OpenRegistry

Revisiting the Management of Electronic Identity

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Rutgers University
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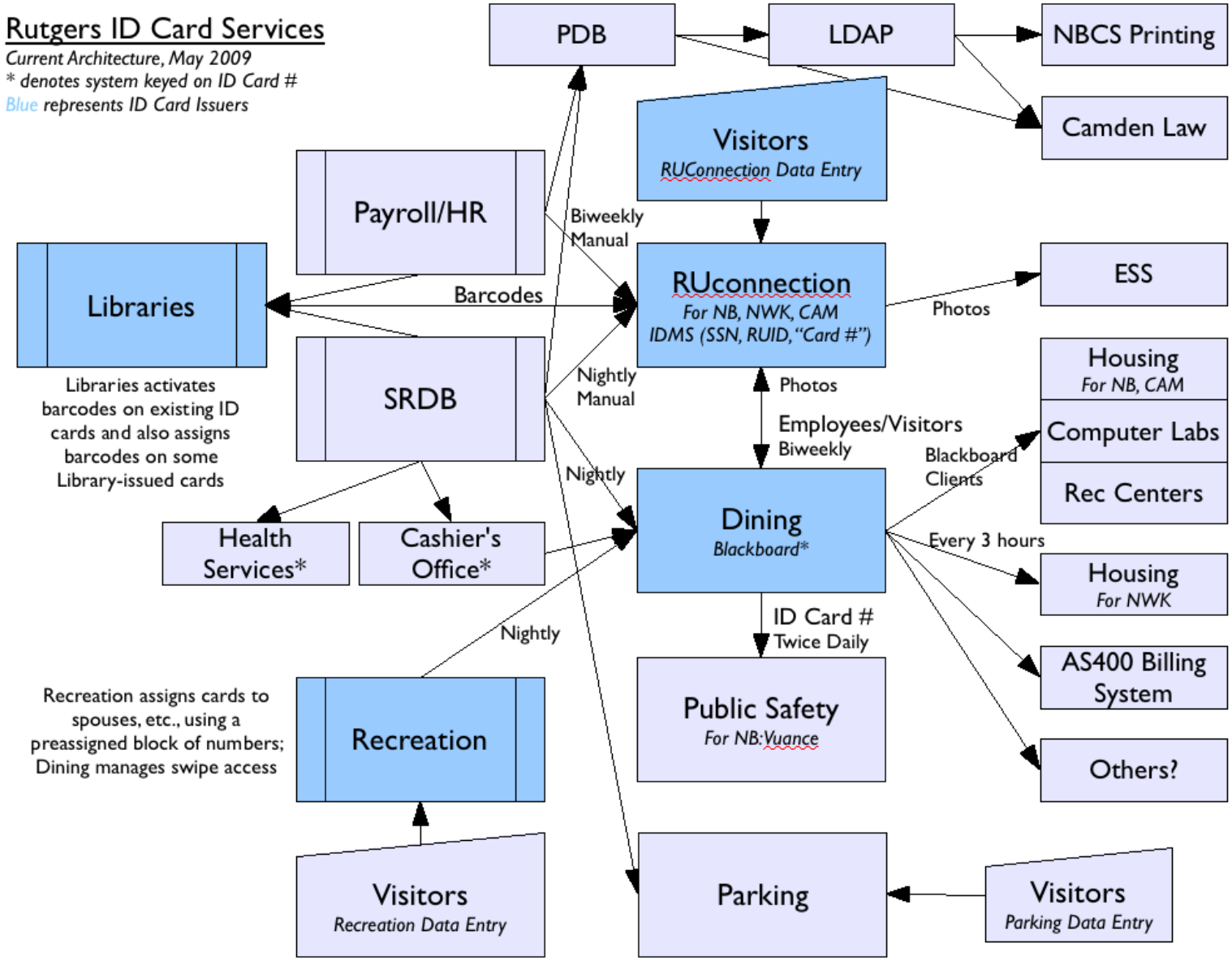
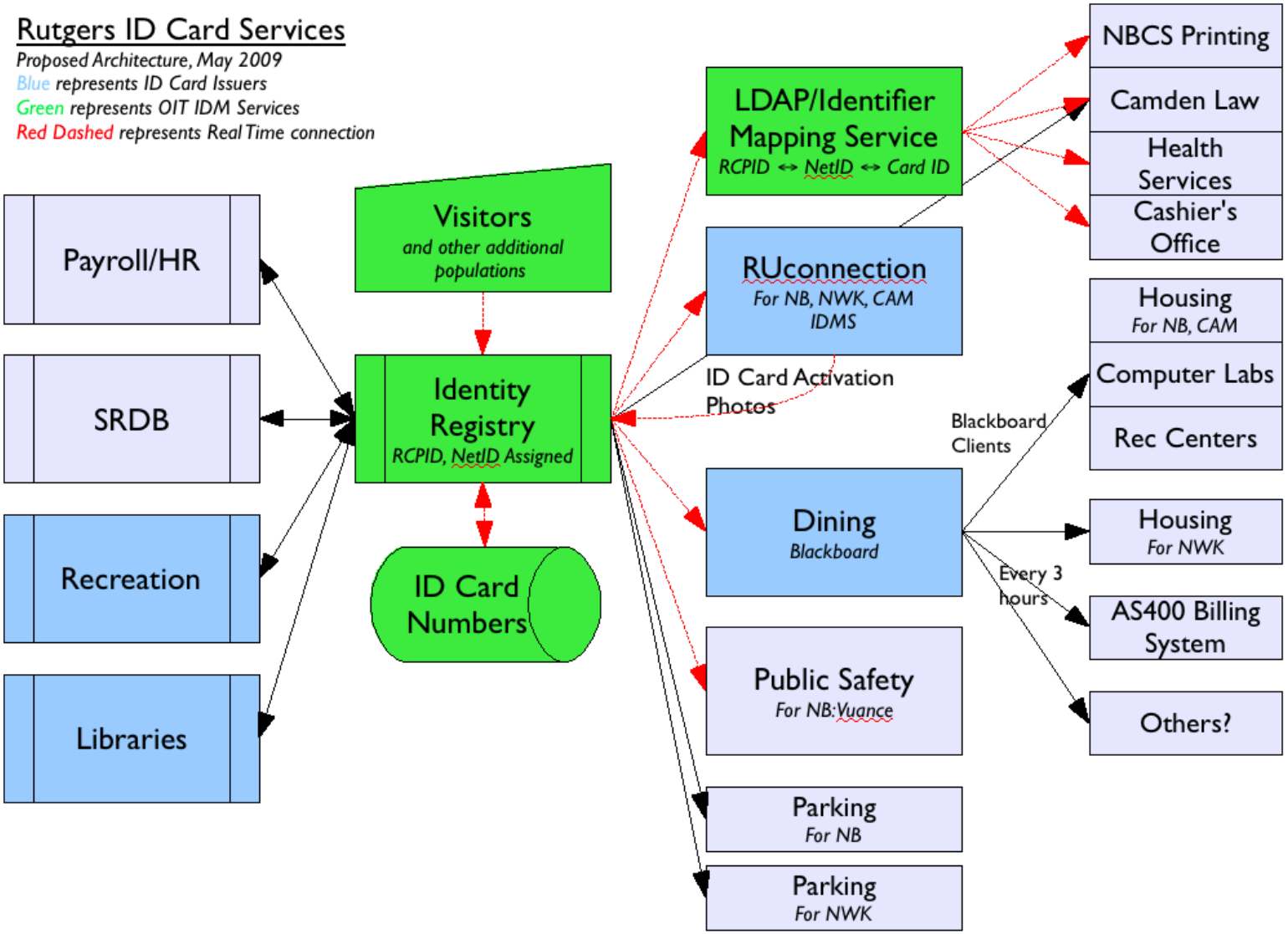
About Rutgers University

