

Association for Public Data Users 2013 Annual Conference:

A Sea Change for Public Data

George Washington University
800 21st Street NW | Continental Ballroom,
3rd floor | Washington, DC
September 16-17, 2013

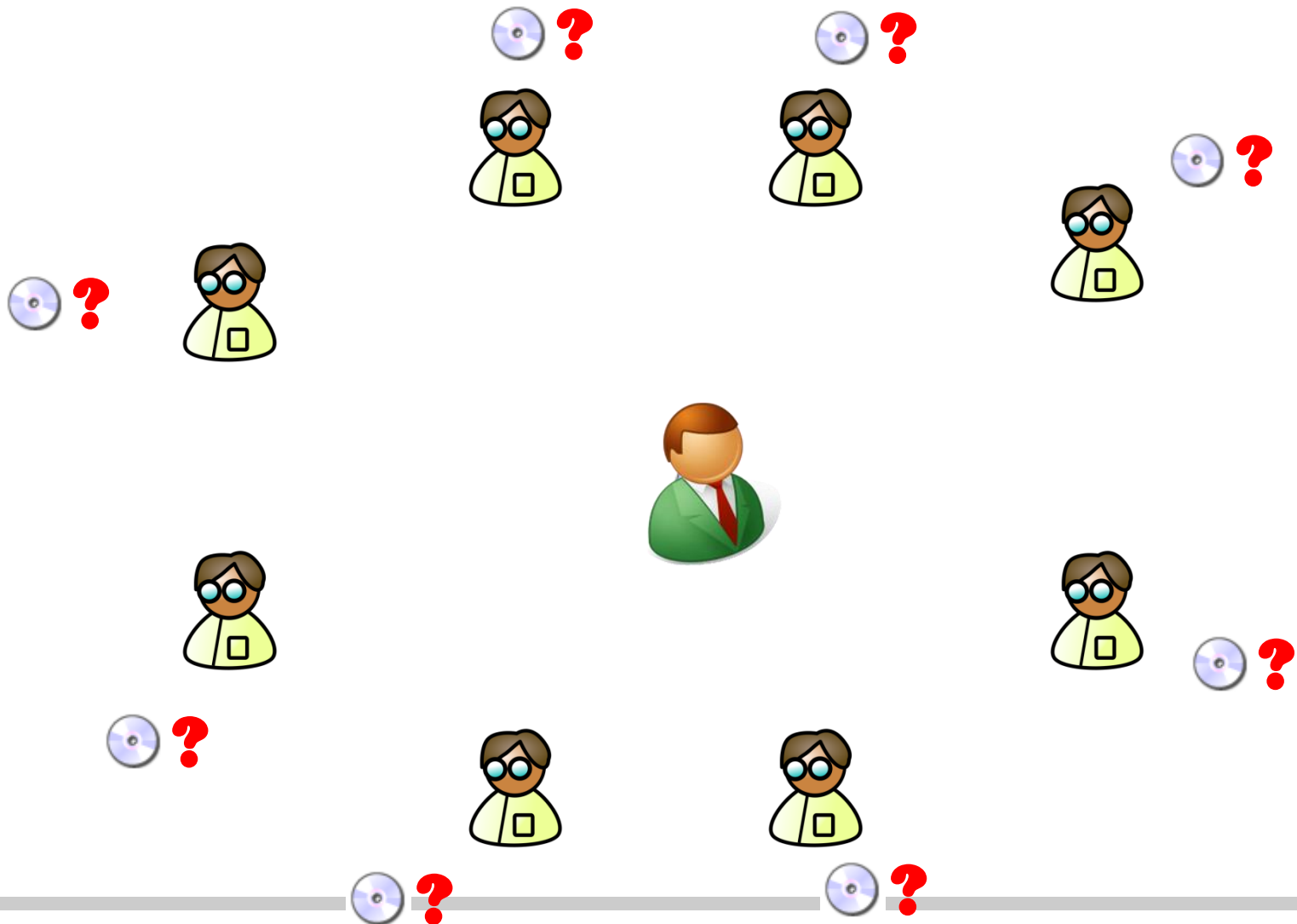


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Director, NORC Data Enclave
NORC at the University of Chicago

NORC
at the UNIVERSITY of CHICAGO

- Resetting Perceptions
- What is the Data Enclave?
- How do you balance data utility & confidentiality?
- How do users access the enclave?
- What functionality is available?
- How do I import and export files?
- How do I collaborate with other researchers?

The Licensing (“Trust”) Model



The Challenge Before Us...

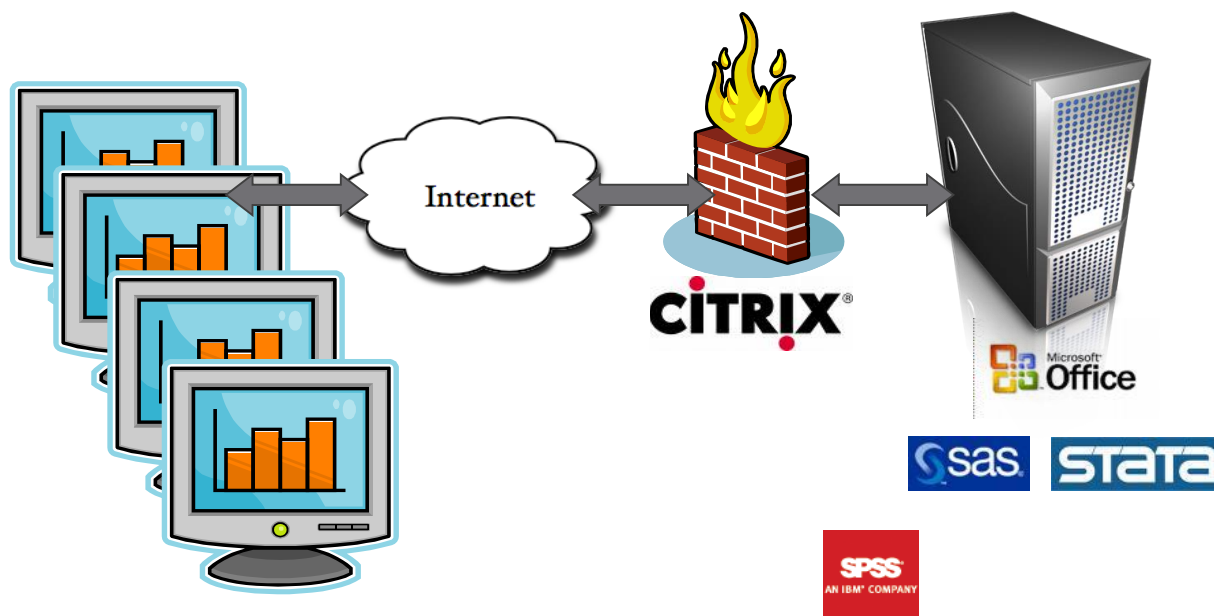
- Develop data access methods that achieve the often conflicting goals of:
 - Data confidentiality
 - Protecting privacy
 - Maintaining data quality, and
 - Making data more conveniently accessible

