SAGE2 v3 - Waipi'o



Integration with Scientific Workflows

Jupyter

Jupyter



Andrew Burks (UIC)

- **Jupyter** is becoming a popular data science platform
- **JupyterLab** aims to build on **Jupyter Notebooks** to provide a powerful, extendable interface
- We provide an extension to **JupyterLab** to integrate **SAGE2** into Jupyter-based data science workflows



[<http://jupyter.org>]



SAGE²™

Scalable Amplified Group Environment

User Interface Improvements

Voice Commands
Remote Pointers

Voice Commands

- Users can control SAGE wall and applications like Siri.
- Three types of commands:
 - Wall
 - Tile content, launch application, restore session
 - Application
 - Maximize, share, context menu entries
 - User Interface
 - Time, help



Dylan Kobayashi
UH Manoa



SAGE2TM

Scalable Amplified Group Environment

Remote Pointers

Improves distance collaboration by enabling remote users to simultaneously point at things in shared documents.

SAGE2TM

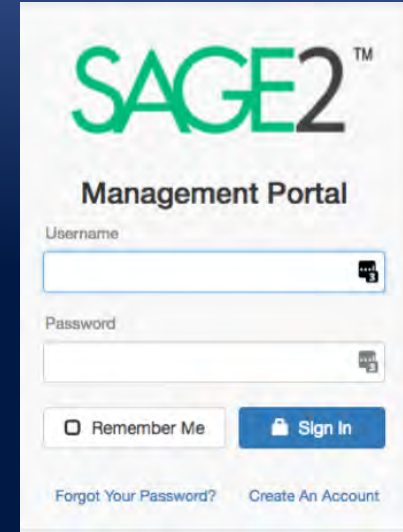
Scalable Amplified Group Environment

Management Capabilities

Cloud-based Installation Performance Monitoring

SAGE2cloud

- Simplify SAGE2 deployment
 - One click SAGE2 server installation and configuration
 - Monthly SAGE2 version selector
 - One-click updater
 - Support for multiple users and machines
- Provide a scalable environment for deploying and managing multiple SAGE2 servers



The screenshot shows the SAGE2 Management Portal login interface. At the top is the SAGE2 logo in green and black. Below it is the title 'Management Portal'. There are two input fields: 'Username' and 'Password', each with a small icon to its right. Below the password field is a checkbox labeled 'Remember Me' and a blue 'Sign In' button. At the bottom, there are two links: 'Forgot Your Password?' and 'Create An Account'.

Victor Mateevitsi, UIC



SAGE2cloud Implementation

Single Machine



Multiple Machines

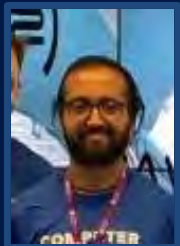
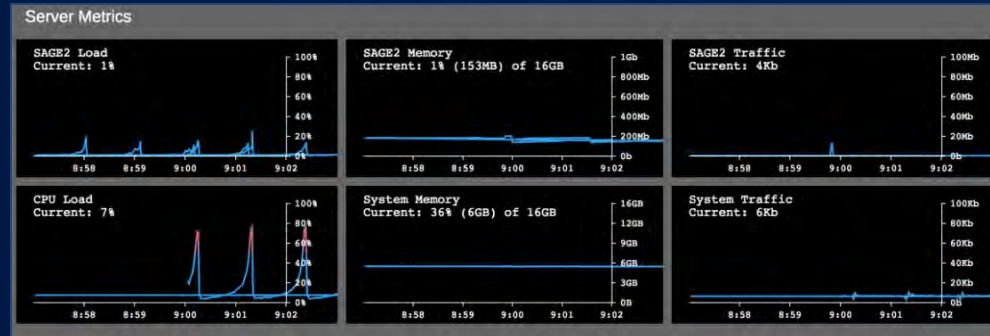
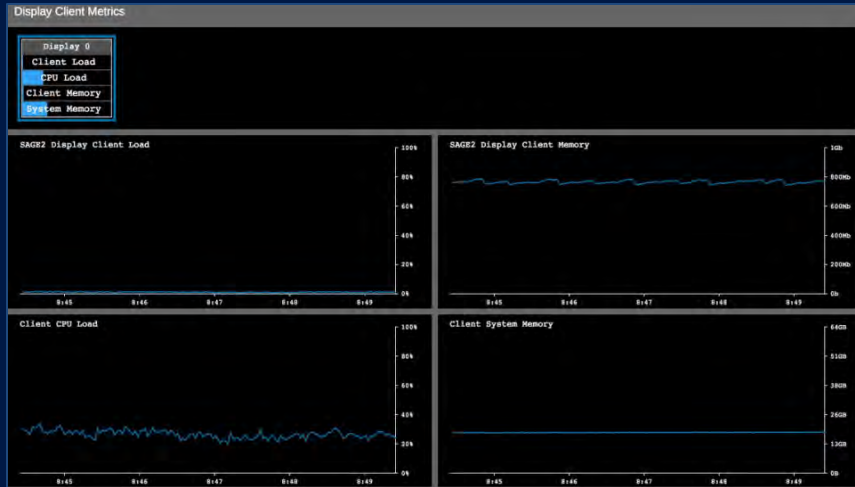