- State University of New Jersey
- Three Main Campuses
  - New Brunswick (main)
    - 29000 FT, 7000 PT Students
  - Newark
    - 7000 FT, 4000 PT Students
  - Camden
    - 3500 FT, 1700 PT Students
- ¾ Undergraduate
- 15000 Faculty/Staff
- 400000 Alumni
- Many visitors, guests, conference attendees, etc
- Need to assign NetIDs (logins) and ID Cards


Rutgers ID Card Services
Current Architecture, May 2009
* denotes system keyed on ID Card #
Blue represents ID Card Issuers
PDB
LDAP
NBCS Printing
Camden Law
Visitors
RUConnection Data Entry
Payroll/HR
Biweekly
Manual
Libraries
Barcodes
RUconnection
For NB, NWK, CAM
IDMS (SSN, RUID, "Card #")
ESS
Photos
Libraries activates barcodes on existing ID cards and also assigns barcodes on some Library-issued cards
SRDB
Nightly
Manual
Photos
Housing
For NB, CAM
Employees/Visitors
Biweekly
Computer Labs
Blackboard Clients
Rec Centers
Nightly
Health Services*
Cashier's Office*
Dining
Blackboard*
Every 3 hours
Housing
For NWK
ID Card #
Twice Daily
Nightly
AS400 Billing System
Public Safety
For NB:Vuance
Recreation assigns cards to spouses, etc., using a preassigned block of numbers; Dining manages swipe access
Recreation
Others?
Visitors
Recreation Data Entry
Parking
Visitors
Parking Data Entry

We're Not That Unique

- Lots of other US Higher Ed looks similar
  - Multiple Systems of Record (SORs)
  - Heterogenous Downstream Systems (DSSs)
    - OpenSource: Kerberos, OpenLDAP, CAS, Shibboleth, Sakai, Kuali, ...
    - Proprietary: Active Directory, Banner, Endeavor, Lenel, ...
  - Complex, poorly documented rules and procedures
  - Limited resources
- And also in Canada, UK, Sweden, Brazil, ...


Rutgers ID Card Services
Proposed Architecture, May 2009
Blue represents ID Card Issuers
Green represents OIT IDM Services
Red Dashed represents Real Time connection
Payroll/HR
SRDB
Recreation
Libraries
Visitors
and other additional populations
Identity Registry
RCPID, NetID Assigned
ID Card Numbers
LDAP/Identifier Mapping Service
RCPID ↔ NetID ↔ Card ID
RUconnection
For NB, NWK, CAM IDMS
ID Card Activation Photos
Dining
Blackboard
Public Safety
For NB:Vuance
Parking
For NB
Parking
For NWK
Blackboard Clients
Every 3 hours
NBCS Printing
Camden Law
Health Services
Cashier's Office
Housing
For NB, CAM
Computer Labs
Rec Centers
Housing
For NWK
AS400 Billing System
Others?