Resetting Perceptions

- Fundamental perceptions need to be revisited and adjusted for accessing sensitive data
- Classic dissemination models need to change
- No longer pushing out sensitive data (e.g., via CDs and contracts to “trusted researchers”)
- Pulling in trusted researchers through safe access nodes to secure systems
- Ensuring safe outputs / statistical disclosure control

What is the Enclave ?

The Enclave is an environment that allows for secure remote access to confidential microdata.



Through the use of a secure terminal VPN session, researchers analyze sensitive data in a secure, convenient and cost-effective manner; data never leave the FISMA compliant secure data center.

The NORC's Data Enclave IT Security Plan is fully compliant with the Federal Information Security Management Act (FISMA), provisions of mandatory Federal Information Processing Standards (FIPS), and meets all of NIST's IT, data, system, and physical security requirements.

Per the Federal Information Security Management Act and provisions of mandatory Federal Information Processing Standards (FIPS) 199 and NIST Security Plan 800-60, and 800-53 NORC's Data Enclave system impact levels have been determined as follows:

NIST Sensitivity Element	NIST Impact Rating	Short Description of Basis for Rating
Confidentiality	Moderate	The Data Enclave contains information of a proprietary nature. If this proprietary information were disclosed, it could result in serious loss of customer trust for the Federal Statistical Agency.

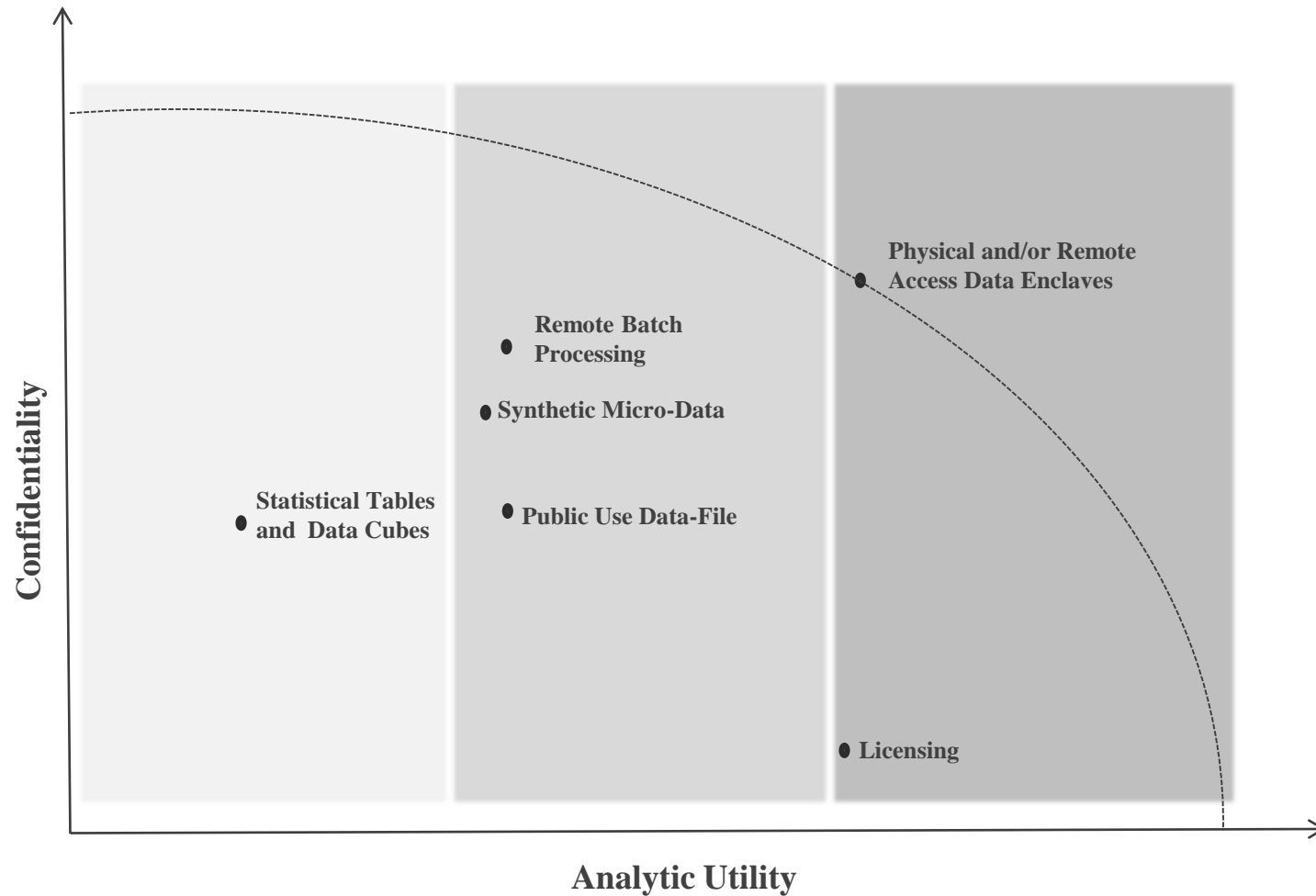
How Do I Access the Enclave?



