

2019 Spring HDMA Lightning Talk Series
Date/Time: March 29 (Friday at 11:00am)

Developing a **Health Science** Knowledge Repository and Open Data Portal

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HDMA
@SDSU

THE CENTER FOR
HUMAN DYNAMICS
IN THE MOBILE AGE



SAN DIEGO STATE
UNIVERSITY

SDSU HealthLINK

Center for Transdisciplinary **Health Disparities** research (2018- 2023)

Funder: **National Institutes of Health (NIH)**: National Institute on Minority Health and Health Disparities (NIMHD) (**U54MD012397**)

MPIs: Guadalupe X. Ayala, PhD, MPH, and Kristen Wells, PhD.
(\$19 millions for five years)

We seek to enhance our institutional capacity to engage in **basic biomedical, behavioral, and clinical** MHHD research by developing a Research Infrastructure Core (RIC)....

- **Administrative Core**
- **Research Infrastructure Core**
- **Investigator Development Core**
- **Community Engagement Core**
- **Research Projects (RPs)**
- **Pilots Projects**



SDSU
HEALTHLINK
Leveraging Infrastructure, Networks, and
Knowledge to reduce health disparities

Research Infrastructure Core Co-leaders

Multiple PIs



Guadalupe X. "Suchi" Ayala,
Co-Lead



Kristen Wells,
MPI Lead, Co-Lead



Scott Kelley,
Co-Lead



Kee Moon,
Co-Lead



Yusuf Ozturk,
Co-Lead



Ming-Hsiang "Ming" Tsou
Co-Lead

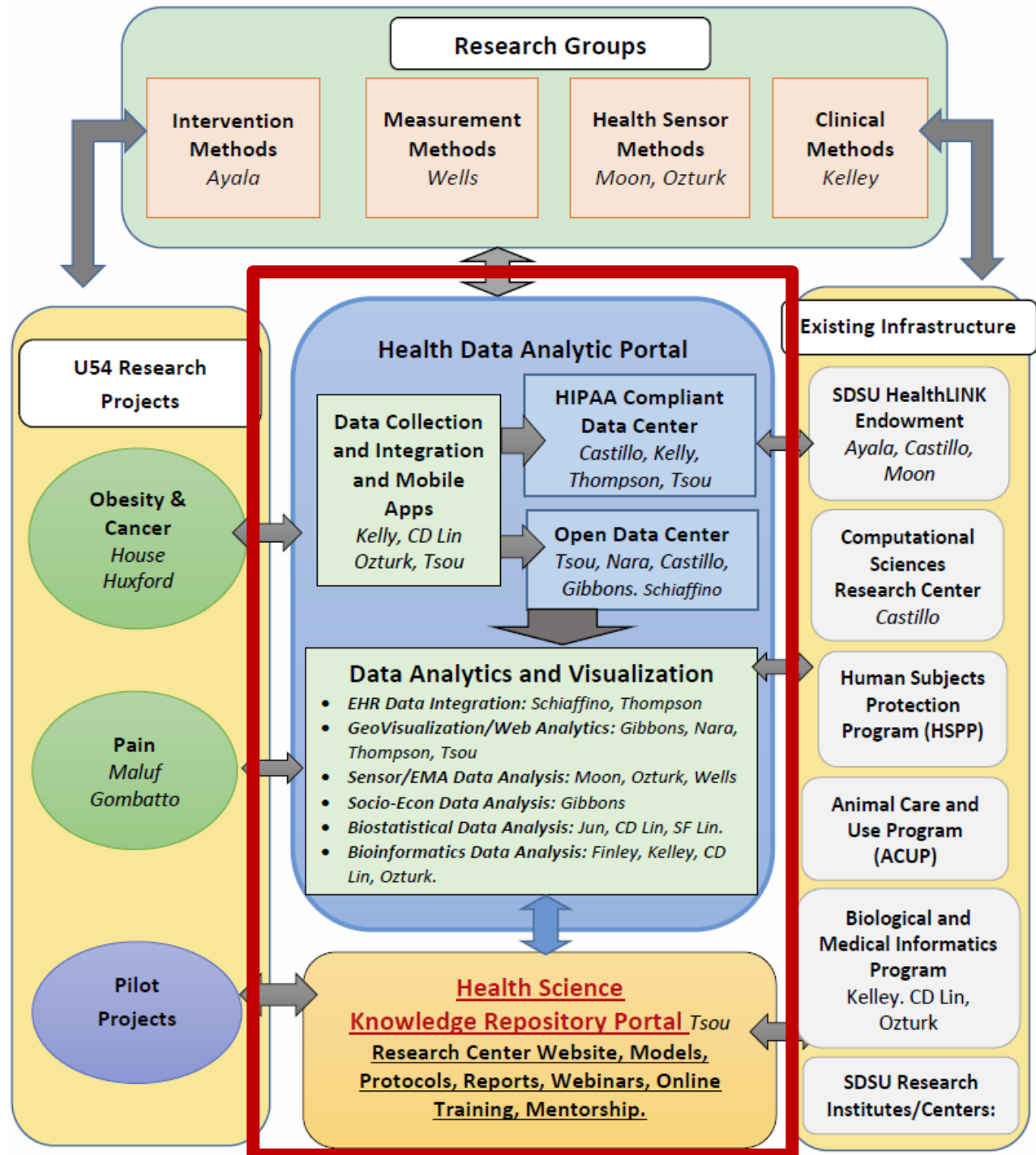


Julie Pickrel,
Center Research Manager

HealthLink: Research Infrastructure Component (RIC) Structure

Health Science Knowledge Repository Portal (WordPress + Research Profile Networking + HUBzero)

Health Data Analytics Portal (HUBzero + HIPPA VMs + Research VMs + web applications for data analytics and visualization)



Research Groups

- Intervention Methods**
Ayala
- Measurement Methods**
Wells
- Health Sensor Methods**
Moon, Ozturk
- Clinical Methods**
Kelley

- U54 Research Projects**
- Obesity & Cancer**
House, Huxford
 - Pain**
Maluf, Gombatto
 - Pilot Projects**

Health Data Analytic Portal

- Data Collection and Integration and Mobile Apps**
Kelly, CD Lin, Ozturk, Tsou
- HIPAA Compliant Data Center**
Castillo, Kelly, Thompson, Tsou
- Open Data Center**
Tsou, Nara, Castillo, Gibbons, Schiaffino
- Data Analytics and Visualization**