Rutgers University Identity Goals

- Capture Identity Data for *all* populations affiliated with the University, including regular students, continuing ed students, joint program students, alumni, new employees, faculty, staff, retirees, and guests
  - Now: Primarily students, faculty/staff, and some "guests"
- Faster propagation of data, real time where possible
  - Now: Nightly to biweekly batch feeds
- Consistent data definitions, contracted via versions
  - Now: Hard to find definitions, unclear when they change
- Delegated operations where possible
  - Now: Heavy dependency on Help Desk and Central IT

What Is OpenRegistry?

- An OpenSource Identity Management System, a place for data about people affiliated with your institution
- Core functionality
  - Interfaces for web, batch, and real-time data transfer
  - Identity data store
  - Identity reconciliation from multiple systems of record
  - Identifier assignment for new, unique individuals
- Additional functionality
  - Data beyond Persons: Groups, Courses, Credentials, Accounts
  - Business Rule based data transformations

What Is OpenRegistry?

- More than just a Registry, some periphery too
  - Directory Builder
  - Provisioning and Deprovisioning
- Generally *not* authoritative for data
  - SORs are authoritative for most data
  - OR reflects single, reconciled view of data from multiple SORs
  - Exceptions include some identifiers, results of business rule calculations, populations with no real SOR (eg: visitors)