SAGE2TM

Scalable Amplified Group Environment

SAGE2 Performance Monitoring

Performance monitoring tool to monitor the general “health” of the SAGE2 system- to quickly pinpoint the cause of bottlenecks.



Krishna Braradwha,
UIC

Application Development

Synchronized Movieplayer

Chemistry Viewer

Notepad

Unity3D

Synchronized Movie Control

Control of multiple video players together to allow synchronized views of pre-rendered scientific visualizations.

Thank you National Center for High Performance Computing (Taiwan) for the idea and feedback.

NAR Labs

National Applied Research Laboratories

National Center for
High-performance Computing

Dylan Kobayashi
UH Manoa



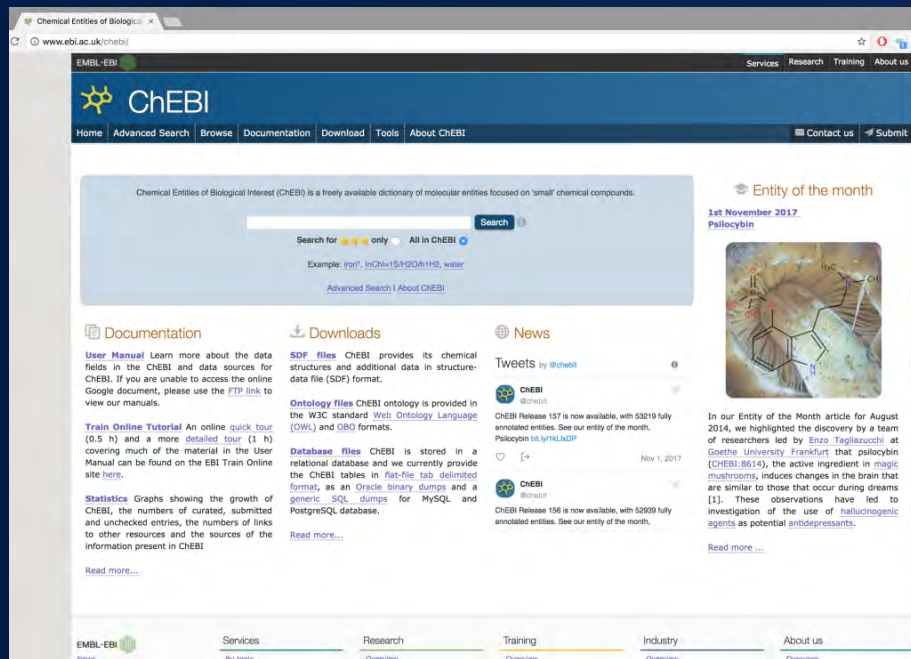
SAGE2TM

Scalable Amplified Group Environment

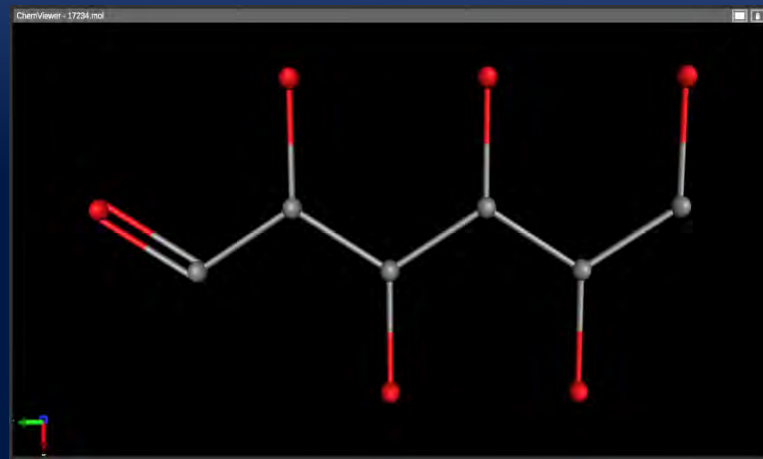
ChemViewer Updates

Expanded to show information from

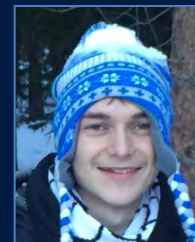
<http://www.ebi.ac.uk/chebi/>



