



As neuroimaging research continues to grow, dynamic neuroinformatics systems are necessary to store, retrieve, mine and share the mass amounts of data. COINS has been created to facilitate communication and cultivate a data community by improving the ability to share data as well as research tools. This tool suite enables rapid sharing of data among PIs, querying of data types and assessments, and real-time reporting, among other functionalities. It manages studies at the Mind Research Network, the Nathan Kline Institute, University of Colorado - Boulder and the Olin Neuropsychiatry Research Center. COINS is dynamic and develops as the neuroimaging field grows.

## COINS Tools

MICIS  
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Self Assessment  
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CAS  
My Security

# MICIS

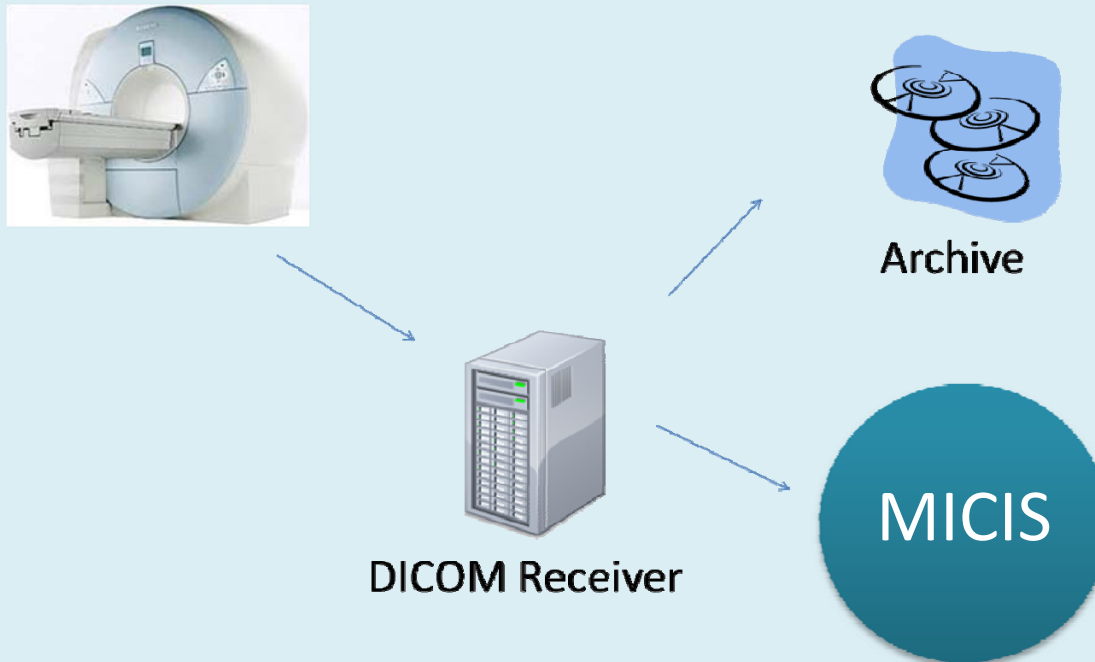
MICIS (Medical Imaging Computer Information System) is a centralized PostgreSQL-based web application that implements best practices for participant enrollment and management, MRI imaging data import, scan annotation and behavioral data management, radiology review event reports, and scan time billing.

The screenshot displays the MICIS web application interface. At the top, the header includes the text "COLLABORATIVEINFORMATICS" on the left, a logo consisting of three curved lines and the letters "INS" in the center, and "NEUROIMAGINGSUITE" on the right. Below the header is a navigation bar with links: "MICIS Home", "SUBJECTS", "STUDIES", "IMAGING", "BILLING", "RADIOLOGY", "REPORTS", and "ADMIN". A "Welcome mking (MRI)" message is visible on the right side of the navigation bar. The main content area is titled "To find subjects:" and contains the instruction "Find subjects by the URSI or Subject Details or an External ID." There are three search sections: "Search By URSI" with a text input field for "URSI:"; "Search By Subject Details" with radio buttons for "Sex" (Female, Male), a "Date of Birth" field with a date format hint "MM/DD/YYYY", "Last Name" and "First Name" text input fields, and a "Filter" section with radio buttons for "Best Match" (selected) and "All Close Matches"; and "Search By External ID" with a dropdown menu for "External ID Type" currently set to "None". A "Continue >" button is located at the bottom of the form.

# DICOM Receiver

An automated DICOM receiver collects, archives, and imports imaging data in the database, requiring no user intervention.

- Ensures subjects are enrolled in study
- Moves invalid scans to lost-and-found
- Automates image archiving to file system and storage of meta-data to MICIS from Scanner
- Multi-platform, small footprint
- JAVA-based



# Assessment Manager

Clinical data gathered from interviews, questionnaires, and neuropsychological tests are entered into the database through the web application called Assessment Manager (ASMT). ASMT's intuitive design allows most users to start data collection with little or no training. Clinical data collection via web forms use a double-entry, conflict-resolution process, reducing data collection errors.