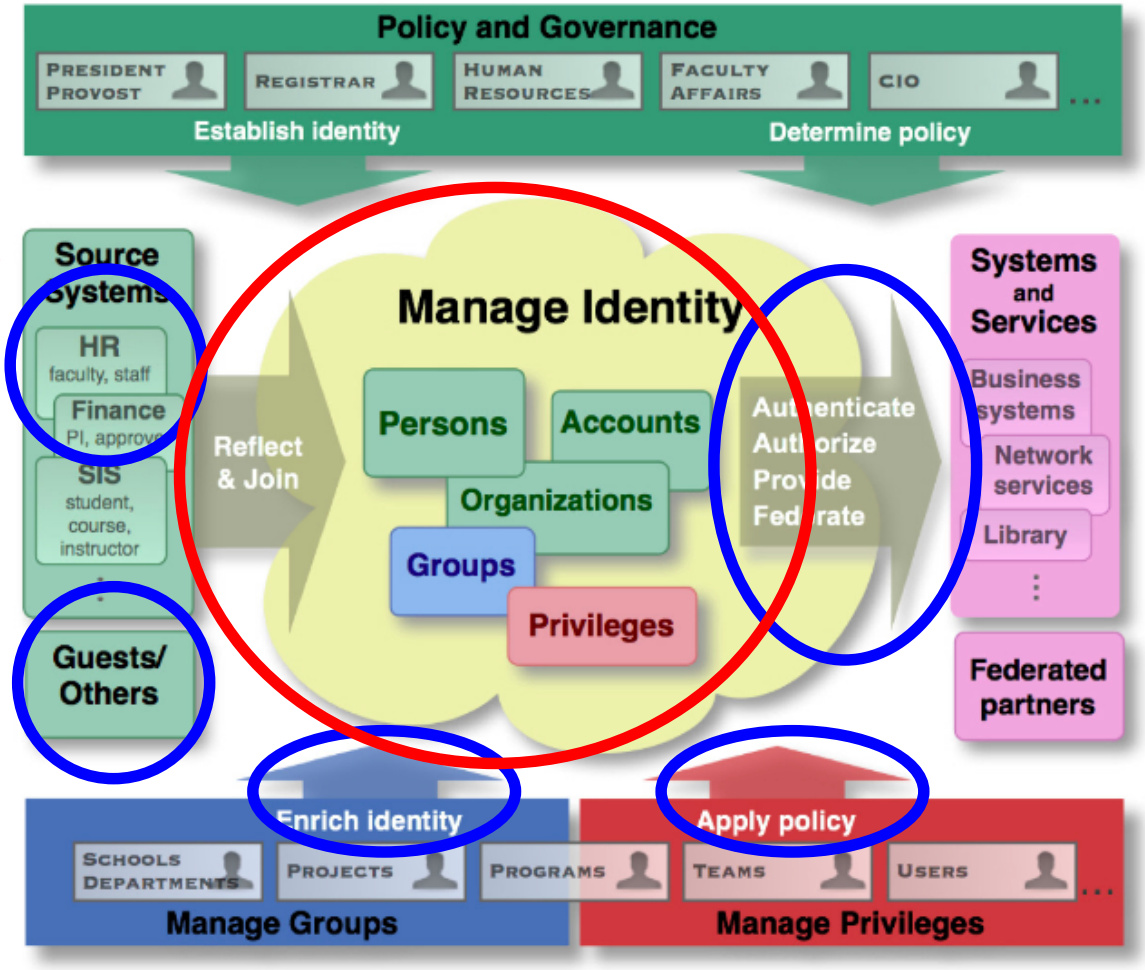
Inspirations

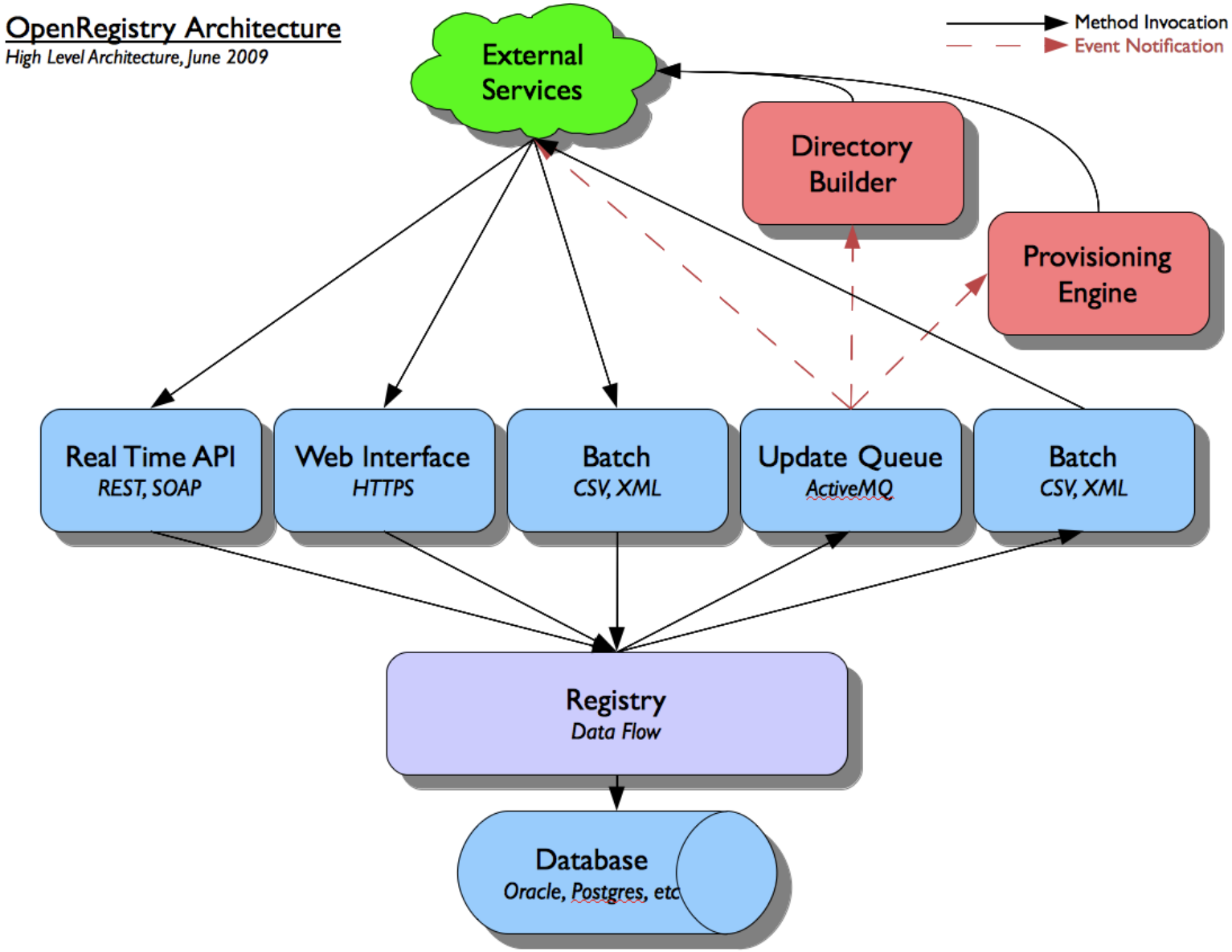
- Columbia University Identity Management System
- Rutgers People Database
- Georgetown Model*
- Higher Ed Standards (eg: eduPerson)
- Evolving Standards (eg: NIST LoA)
- Review of interested peer institutions
- Decades of combined experience from before the field was called “Identity Management”