The screenshot shows the ChEBI (Chemical Entities of Biological Interest) website. The header includes the ChEBI logo and navigation links: Home, Advanced Search, Browse, Documentation, Download, Tools, About ChEBI, Services, Research, Training, and About us. A search bar is prominently displayed with a search button. Below the search bar, there are sections for Documentation (User Manual, Train Online Tutorial), Downloads (SDF files, Ontology files, Database files), and News (Tweets by @chebi, ChEBI Release 157, ChEBI Release 156). The right sidebar features the 'Entity of the month' section, highlighting Psilocybin as the entity for November 2017, accompanied by a microscopic image of the molecule.

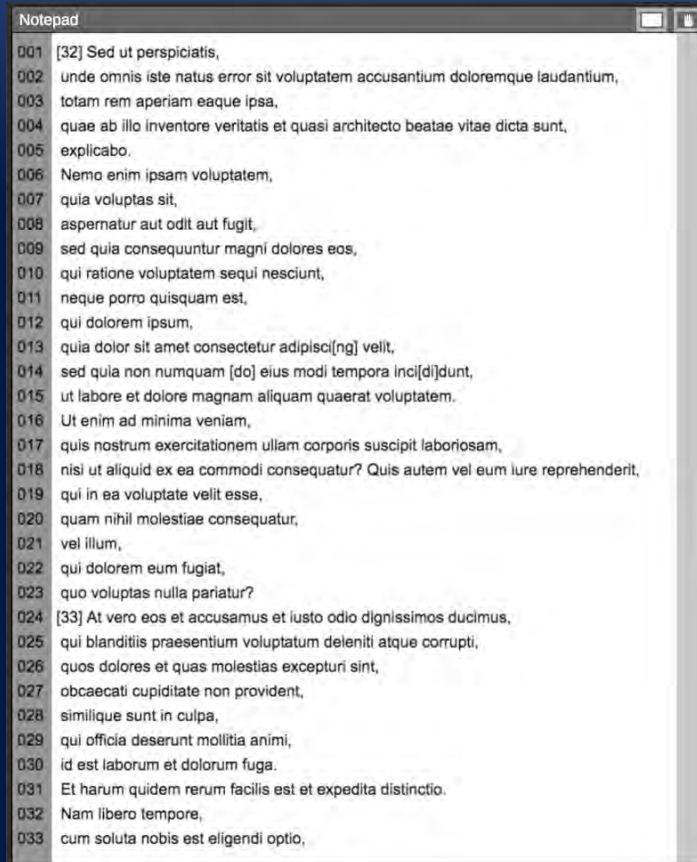


Jared McLean
UH Hilo



Notepad Update

Now supports text scrolling



Jirayu Rounsuriyaviboon
Mahidol University,
Thailand



Unity WebGL in SAGE2

Framework to allow developers to create Unity applications and use SAGE2 to display the application at the full resolution of the display wall