 - *EHR Data Integration: Schiaffino, Thompson*
 - *GeoVisualization/Web Analytics: Gibbons, Nara, Thompson, Tsou*
 - *Sensor/EMA Data Analysis: Moon, Ozturk, Wells*
 - *Socio-Econ Data Analysis: Gibbons*
 - *Biostatistical Data Analysis: Jun, CD Lin, SF Lin*
 - *Bioinformatics Data Analysis: Finley, Kelley, CD Lin, Ozturk*

- Existing Infrastructure**
- SDSU HealthLINK Endowment**
Ayala, Castillo, Moon
 - Computational Sciences Research Center**
Castillo
 - Human Subjects Protection Program (HSPP)**
 - Animal Care and Use Program (ACUP)**
 - Biological and Medical Informatics Program**
Kelley, CD Lin, Ozturk
 - SDSU Research Institutes/Centers:**

Health Science Knowledge Repository Portal *Tsou*
Research Center Website, Models, Protocols, Reports, Webinars, Online Training, Mentorship.



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Health Science Knowledge Repository Portal

- Provide the HealthLINK center website (WordPress), researcher profiles and publications (Research Profile Networking), sharable research models (HUBzero), lab protocols, technical reports, research webinars, online training materials (HUBzero), and mentorship information (RPN).
- **WordPress:** is a open-source content management system (CMS), Easy to customize website contents with multiple user access.
- **Research Profile Networking (RNS)** is an NIH-funded open source tool to speed the process of **finding researchers with specific areas** of expertise for collaboration and professional networking. (adopted by UCSD and UCSF already).
- **HUBzero** is an open source software platform for building websites that support scientific activities (project and groups, data sharing, simulation tools, video seminars and lectures, etc.) created at Purdue University via NSF funding.

Research Profile Networking (RNS)



HARVARD
CATALYST

Harvard Catalyst Profiles

Contact, publication, and social network information about Harvard faculty and fellows.

[Created at Harvard University](http://profiles.catalyst.harvard.edu/)

<http://profiles.catalyst.harvard.edu/>


Home About Help History (1) Search Profiles (people, publications, concepts, etc.)


Login to edit your profile (add a photo, awards, links to other websites, etc.)