I2 Identity & Access Management Model

OpenRegistry Core

OpenRegistry Periphery

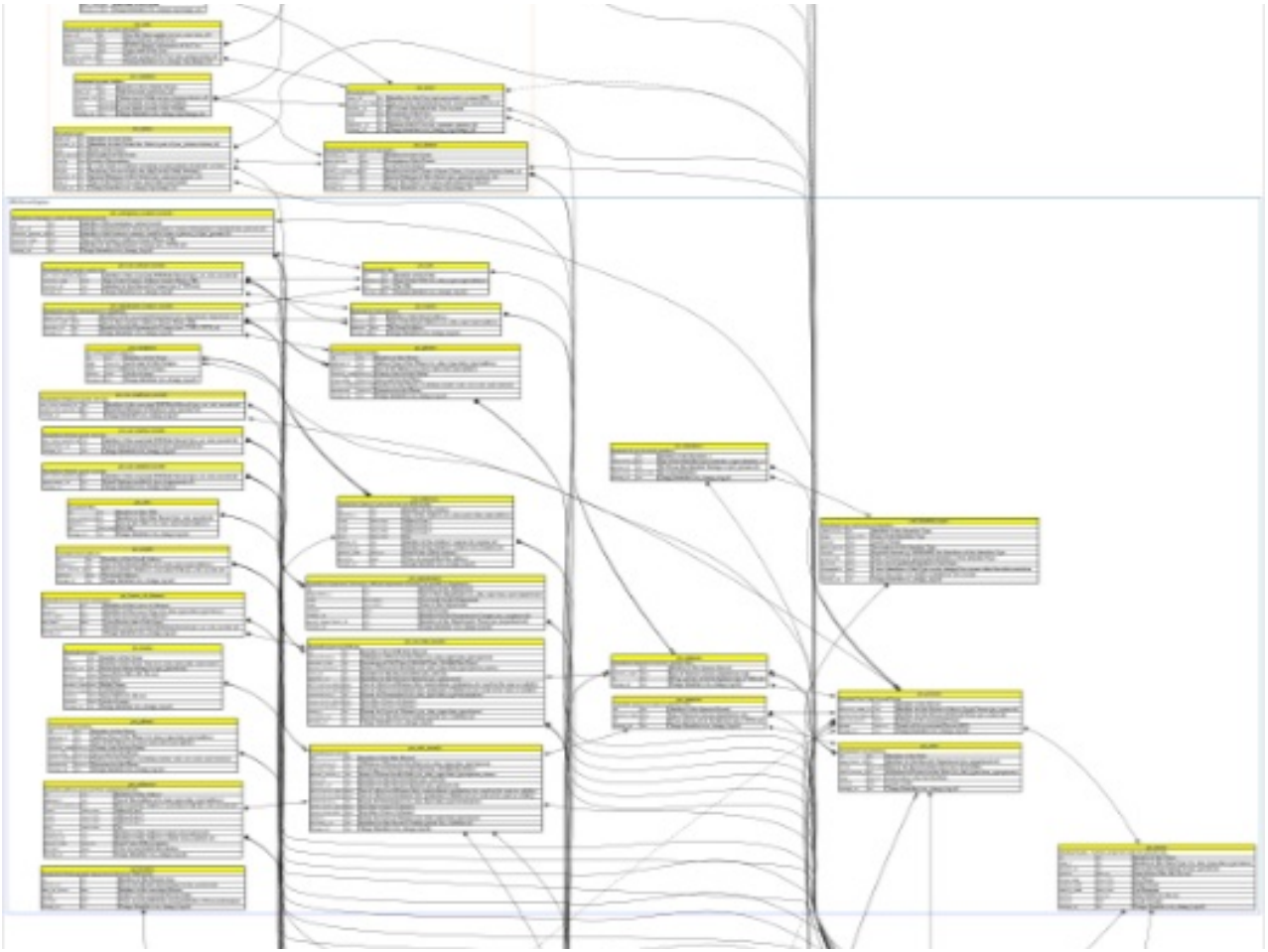



OpenRegistry Architecture
High Level Architecture, June 2009
Method Invocation
Event Notification
External Services
Directory Builder
Provisioning Engine
Real Time API
REST, SOAP
Web Interface
HTTPS
Batch
CSV, XML
Update Queue
ActiveMQ
Batch
CSV, XML
Registry
Data Flow
Database
Oracle, Postgres, etc

Data Model

- Generic enough to work for multiple institutions
- Specific enough to work for yours
- Internationalized
- Well documented