- Dual-entry and conflict resolution
- User-definable instruments
- User-definable sharing protocols between studies
- Reusable instruments across studies

The screenshot displays the Assessment Manager (ASMT) web application interface. At the top, the header includes 'COLLABORATIVEINFORMATICS', the 'OINS' logo, and 'NEUROIMAGINGSUITE'. Below the header is a navigation bar with links: 'ASMT Home', 'DATA ENTRY', 'MANAGE', 'SELF-ASSESS', 'INSTRUMENTS', and 'ADMIN'. The main content area is titled 'Data Entry: Cover Sheet' and contains a form for entering assessment data. The form includes fields for 'URSI' (Malformed URSI), 'Visit', 'Source', 'Assessment Date', 'Assessment Start Time', 'Raters' (1 and 2), 'Site', 'Assessment Event Type', 'Did Rater state they could not complete assessment?' (Yes/No), and a text area for 'Enter reason given by Rater for the incomplete assessment'.

# Self Assessment

With this tool participants can fill out questionnaires on the web from home or in a testing room. There is no need for data entry - after review the assessments go straight to the database as a complete record.

- Queue Management
- Study Templates
- Subject Interface
- Submission review
- Deny submissions
- Complete submissions
- Self Assessment Question Features
  - Self Assessment Label
  - Required Question
  - Hidden from Self Assessment
  - Conditional Skipping

The screenshot shows a web application titled "Manage Self-Assessment Queues". At the top, there are three input fields: "Participant:" with a dropdown menu showing "M10936279", "Login:" with a text box containing "Example", and "Visit:" with a dropdown menu showing "Visit 1". Below these fields is a section labeled "Current Queue:". To the left of this section is a green checkmark icon, and to the right is a blue curved arrow icon. The main content area is divided into two panels. The left panel, titled "Participant Queue", lists ten assessment items, each with a red 'X' icon to its right: ASR, PDI-21, UPPS-P, ASSQ, BASC-2 12-17, BASC-2 (Ages 6-11), MASC, EDEQ, Fagerstrom, and WASI. The right panel, titled "Study Templates", lists several assessment templates: "All Assessments", "BASC-2 (Ages 6-11)", "BASC-2 - Parent", "BDI-II", "CASI-A", "CBCL (Parent Form)", and "CPI".

# Tablet

Data can also be entered into ASMT through a tablet-based electronic data capture service that provides an asynchronous, remote clinical assessment capability.

- Paperless-based assessments
- Eliminates need for dual entry
- Asynchronously uploads to Assessment Manager via Web Service

The screenshot shows a web application window titled "Aberrant Functional Connectivity in Psychosis - [M87163018 Baseline Fagerstrom Test for Nicotine Dependence 11/26/2008 (Accepted)]". The interface includes a menu bar (File, Study, Profile, Window, Help) and a toolbar (Close, Print). A left sidebar contains a tree view with the following items: Details (Subject ID: M871), Visit (Baseline), Instruments (Fagerstrom Test for), Source (Proband), Patient ID (MDK1), Assessment Date, Status (Accepted), Last Modified, and User Flag. The main content area is titled "FAGERSTROM TEST FOR NICOTINE DEPENDENCE" and includes a note: "Note: Please fill out the following questions based on the time in which you were most recently permitted to smoke cigarettes. This may be either the time previous to incarceration or before the prison banned the use of cigarettes." The form contains four questions with radio button options:


- 1) Is subject a smoker? ☒ Yes ☐ No
- 2) How soon after waking up do you smoke your first cigarette? ☐ 3: Within 5 Minutes ☐ 2: 6 - 30 Minutes ☐ 1: 31-60 Minutes ☒ 0: After 60 Minutes
- 3) Do you find it difficult to refrain from smoking in places where it is forbidden? e.g. church, the library, in the cinema, etc. ☐ Yes ☒ No
- 4) At the time, which cigarette would you hate to give up the most? ☐ 1: The first one in the morning ☒ 0: All others
- 5) How many cigarettes/day do you smoke? ☒ 0: 10 or less ☐ 1: 11 - 20 ☐ 2: 21 - 30 ☐ 3: 31 or more

The bottom of the window shows "Page 1".









# Query Builder

All the types of data stored in MICIS and ASMT are easy to retrieve and export for use in other analyses. The Query Builder is the most versatile data export tool currently offered in the COINS tool suite. This tool supports secure, ad-hoc querying of single and cross-site studies for assessments, scans and demographics. It also offers the ability to search assessment data and scan data in the same query.

COLLABORATIVEINFORMATICS

INS

NEUROIMAGINGSUITE

MICIS Home

SUBJECTSSTUDIESIMAGINGBILLINGRADIOLOGYREPORTSADMIN

Web-browser address (URL)

Quick Dump

Download tab-delimited text file

Assessment data contains the cleanest data available: Double Entry Complete (C) records when they exist. Otherwise a Single Entry (1 or 2) record is retrieved. If there is a Double Entry Conflict (F) record, all assessments associated with that record will be excluded.