The Data Enclave exists along a continuum of access modalities for sensitive data.

- Every data producing organization that seeks to disseminate data must determine what their goals and objectives are with respect to risk tolerance and the desired audience for data.
- In practice this means making decisions about the tradeoff between disclosure risk and analytic utility

Risk-Utility Tradeoff (cont.)

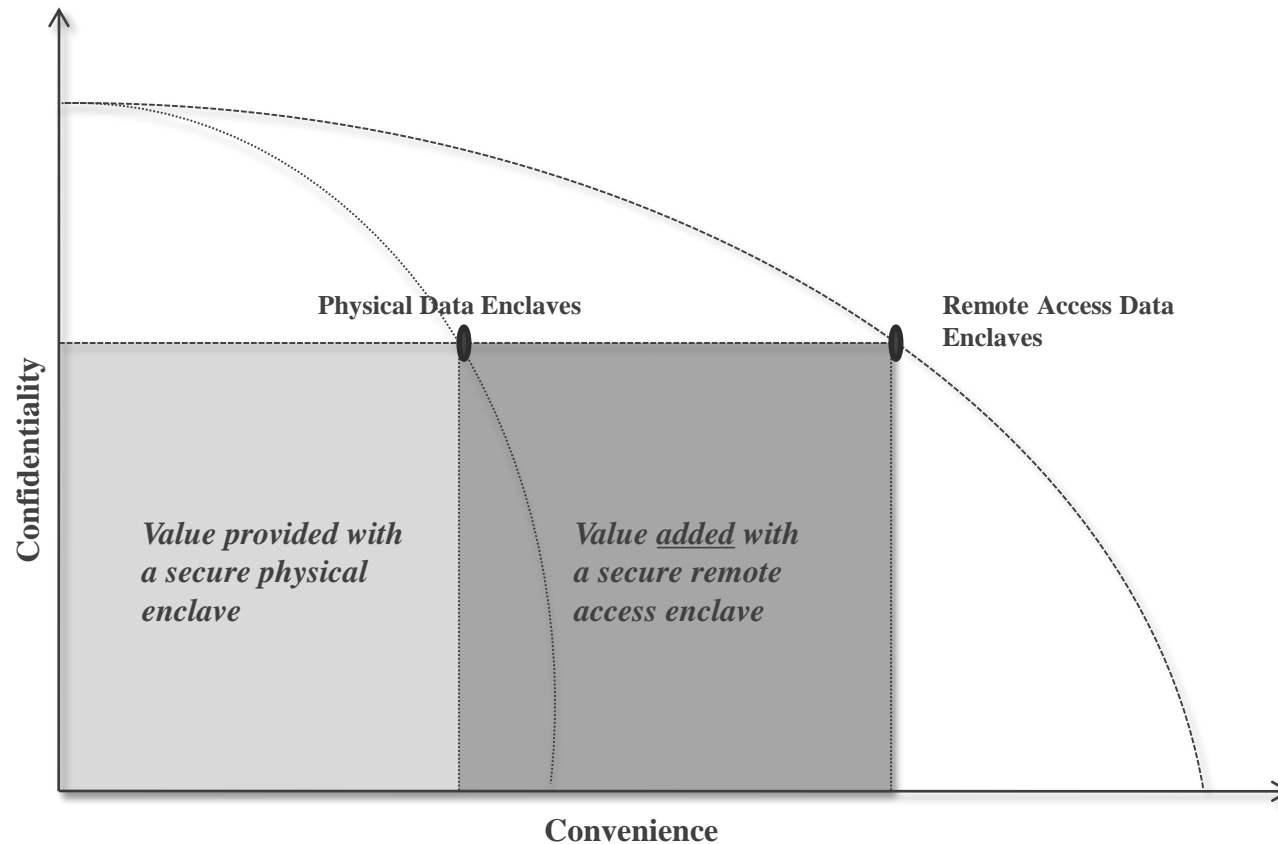


RDC vs. Remote Access

- Data security – the ability to control disclosure risk, ensure privacy, and thus maintain data confidentiality
- Both RDCs and data enclaves allow secure microdata access: similar level of data analytic utility
 - **RDC**: researchers physically access data stored at a secure physical facility
 - **Data Enclave**: researchers remotely access data stored at a file server through a secure system on a virtualized environment
- Both modalities provide high confidentiality protection: information inflow & outflow are monitored and controlled.

- Confidentiality and utility are not the only factors that influence the choice of data access modality
- The third factor: Convenience
- Producers' perspective:
 - How costly is it to implement an RDC or enclave?
 - How easy is it to update and document the data?
 - How easy is it to monitor researchers' work and output requests?
- Researchers' perspective:
 - How far do they need to travel to the nearest RDC?
 - How easy is it for them to conduct follow-up work?
 - How quickly does the RDC review and approve output requests?
 - How easy is it for them to seek assistance?
 - Is there any peer-to-peer researcher interaction?