Profiles Stats

24197 People
724498 Publications
16531 Grants

Recent Updates

 **Nathalie Pochet**
March 28, 2019
added a publication from:
BMC genomics

 **Nienke Moret**
March 28, 2019
added "Bsc
Pharmaceutical Sciences,
Cum Laude" into awards
and honors section

 **Ronak Patel**

Find People Find Everything Else

Find People by Research Topic or Name

Research Topics

Search for exact phrase

and / or

Last Name

First Name

Institution All

Department All

Faculty Type

Most viewed (today)

women's health
beth
israel
laura
gender bias
Contreras
David
nathan
Nelson
Thrombopoiesis

UCSan Diego

Powered by Altman Clinical and Translational Research Institute



UCSD Profiles
search, discover, network

Everything

SIGN IN TO EDIT ABOUT HELP / FAQ SEARCH OPTIONS

UCSD Profiles Metrics


100464 Publications
7247 Total Profiles
642 Edited Profiles

Network Updates

from all participating institutions

 **John Yue UCSF**
March 28, 2019

added a publication from:
Operative neurosurgery
(Hagerstown, Md.)

 **Vineeta Singh UCSF**
March 28, 2019

added a publication from:
The Biochemical journal

 **Eduardo Rodriguez Almaraz UCSF**
March 28, 2019

Find People by Research Topic or Name

Research Topics

and/or

Last Name

First Name

School

Researcher Type

More Options

Most viewed

John
ophthalmology
Spinal Cord Injuries
david
Thomas
Cohen
Asian American
deborah
Paul
Jeffrey

<https://profiles.ucsd.edu/search/>

What is UCSF Profiles?

A Research Networking and Expertise Mining Tool

Winner of the 2013 UC Sautter Golden Award

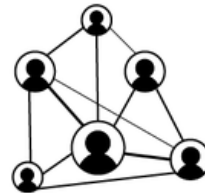
Search



Experts, Collaborators, Mentors

- 100,000+ publications
- 3000+ UCSF faculty
- 1400+ UCSF residents and fellows
- 1000+ UCSF postdocs
- 30 biomedical institutions nationwide

Discover Networks



Peoples' Research Connections

- Who co-authored together
- Who worked on similar research topics

Edit Your Profile

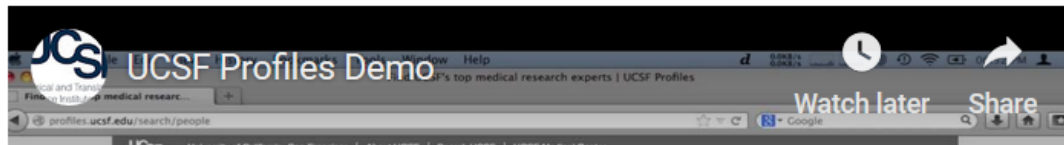


Information About Your Research

- Overview to describe your work
- Photo, website links, and awards
- Mentoring information
- Your presentations on SlideShare
- Edit your publications if necessary

[Edit your profile now »](#)

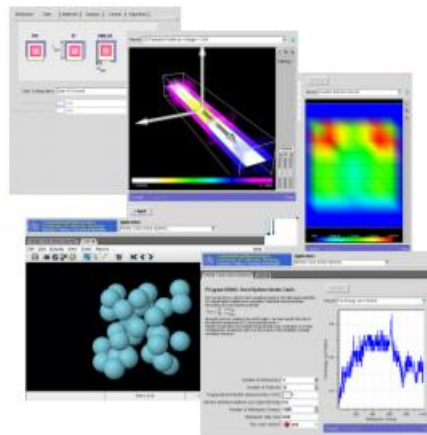
Watch this short introduction video!