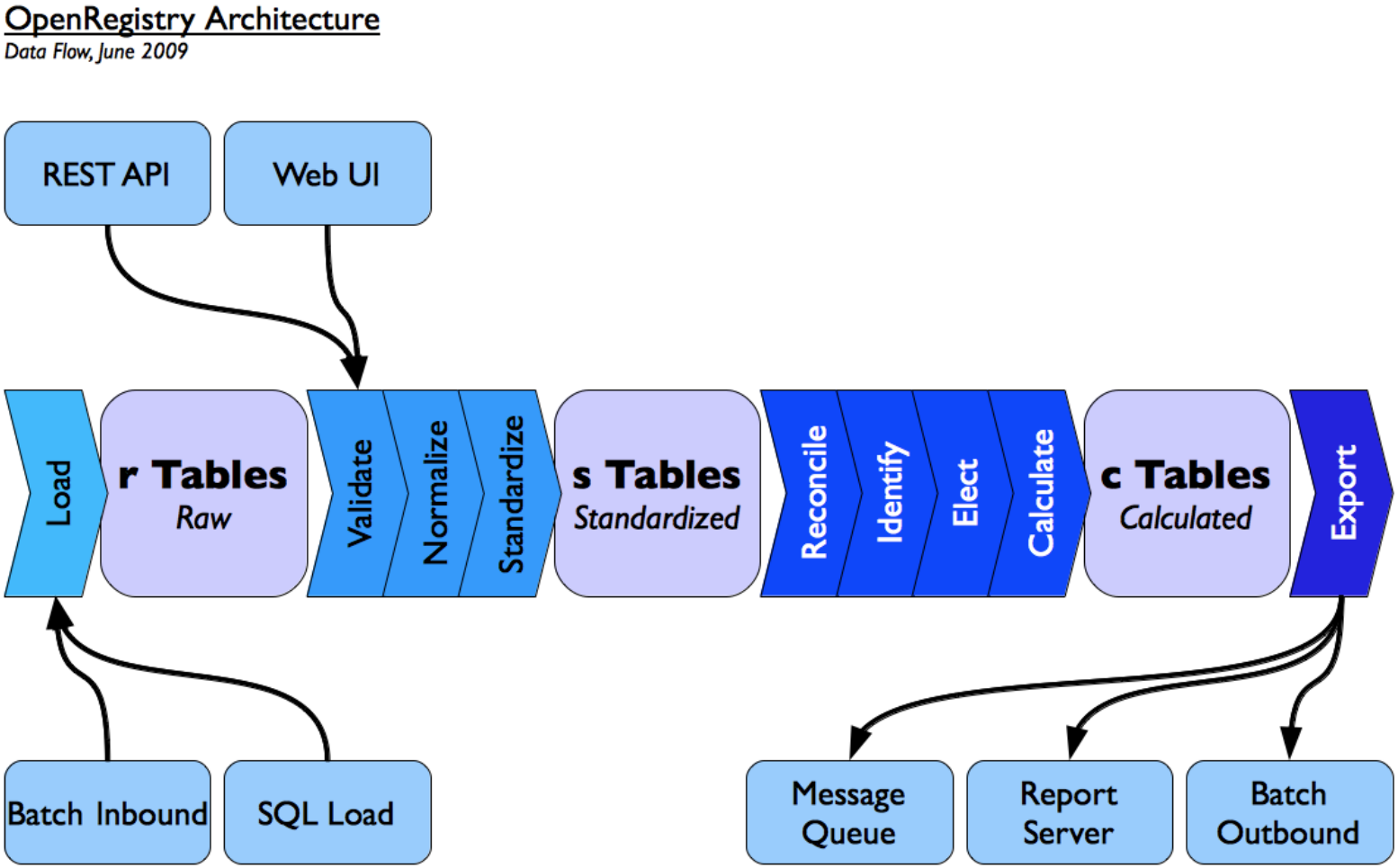
Data Model Overview



Data Model Excerpt

prc_affiliations		
affiliation_id	int	Identifier of this Affiliation
person_id	int	Person this Affiliation belongs to (prc_persons:person_id)
validity_id	int	Identifier for this Affiliation's Validity period (ctx_validities:validity_id)
parent_affiliation_id	int	Identifier of this Affiliation's Parent (prc_affiliations:affiliation_id)
termination_date	date	Date of effective termination (need not be same as validity)
termination_t	int	Reason for termination (ctx_data_types:data_type=termination)
affiliation_t	int	Affiliation of Person (ctx_data_types:data_type=person)
percent_time	int	Percentage of Full Time (100=Full Time, 50=Half/Part Time)
person_status_t	int	Status of Person for this Affiliation's (ctx_data_types:data_type=person_status)
role_id	int	Identifier for this Record's Affiliation's (prs_roles:role_id)
sponsor_id	int	Identifier for this Record's Sponsor (prs_sponsors:sponsor_id)
sor_role_record_id	int	Identifier of this Affiliation's SOR Role Record (prs_sor_role_records:sor_role_record_id)
change_id	int	Change Identifier (ctx_change_log:change_id)

prs_sor_employee_records		
sor_role_record_id	int	Identifier of the associated SOR Role Record (prs_sor_role_records:sor_role_record_id)
supervisor_person_id	int	Reporting Manager of Employee (prc_persons:person_id)
hire_date	date	Date of effective hire (need not be same as validity)
termination_date	date	Date of effective termination (need not be same as validity)
termination_t	int	Reason for Termination (ctx_data_types:data_type=termination)
change_id	int	Change Identifier (ctx_change_log:change_id)