Select Study:

Build Query

Select Subjects

Limit results to subjects which meet the following criteria:

Currently, only one criteria at a time may be specified.

☐ Subjects appear in a list  
☐ Subjects are enrolled in a study

Preview of selected URISs: 0

Data Criteria

Select which data to output.

Currently, only one type of data may be retrieved at a time (demographics OR scans OR assessments).

☐ Demographics Data  
☐ Assessment Data  
☐ Scan Data

Preview >>

My Queries

Saved Queries:

Label:

## Portals

INS study portals serve as a central collaboratory for monitoring enrollment progress, quality assurance, document exchange, etc. Progress reports within the study-specific portals provide a complete workflow overview of a study to identify missing data at one glance. Internal and external collaborators can use the portals to access all data sources associated with their studies.

- Each study has an external portal
- Progress reports for subject tracking
- Shareable documents – study measures, meeting notes, etc.
- Contact and Subject Lists

[illegible]



# Data Sharing

COINS is trying to foster a data community by increasing data sharing capabilities among Principle Investigators. The goal is to keep investigators in touch with each other and aware of data that is collected. Improving the ability to share data and study tools reduces duplicate efforts and increases communication.

The Data Exchange is a tool that is used to track the data that is shared and accessed. It also works as a request system.

- Track data requests
- Track data that has already been shared
- Browse all data that has been collected



# CAS

Protection is very important to investigators conducting human subject research. As such, this database has been developed following guidelines set by the Institutional Review Board (IRB) to facilitate a safer and more protected environment in which to collect and store sensitive data. The Central Authentication System (CAS) is a feature that controls account creation for the MICIS, ASMT, and study Portals.

The screenshot displays the 'CAS - Management' application window, specifically the 'Add User' form. The interface is divided into a left sidebar and a main content area. The sidebar contains navigation links for 'Users', 'Applications', 'Roles', and 'Sites', each with 'List' and 'Add' buttons. Below these are links for 'Change Your Password', 'Get Shell Access Key', and 'Log Out'. The main content area is titled 'Add User' and contains the following fields: 'Label' (text input), 'Username' (text input), 'Password' (text input), 'Account Expiration Date' (calendar icon with '(mm/dd/yyyy)' placeholder), 'Password Expiration Date' (calendar icon with '(mm/dd/yyyy)' placeholder), 'Site' (dropdown menu showing 'Boston - MGH'), and 'Is Site Administrator?' (radio buttons for 'Yes' and 'No'). Below these fields is the 'Application Permissions' section, which includes two lists: 'Applications' (containing 'AdultFemalePortal', 'AdultMalePortal', 'AnalysisAdmin', and 'asdPortal') and 'Roles' (containing 'Accountant', 'acctManagement', 'Admin', and 'AdminCalibrationData'). There are plus and minus buttons between these lists. At the bottom, there is an 'Assigned Permissions' section with a scrollable list.

# My Security

Principle Investigators and Program Managers can manage study permissions through a similar tool to CAS called My Security. This gives them the authority to allow or restrict access to their study data.

The screenshot displays the 'MySecurity Manage' application window, specifically the 'Update User' tab. The interface is divided into a left sidebar and a main content area.

**Left Sidebar (MySecurity Manage):**

- Users
- List
- Add
- Change Your Password
- Log Out
- logged in: mking

**Main Content Area (Update User):**

**Notes:**

- Note: You cannot remove or add permissions to studies or system you don't have permission to
- Note: User permissions will not take effect until user logs in again

**User Information:**

- Label: [Text Field]
- Password: [Masked Password Field]
- Account Expiration Date: 06/22/2011 (mm/dd/yyyy)
- Password Expiration Date: 01/24/2011 (mm/dd/yyyy)
- Site: New Mexico (Dropdown)
- Activate Account: ☐ Yes ☒ No

**Application Permissions:**

Here's a rundown of Application Level privileges:

- CAS/acctManagement = Allows the user to change their password
- Assessments: everybody = Access to Asmt
- Assessments: Coordinator = Allows resolve conflicts, Show all Instruments
- All Studies, Changing Data Entry Type for a completed assessment, access to Manage link
- MITIC: everybody = Access to MITIC
- MITIC: Coordinator = Allows Unlinking PHI, Access Subject Enrollment Report

**Assigned Permissions:**

- Assessments: acctManagement
- Assessments: everybody
- Assessments: Coordinator
- CAS: everybody

**Study Permissions:**

**Study:**

- EARLY Portal
- MCIS

**Roles:**

- Coordinator
- DataEntry
- DataEntry2

**Assigned Permissions:**

- EARLY: Coordinator
- FIRST: Coordinator
- MCIC: Coordinator

**Update** (Button)