HUBzero: A “Collaboratory” (science gateway) for Team Science

More than just apps

Simulation & Modeling Tools



Tech Reports
Teaching Materials



Seminars
Tutorials



Data from
Experiments

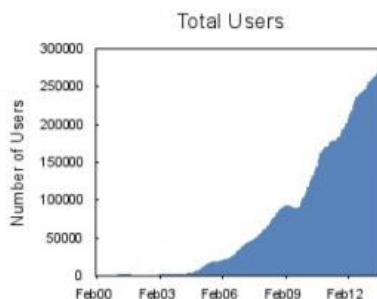


HUBzero example: <http://nanohub.org/>

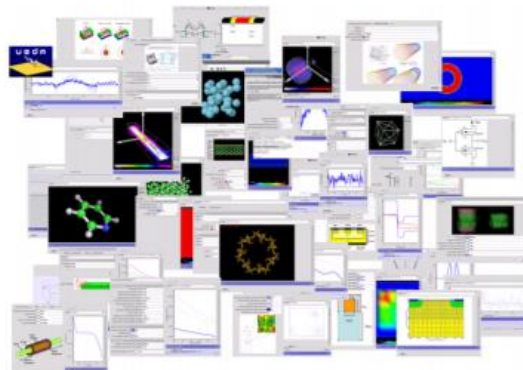
Example: nanoHUB.org



Network for
Computational
Nanotechnology
Established in 2002



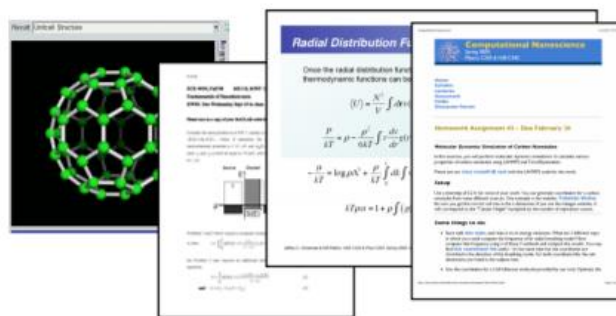
266,000 users



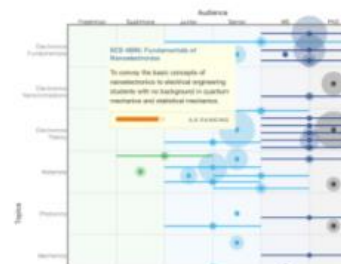
317 simulation tools



3,071 seminars



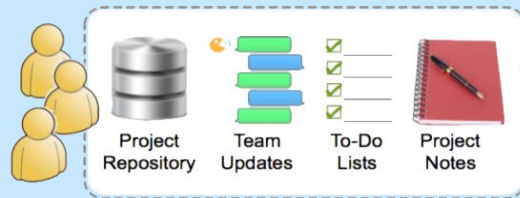
556 teaching materials



82 courses

HUBzero Platform (PHP and Joomla)

Open Source and Customizable for Public Health Research Tasks



Work in private project areas

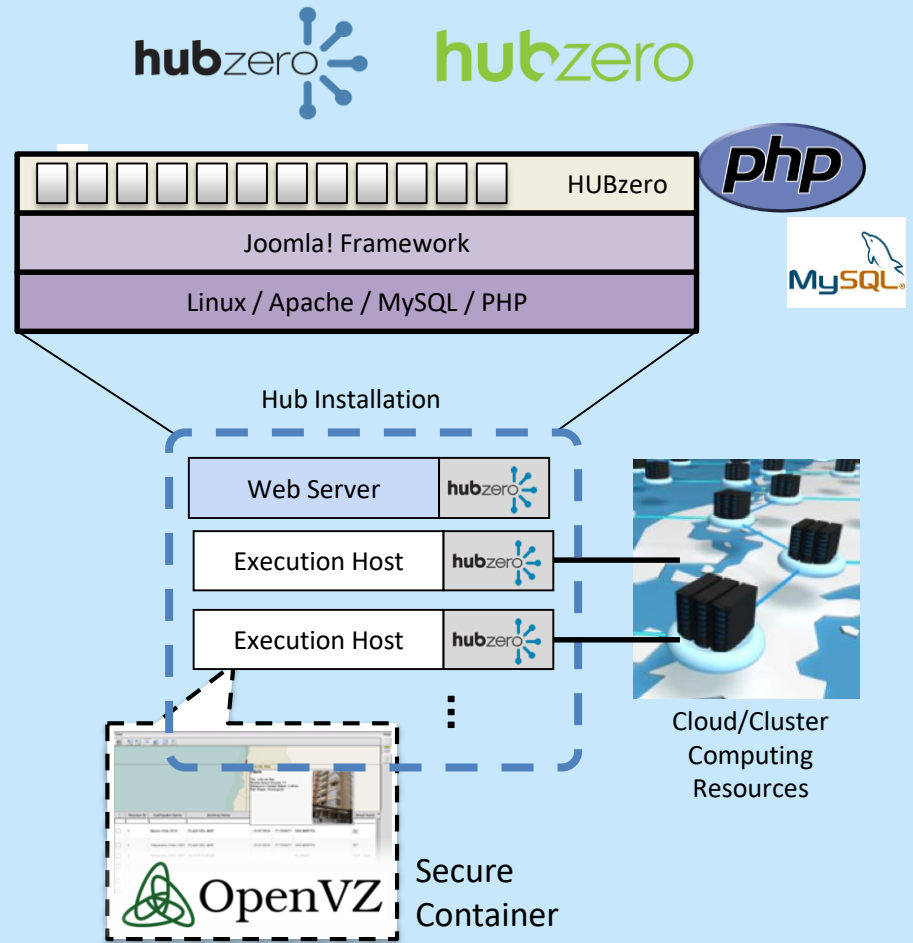


Work within "workspace" (Linux desktop in browser)