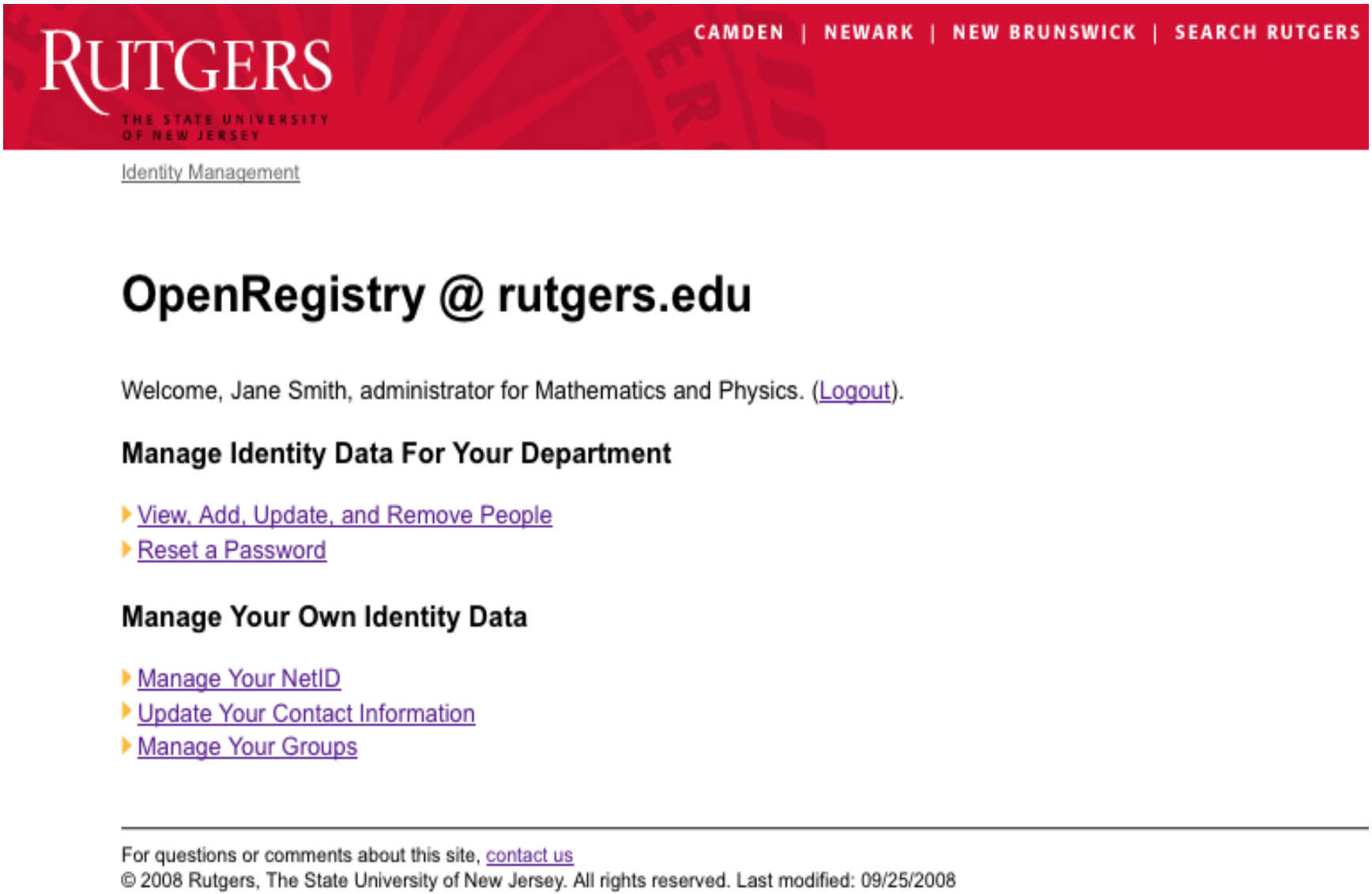

OpenRegistry Architecture
Data Flow, June 2009
REST API
Web UI
Load
r Tables
Raw
Validate
Normalize
Standardize
s Tables
Standardized
Reconcile
Identify
Elect
Calculate
c Tables
Calculated
Export
Batch Inbound
SQL Load
Message Queue
Report Server
Batch Outbound

OpenRegistry Approach

- Communicate openly and transparently
- Design based on supportable, end-user focused, efficient processes and ease of maintenance
- Adhere to open standards wherever possible
- Leverage other higher ed efforts
- Favor iterative development where appropriate
- Implement highly available, highly scalable, cost efficient technologies

OpenRegistry Approach

- Generic architecture and data model
  - More than Rutgers needs, but makes OR more useful for others
- Multiple levels of engagement with the community
  - Discuss: Review design documents, identify gaps and changes
  - Develop: Help write code, documentation, etc
  - Deploy: Run OR as an IDMS (when released)
  - Donate: Contribute resources to help with development and outreach
- Transparent, agile development process
  - Work done on Jasig servers, not Rutgers
- Get the ball rolling, encourage others to join
- Build on lessons learned from CAS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CAMDEN | NEWARK | NEW BRUNSWICK | SEARCH RUTGERS
Identity Management
OpenRegistry @ rutgers.edu
Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).
Manage Identity Data For Your Department
View, Add, Update, and Remove People
Reset a Password
Manage Your Own Identity Data
Manage Your NetID
Update Your Contact Information
Manage Your Groups
For questions or comments about this site, contact us
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Identity Management

OpenRegistry: Your Department

Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).

Manage Identity Data For Your Department

- Add a New Person
- View more details or update a Person (including provisional termination) by clicking on the appropriate record
- Delete a Person by checking the box in the 'Delete' column, then clicking 'Delete Selected Entries', below

NetID	Name	Title	Affiliation	Department	Good From	Good Until	Delete?
aa12	Alex Alexander	Professer of Addition	Faculty (Provisional)	Mathematics	10/1/2008	10/31/2008	☐
bb34	Beth Bethlehem	Professer of Invisible Particles	Faculty	Physics	8/1/1994		
cc56	Charles Charleston	Guest Lecturer of Multiplication	Visiting Scholar	Mathematics	8/15/2007	12/31/2007	☐

Delete Selected Entries

For questions or comments about this site, contact us

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Identity Management

OpenRegistry: Add a Person

Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).

Step 1: Personal Information

Please enter as much information as possible to help us determine if we already know about this person.

First Name*	
Middle Name	
Last Name*	
Suffix	
Date of Birth*	
NetID	
SSN	

*Required

Continue

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Identity Management

OpenRegistry: Add a Person

Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).

Step 2: Possible Matches

We have found the following people who may be the person you are trying to add.