Value-Add: Remote Access



Objectives of a Modern Data Access Facility:

- Secure
- Flexible
- Low Cost
- Convenient
- Meet Replication standard
- Metadata documentation / data lifecycle

Holistic Security Protocol

+Safe Projects

Must have institutional approval and backing

+Safe People

Trained Researchers

+Safe Setting

Data and processing housed in secure network

Users access environment over secure connection

Access limited to secure machines

+Safe Outputs

Strict disclosure review of all exports

= Safe Use

Statistical Applications

Statistical Applications:

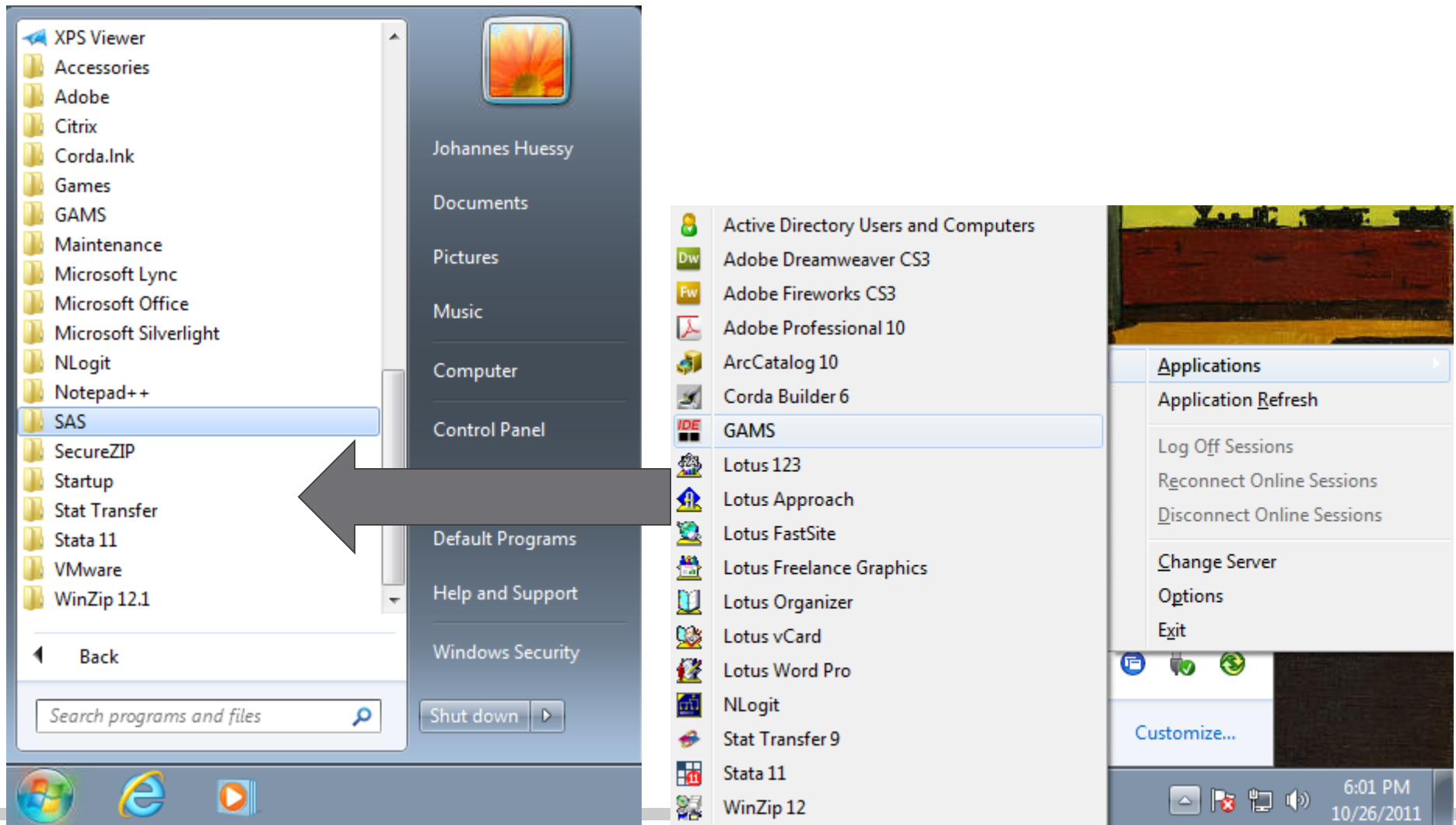
- ▶ SAS
- ▶ Stata
- ▶ SPSS
- ▶ R
- ▶ MATLAB
- ▶ LISREL
- ▶ NLOGIT

Productivity Tools

- ▶ StatTransfer
- ▶ Microsoft Office (with Office Communicator)
- ▶ IHSN Microdata Management Toolkit
- ▶ Notepad ++
- ▶ Ultraedit



Streaming Applications



Data Queries Run on Advanced Computational Engines

- As the size and complexity of the data grows, a straightforward virtual desktop infrastructure can become inefficient. Advanced data engines are necessary to provide adequate functionality:

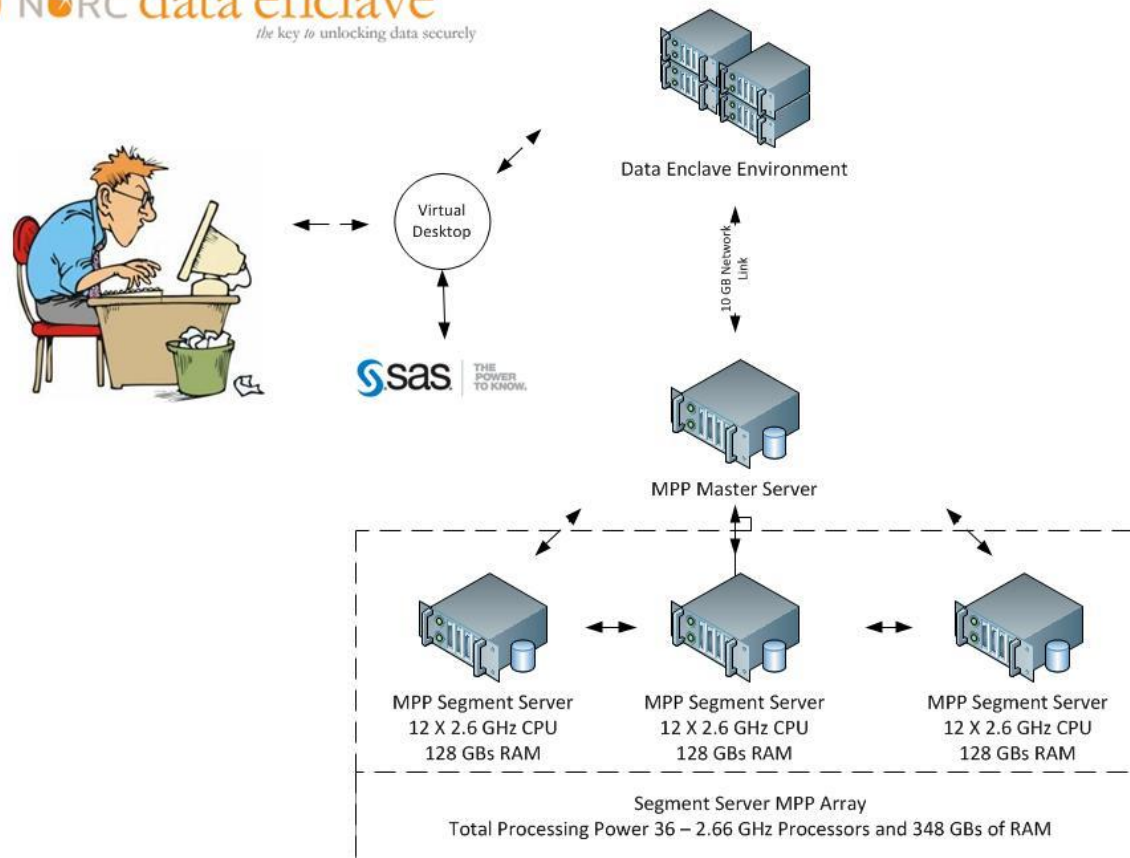
- Parallel Processing
- Advanced Databases
- Tabulation Engines
- Extraction Tools



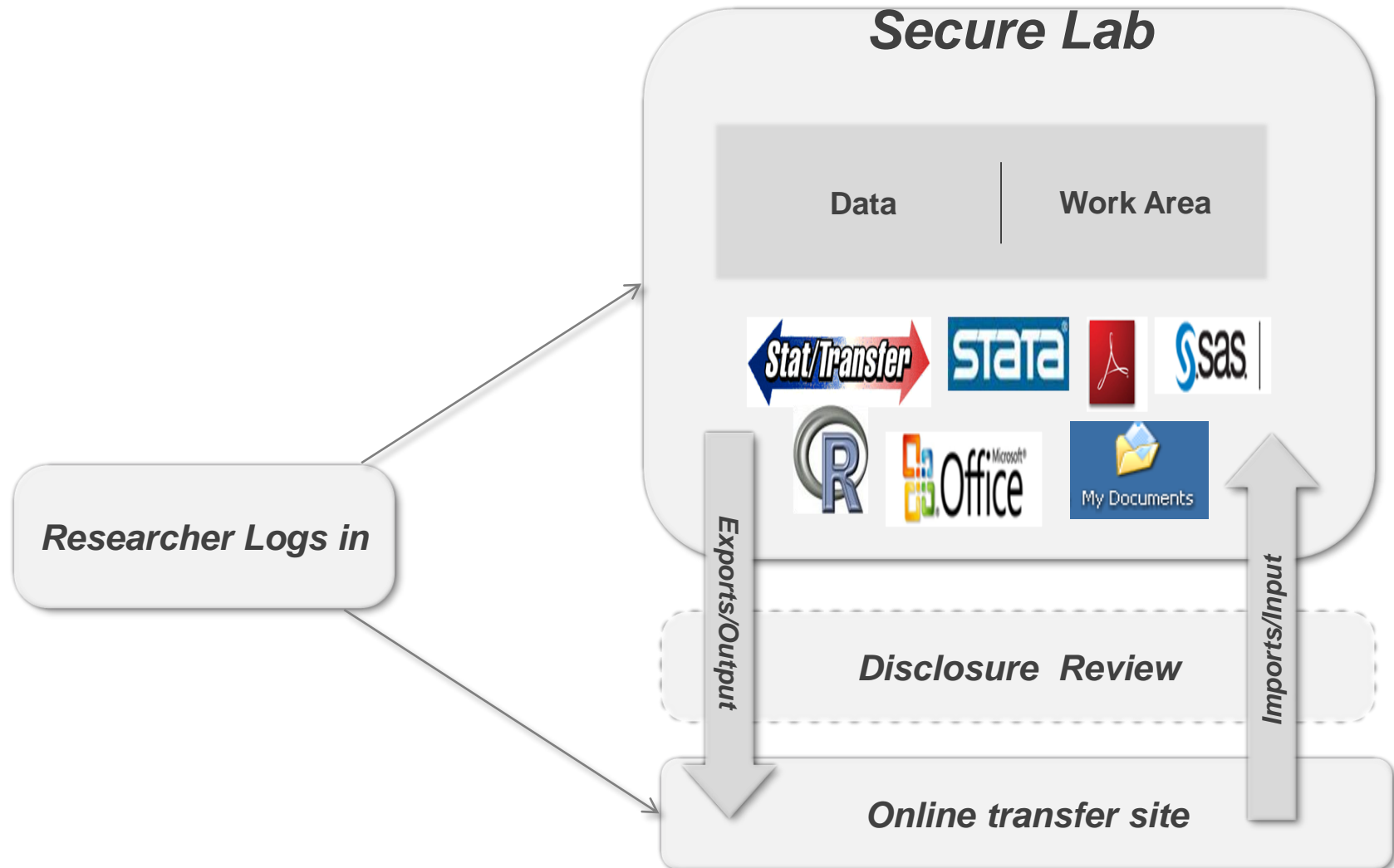
Efficient Access

- Less time spent waiting for analyses to complete
- More time available for interpretation
- Increased publication quality and volume potential