Arthur Nishimoto
UIC

Under Development

User Access Control Application Data Sharing

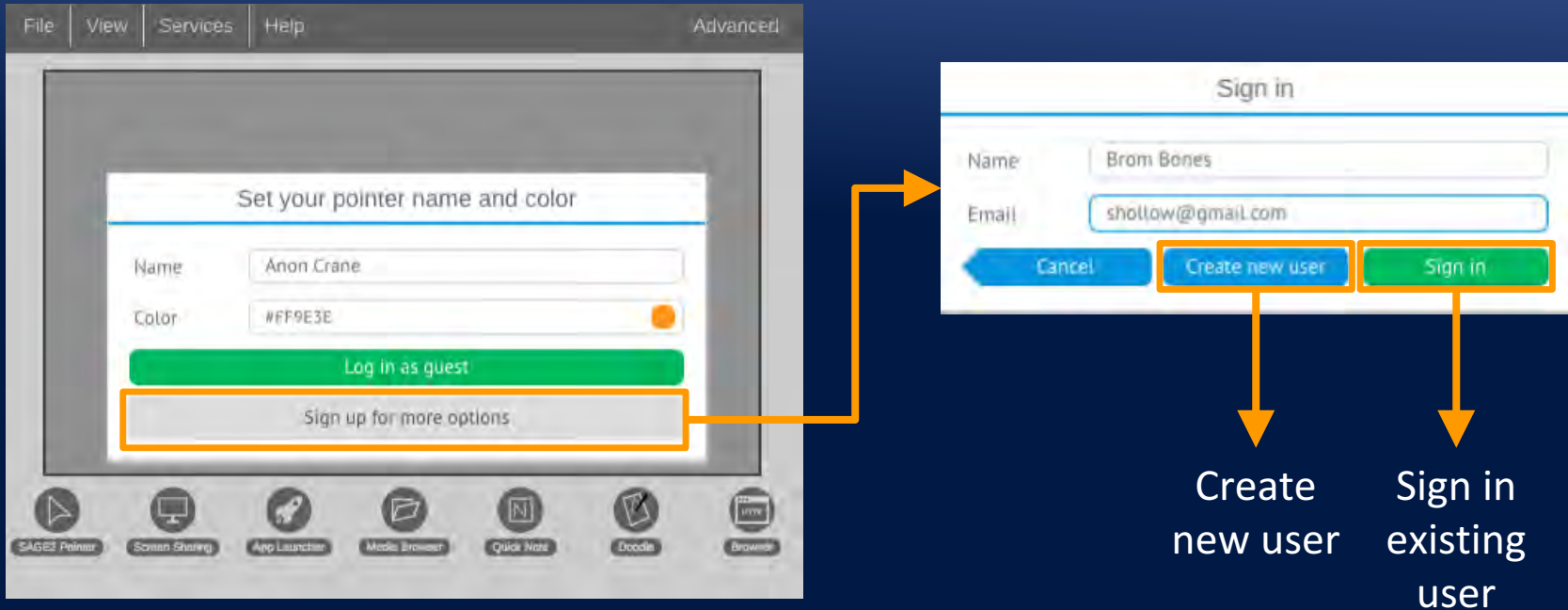
User Access Control

- Distinguish between people using SAGE2
 - Access and authorization
 - Log activity—who did what
 - Scenarios and roles, e.g.
 - Group meeting with a leader
 - Teachers / students