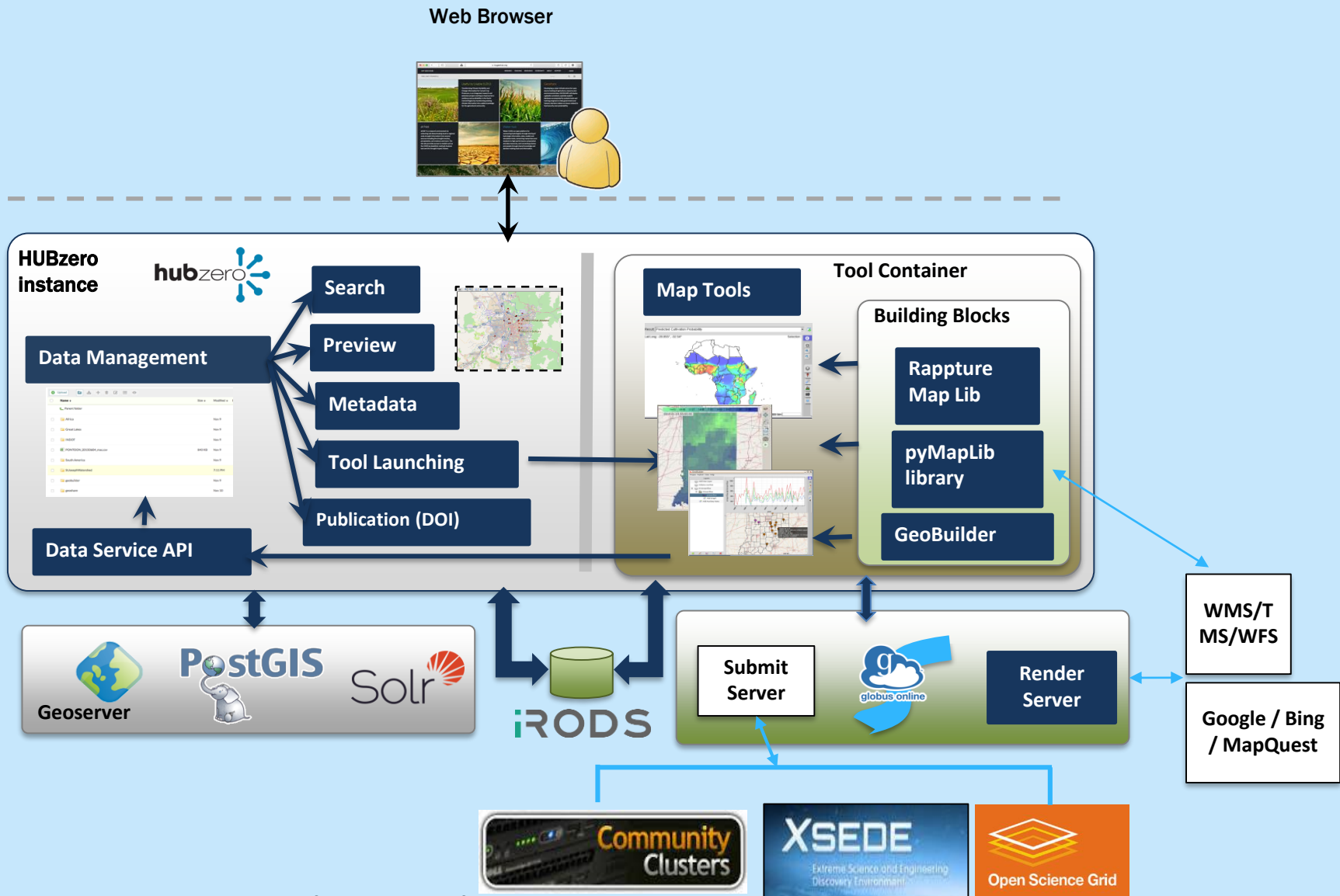
Rapture Toolkit



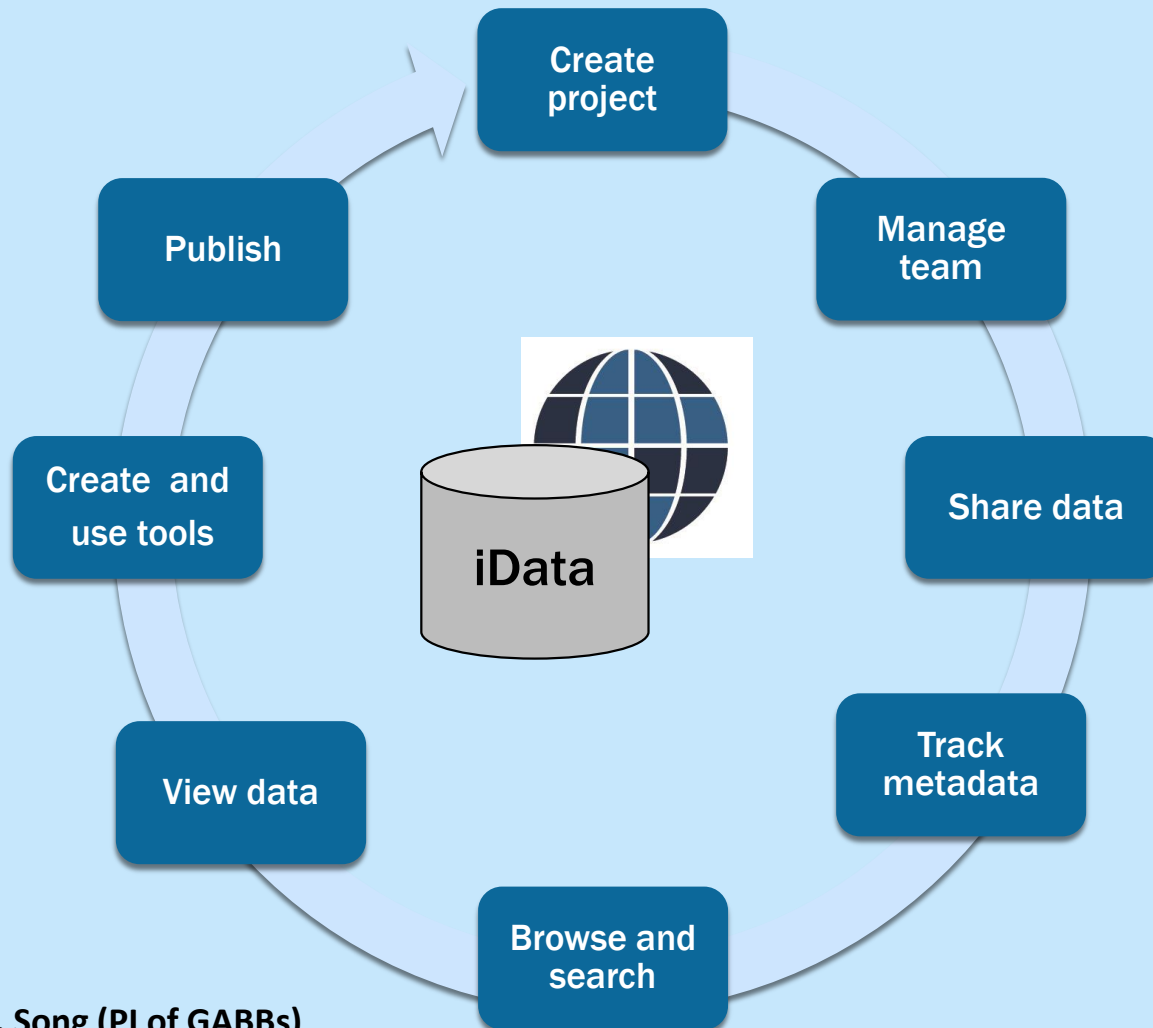
Slide from Dr. Carol X. Song (PI of GABBs)



GABBs (geospatial extension from HUBzero)