Big Data Solution



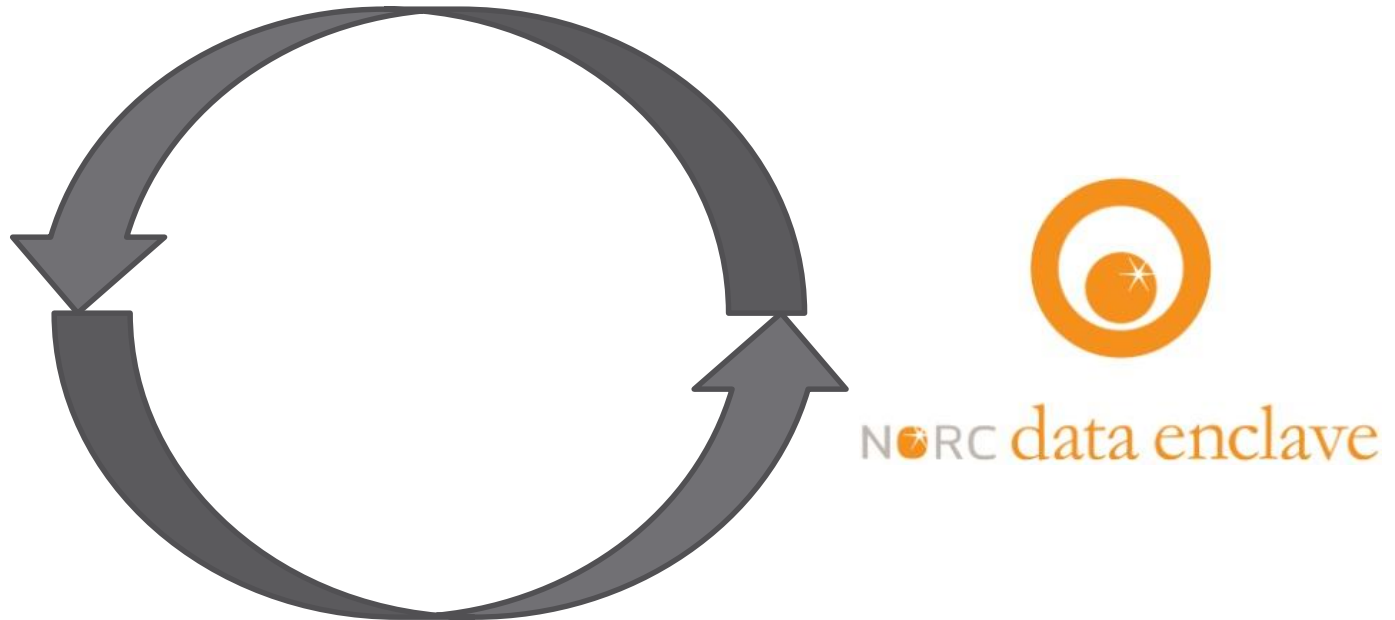
Output Control



- All research results must be reviewed for disclosure risk and approved by NORC disclosure analysts before the results can be shared with approved researchers.
- NORC performs extensive disclosure analysis on all output and makes recommendation to producer
 - Primary disclosure
 - Secondary disclosure
 - Residual disclosure

Accellion File Transfer Site

For exports out of the environment, users are sent a link to approved files which can be downloaded from the Accellion transfer site. All files saved on the Accellion transfer site are encrypted at rest and in transit.



For imports into the environment, users need to request an import workspace from Enclave staff. Once this workspace has been created users can upload files and notify Enclave staff by email for transfer. Small files under 5MB can be emailed directly to dataenclavemanager@norc.org

PRODUCER PORTAL

GENERAL INFORMATION

- Background info
- Announcements
- Calendar or events
- About
- Topic of the week

KNOWLEDGE SHARING

- Discussion groups
- Wiki
- Shared libraries
 - Metadata / Report
 - Scripts
 - Research papers