Kristine Lee, UIC

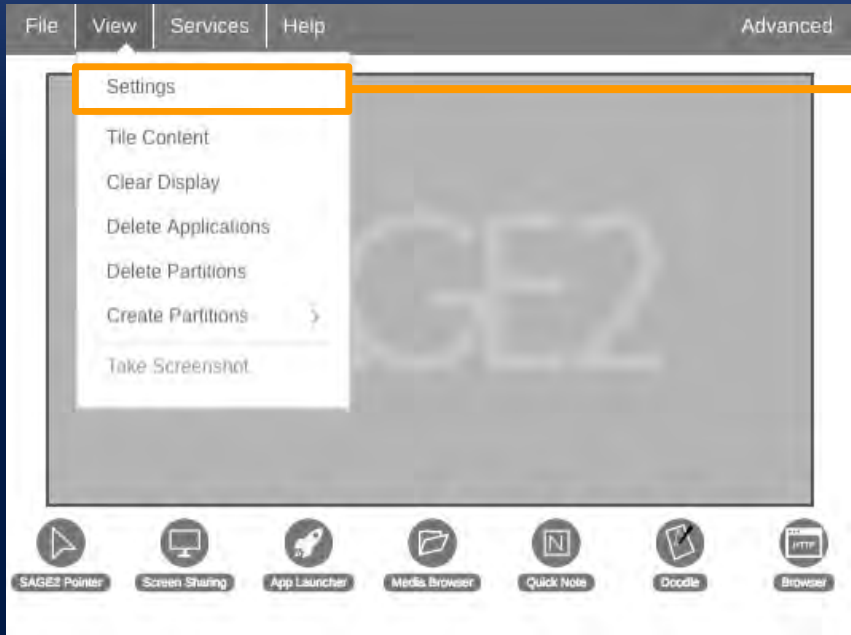


User Access Control

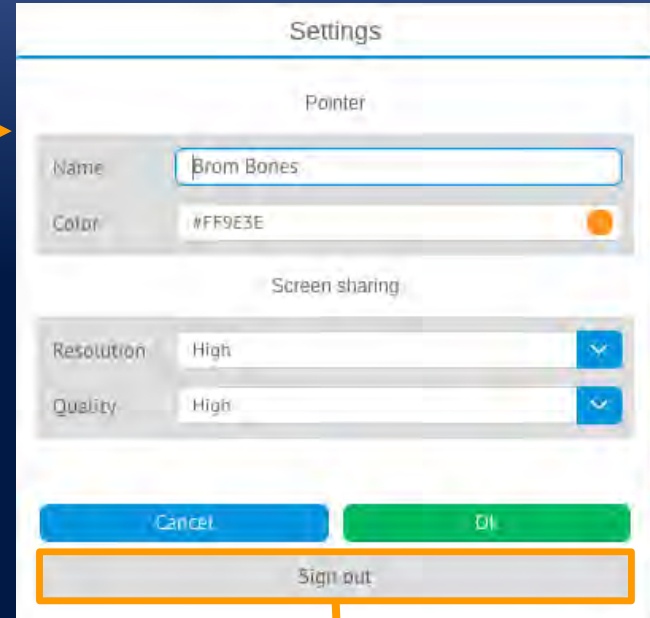


Anonymous guests are prompted to log in

User Access Control



User can also sign in/out in View > Settings

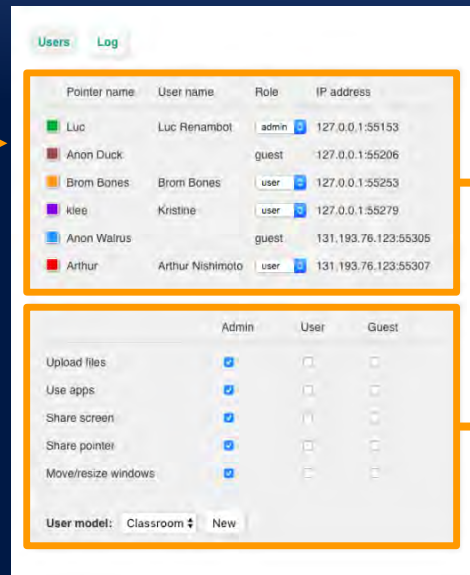


Sign out

User Access Control



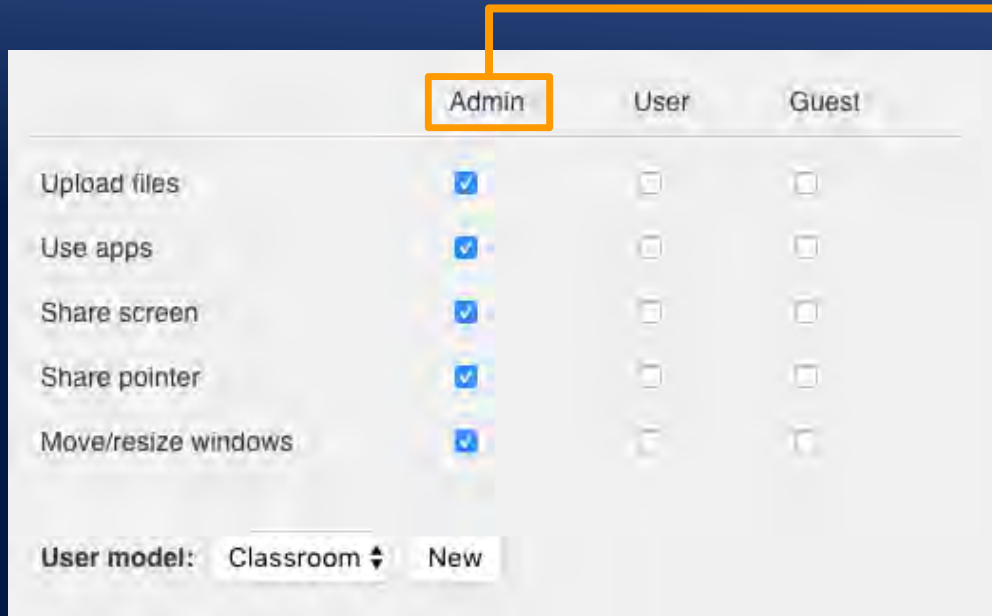
Open the User Console via the
Advanced menu