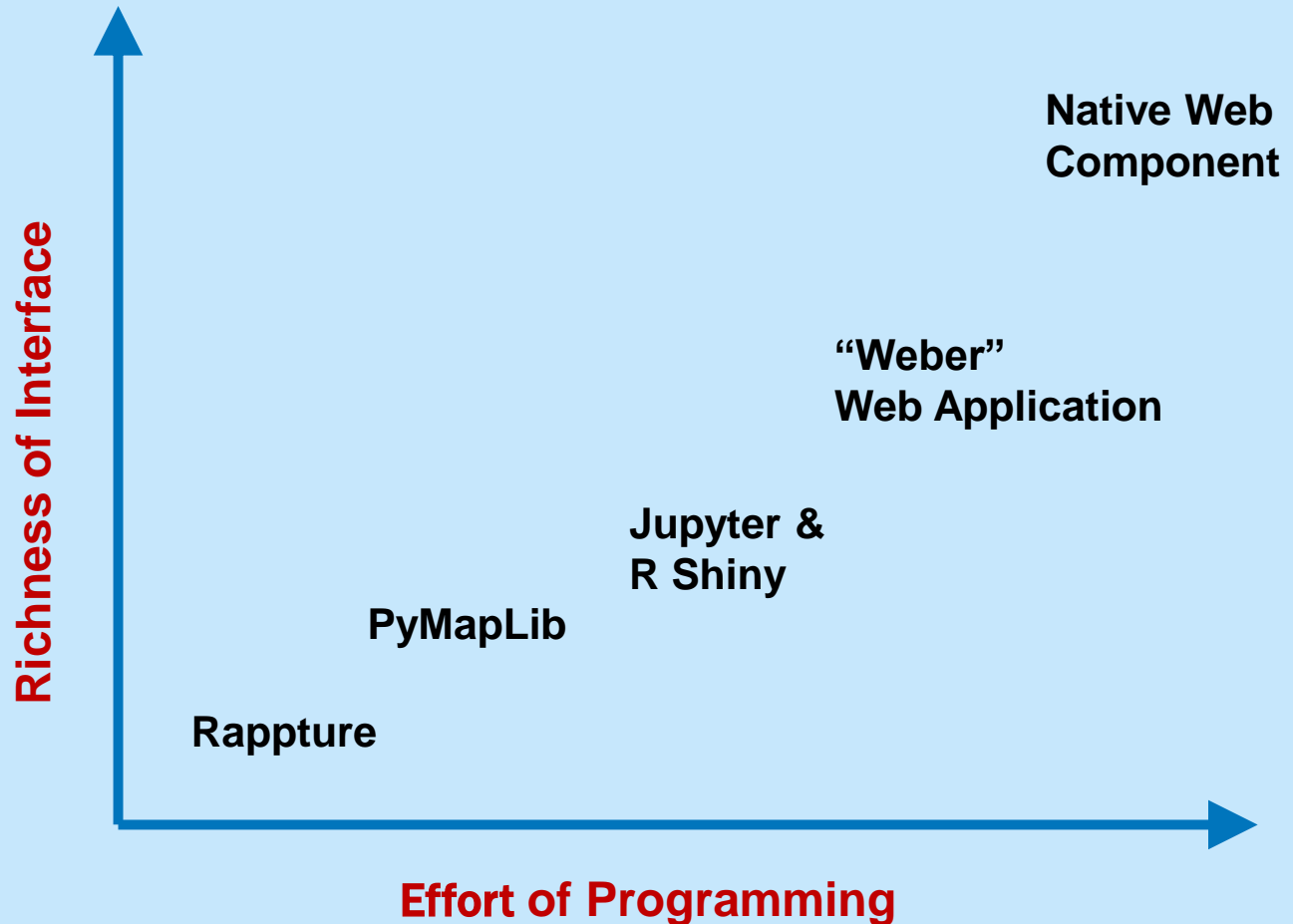


HUBzero: Data Management and Work Flow



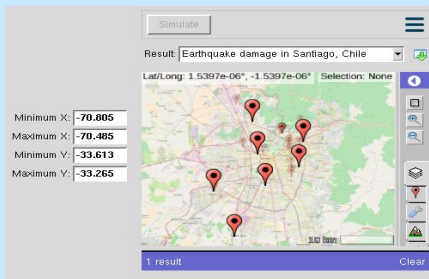
Programming in HUBzero + GABBs

Built-in
data
viewer
and
tools



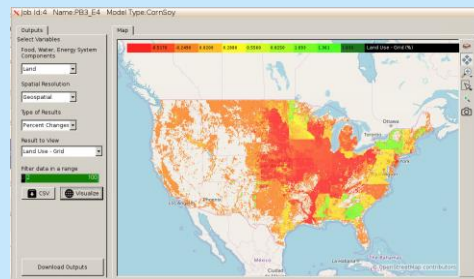
HUBzero: Data Analytics and Visualization

Rappture Toolkit



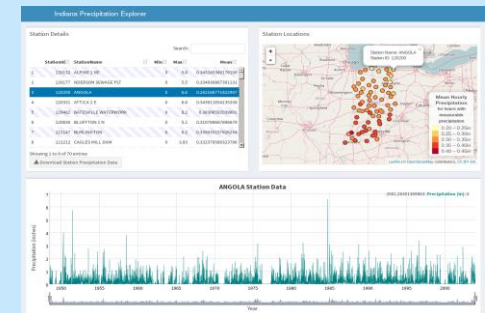
- Geospatial Output Widget
- Render server support
- 2D / 3D support
- Rappture applications and supported languages
- Tcl/Tk