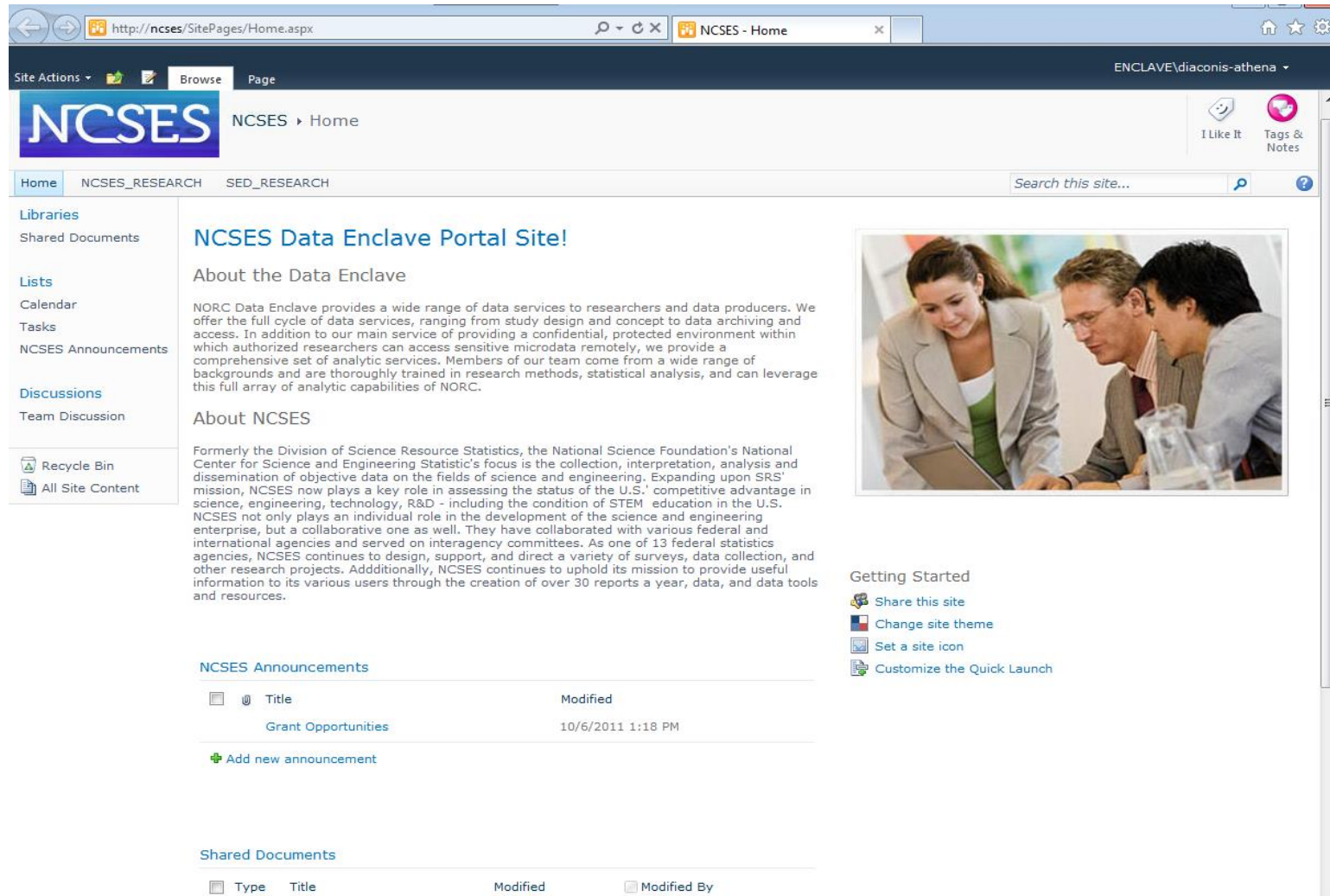
SUPPORT

- Frequently Asked Questions
- Technical Support
 - DE usage
 - Data usage
 - Quality



Content fully editable by producers and researchers using a simple web based interface

Private **research group portals** with similar functionalities are configured for each research project



Collaboration Tools



The screenshot shows a web browser window displaying the NCSES Data Enclave Portal Site. The browser's address bar shows the URL <http://nces/SitePages/Home.aspx>. The page features a navigation menu on the left with links to Libraries, Lists, Calendar, Tasks, NCSES Announcements, Discussions, Team Discussion, Recycle Bin, and All Site Content. The main content area is titled "NCSES Data Enclave Portal Site!" and includes sections for "About the Data Enclave", "About NCSES", and "NCSES Announcements". The "About NCSES" section describes the organization's mission and history. The "NCSES Announcements" section contains a table with one entry: "Grant Opportunities" dated "10/6/2011 1:18 PM". Below this table is a link to "Add new announcement". The "Shared Documents" section is also visible at the bottom. On the right side of the page, there is a search bar and a "Getting Started" section with links to "Share this site", "Change site theme", "Set a site icon", and "Customize the Quick Launch". A photograph of three people (two men and one woman) looking at a laptop is also present.

Site Actions ▾   Browse Page ENCLAVE\diaconis-athena ▾



NCSES NCSES ▸ Home

Home NCSES_RESEARCH SED_RESEARCH Search this site...  

Libraries
Shared Documents

Lists
Calendar
Tasks
NCSES Announcements

Discussions
Team Discussion

 Recycle Bin
 All Site Content

NCSES Data Enclave Portal Site!


About the Data Enclave


NORC Data Enclave provides a wide range of data services to researchers and data producers. We offer the full cycle of data services, ranging from study design and concept to data archiving and access. In addition to our main service of providing a confidential, protected environment within which authorized researchers can access sensitive microdata remotely, we provide a comprehensive set of analytic services. Members of our team come from a wide range of backgrounds and are thoroughly trained in research methods, statistical analysis, and can leverage this full array of analytic capabilities of NORC.

About NCSES



Formerly the Division of Science Resource Statistics, the National Science Foundation's National Center for Science and Engineering Statistics' focus is the collection, interpretation, analysis and dissemination of objective data on the fields of science and engineering. Expanding upon SRS' mission, NCSES now plays a key role in assessing the status of the U.S.' competitive advantage in science, engineering, technology, R&D - including the condition of STEM education in the U.S. NCSES not only plays an individual role in the development of the science and engineering enterprise, but a collaborative one as well. They have collaborated with various federal and international agencies and served on interagency committees. As one of 13 federal statistics agencies, NCSES continues to design, support, and direct a variety of surveys, data collection, and other research projects. Additionally, NCSES continues to uphold its mission to provide useful information to its various users through the creation of over 30 reports a year, data, and data tools and resources.