See who's
connected

Manage
roles and
permissions

User Access Control



A screenshot of a user permissions configuration interface. It features a table with three columns: 'Admin', 'User', and 'Guest'. The 'Admin' column is highlighted with an orange box. Below the table, there is a 'User model:' dropdown set to 'Classroom' and a 'New' button. An orange line connects the 'Admin' header to the 'admin' role in the second screenshot.

	Admin	User	Guest
Upload files	☒	☐	☐
Use apps	☒	☐	☐
Share screen	☒	☐	☐
Share pointer	☒	☐	☐
Move/resize windows	☒	☐	☐

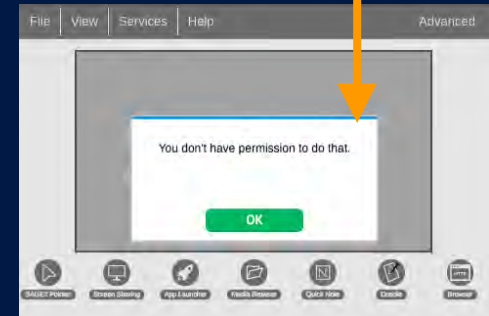
User model: Classroom ▾ New

Example scenario: only the teacher (admin role)
has permission to use the wall



A screenshot of a user list interface. It has three columns: 'Pointer name', 'User name', and 'Role'. The 'admin' role for 'Luc Renambot' is highlighted with a blue box, and the 'User' role for 'Brom Bones' is highlighted with an orange box. An orange line connects the 'User' role to the error message in the third screenshot.

Pointer name	User name	Role
Luc	Luc Renambot	admin
Anon Duck		guest
Brom Bones	Brom Bones	User



Actions by unauthorized
users are disabled

SAGE User Access Model

Next Features

- Secure authentication
 - Currently using username/email as login keys
 - Integrate Passport/Express
- Authorized access to user console
- Extended role creation
 - Currently limited to admin/user/guest

Application Data Sharing

- Data sharing was added to SAGE2 application API to allow multiple applications to work as one large application
- Also enable applications to be designed like components that other developers can utilize
- Applications are able to launch other applications
- This allows not only data passing, but window manipulation

Dylan Kobayashi (UHM),
Jason Haga (AIST)



SageRDI

Sage River Disaster Information

Laboratory for Advanced Visualization & Applications
University of Hawai'i at Mānoa

lava.hawaii.edu



SAGE2 v3 - Waipi'o

- Available now!!!!
- Download Windows binary
- Standalone binaries for Display and UI clients available
 - Windows, macOS, Linux
- Install scripts for major Linux distribution
- Docker image on Docker Hub
 - <https://hub.docker.com/r/sage2/master/>

Documentation

<http://sage2.sagecommons.org/instructions/>

- Installation documentation
- New features in V3
- Introduction to SAGE2
- User Interface walkthrough
- SAGE2 Security
- Mouse and keyboard operations and shortcuts
- Voice commands
- Developer documentation
- SAGE2 code and API
- Command line operation

SAGE2 @ SC17

Center for Data Intensive Science Booth 1653

AIST Booth 1211

SCinet



For Help

- Web
 - sagecommons.org
- Google group
 - <https://groups.google.com/forum/#!forum/sage2>
- Slack
 - sage2.slack.com



Thank You



NSF #OAC-1441963 SAGE2
NSF #OAC-1550126 CENTRA

NSF #OAC-1450871 StarLight SDX
NSF #CNS-1530873 MRI CyberCANOE