- View more details for a Person by clicking on the appropriate record
- If one of these records matches the person you are trying to add, click 'Add This Person' for that record
- If none of these records match, select 'Add New Person', below

NetID	Name	Title	Affiliation	Department	Good From	Good Until	Add?
jas12	John Adam Smith	Administrative Assistant	Staff	English	6/15/2004		Add This Person
jas34	John Alex Smith	Unit Computing Manager	Staff	Athletics	6/15/2004	5/30/2006	Add This Person

Add New Person

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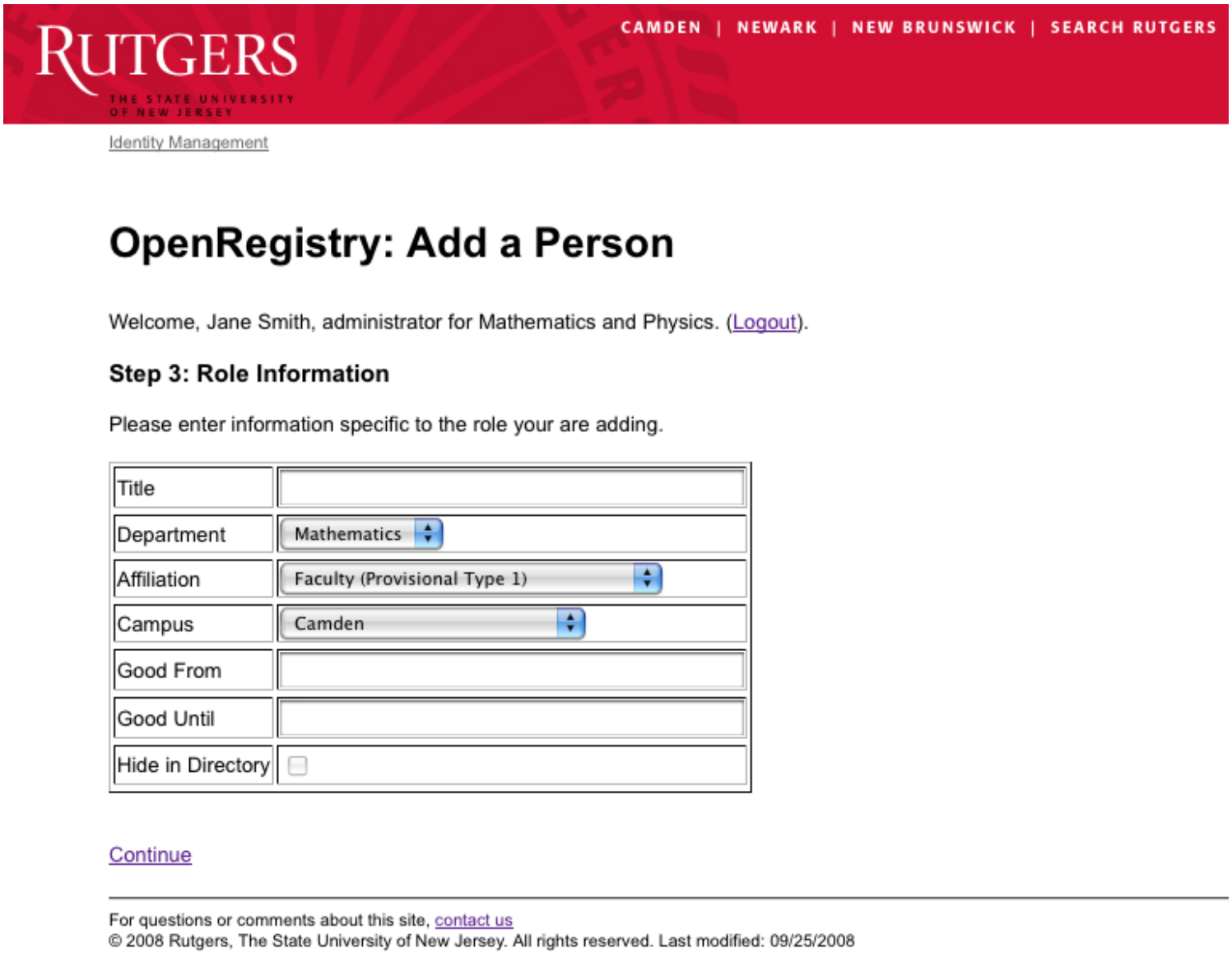

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Identity Management

OpenRegistry: Add a Person

Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).

Step 3: Role Information

Please enter information specific to the role your are adding.

Title	
Department	Mathematics
Affiliation	Faculty (Provisional Type 1)
Campus	Camden
Good From	
Good Until	
Hide in Directory	☐

Continue

For questions or comments about this site, contact us

Identity Management

OpenRegistry: Add a Person

Welcome, Jane Smith, administrator for Mathematics and Physics. (Logout).

Step 4: Identity Activation

John Aron Smith has been successfully added.

- Please print this page and hand it to John for NetID activation purposes
- The address for activation of NetIDs is https://netid.rutgers.edu/activate
- The activation key listed below may only be used once

NetID	jas97
Activation Key	b734ff334a

Add Another Person
Return

OpenRegistry Initiative Milestones

- √ Requirements
- √ Design
- √ Project Infrastructure
- R1: Core Services, REST API, Initial UI, Initial Business Rules
  - Meets Rutgers RIAR-1 requirements
- R2: Enhanced Core Services, UI, Business Rules, Initial Provisioning
- R3: Batch Interface, Enhanced Business Rules, Enhanced Provisioning

Intersection With Your Institution

- Potential for collaboration could take many forms
  - Participation in or vetting of OR design
  - Evaluation for migration and adoption as OR matures
  - Adjustment of OR milestones according to your needs, with your resources
- Benefits of Migration to OR
  - Provides long term, sustainable model
  - Elimination of programmer-specific knowledge concerns
  - Avoidance of vendor lock-in
    - Commercial solutions aren't drop-in, customization work needed
    - Easier to tailor to future needs
  - Community of similar institutions in similar situations

Additional Information

- http://www.ja-sig.org/wiki/display/OR