NCSES Announcements





 Title	Modified
Grant Opportunities	10/6/2011 1:18 PM

 Add new announcement

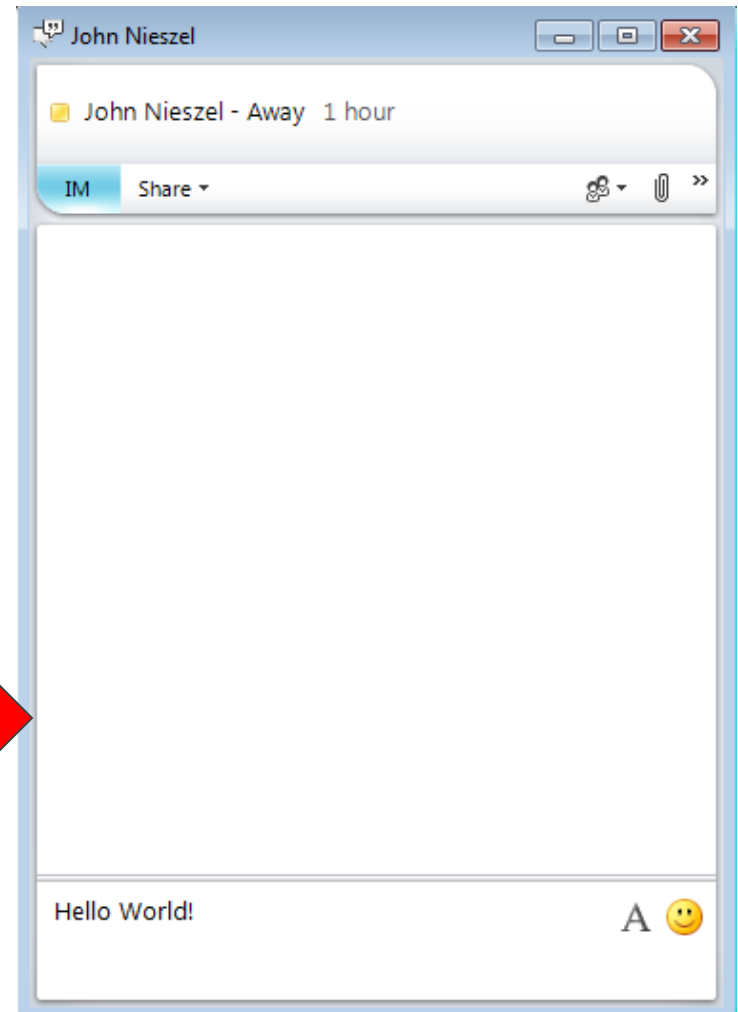
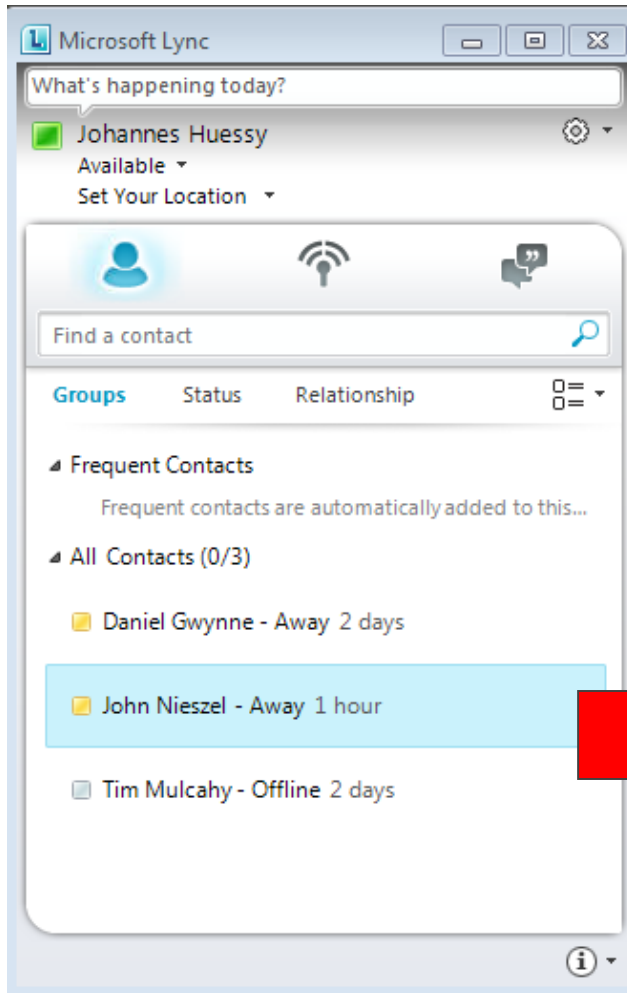
Shared Documents

 Type	Title	Modified	 Modified By
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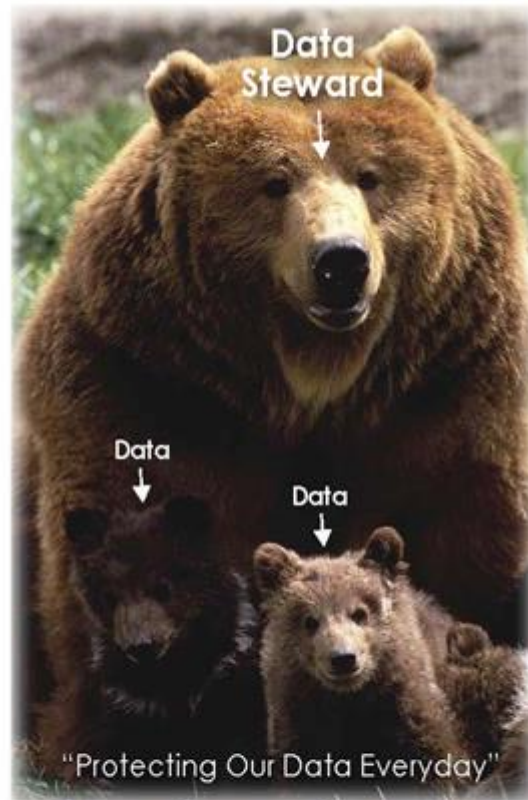
Getting Started

-  Share this site
-  Change site theme
-  Set a site icon
-  Customize the Quick Launch

Instant Messaging



Thank You!



"Protecting Our Data Everyday"

Data Stewardship Week

February 11-15, 2008

USCENSUSBUREAU

NORC
at the UNIVERSITY of CHICAGO

 insight for informed decisions™