PyMapLib



- Python Based
- Generic Framework
- 2D Data support
- Compatible with C++ & Java user interfaces

IDEs



- Jupyter Notebook
- **R Studio/Rshiny**
- Process for publishing as web application



Health Data Analytics Portal (and Open Data Portal)

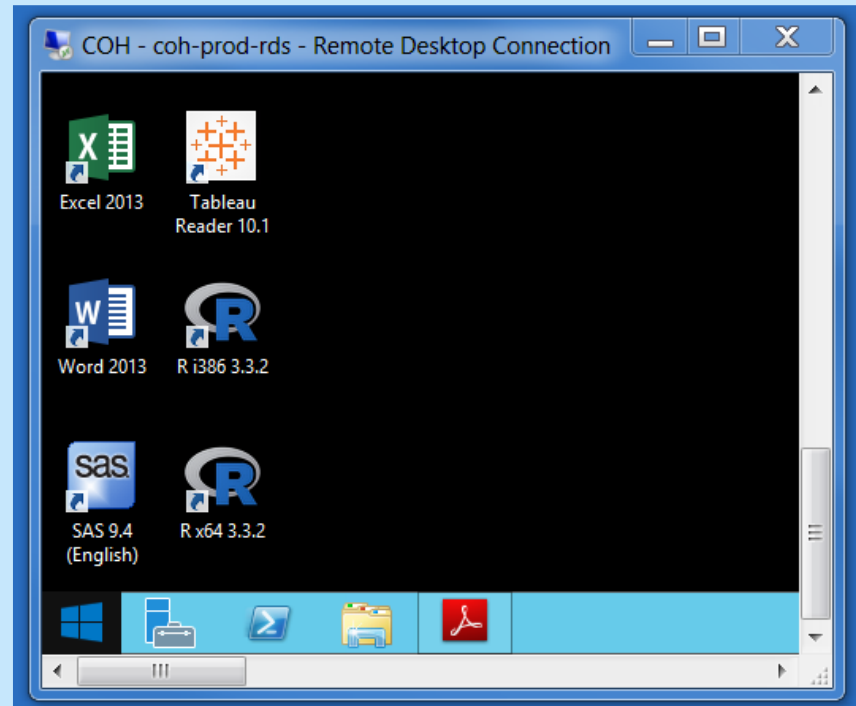
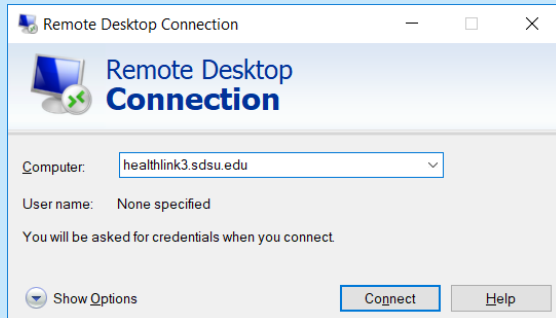
- **HIPAA Compliant Data Center** (For HLINK RP to store sensitive health data and Personal Health Record (PHR) data). Purchased a Web Server with 5 Virtual Machines installation. Adopt a **SANDBOX framework via Remote Desktop Protocol (RDP) Access**. (Similar to UCSD's Sherlock Cloud).
- **Open Data Center:** (provided by HUBzero) allow researchers to share and publish their non-sensitive data and other public available data (using **iData** to generated metadata records automatically – searchable).
- **Data Collection and Integration Toolboxes and Mobile Apps** (**Python, R, JavaScripts, NoteJS, etc.**).
- **Data Analytics and Visualization Toolboxes** (**HUBzero PyMapLib and Rappture Toolkit**).



HealthLINK “Private Cloud” for Project Researchers

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- 4 Virtual Machines (VMs) in HIPAA environments (VMwares).
- 3 Virtual Machines (VMs) in a regular server environment.
- Project Teams (researchers) can access a SINGLE Server (in a Window Desktop Environment) via Remote Desktops to use statistic or GIS tools (SAS, SPSS, ArcGIS, ArcGIS Pro, Tableau, etc.) to **access project data and models within the same server.**





Thank You Q & A

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Research reported in this presentation was supported by the National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award Number **U54MD012397**. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.