

# Identity Registration 201

## baseCAMPING with the cow



spherical cow  
group



# IDENTITY REGISTRATION 201

baseCAMPING WITH THE COW  
COMANAGE REGISTRY

# YOUR CAMP COUNSELOR

**Laura Paglione** serves as an independent consultant with Spherical Cow Group helping technology companies, research institutions and nonprofits develop, implement and market their research infrastructure products. She seeks to inspire organizations to take the road less traveled, embrace alternative solutions, and ditch rigid ideals. She facilitates community engagement for COmanage, coordinates stakeholders of the open source project, and develops resources for the community including the training materials for COmanage. Laura also serves as the Vice Chair of the InCommon Steering Committee and a member of the Trust and Identity Program Advisory Group. (LauraPaglione.com)

**Spherical Cow Group (SCG)** was established in 2012 and has been involved with InCommon for over 10 years. Its eight partners work with organization in higher education, research, scholarly communications, standards and NGOs, including virtual organizations. SCG leads the COmanage Open Source project and development, designs and teaches its training programs, and works with clients who seek to customize COmanage for their needs. (SphericalCowGroup.com)





# GETTING READY



BACKGROUND: IDENTITY REGISTRIES & COMANAGE

# Identity Registries and Person Repositories



Concepts to cover:

- Aggregating person data
- Person matching and deduplication
- Repositories (directories, databases, MDM)
- Identity proofing and credentialing

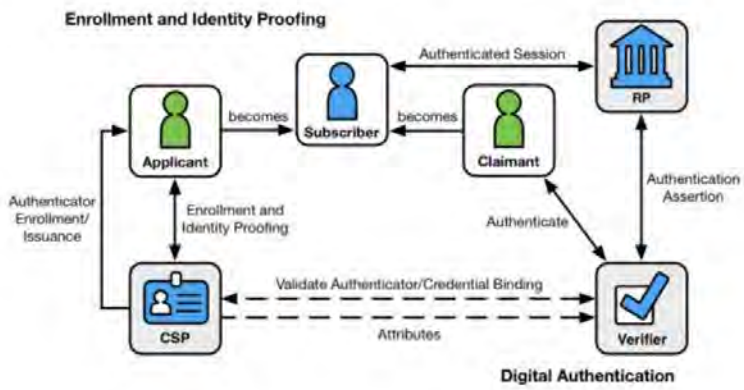
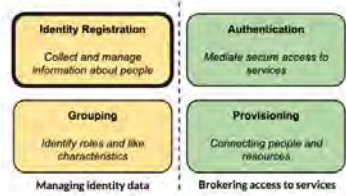


Figure 4-1 Digital Identity Model  
(From NIST SP 800-63 Digital Identity Guidelines)



## IDENTITY REGISTRY & PERSON REPOSITORY

### KEY FEATURES

Aggregating person data

Matching & deduplicating person data

Person information storage

Directories, databases

Use of person data

Identity proofing, credentialing, use by other systems

Person lifecycle management

Onboarding, status changes, offboarding

# YES, A TOOL... BUT THE DETAILS MATTER FOR IMPLEMENTATION

USE CASE	Research Project / VO	Primary Registry	Guest Registry
People and resource access	Manage people from diverse locations / different authentication; access to limited set of specific resources	Manage home population; sophisticated resource access	Manage a non-primary population (parents, library users, etc); usually no institutional sign in; access to limited resources
Aggregating person data	The same person may participate in multiple projects or hold multiple affiliations	Multiple sources of record for a single person (HR, Student system, affiliate system, etc)	Multiple personas – a guest may hold other roles w/your institution
Person information storage	A simple person registry may be enough	Want information stored in a separate, well-established location (like LDAP)	Want the information separate from primary database to avoid accidental co-mingling
Person lifecycle management	Managed by project rules	Might be handled by HR or student database & rules	
Common solution	Handled by a person registry; light group management & provisioning too	Specialized tools for each component; person registry may be a “helper”	Person registry for lifecycle management; more sophisticated tools too

# COMANAGE HISTORY

- Open Source project
  - Project & Development lead: Spherical Cow Group
  - Community directed by the COmanage Program Steering Group (Community Working Group)
  - Code contributions made by the global community
  - Many enhancements are dedicated back to the open source project to benefit all
- Started in 2010 as a project funded by NSF and Internet2
- Goal to leverage FIM services to support collaborative organizations
- Includes a rich set of APIs and plug-ins that enable connections to other systems

# COMANAGE IS USED FOR PERSON LIFECYCLE MANAGEMENT



## **Enrollment + Lifecycle Actions (changes, offboarding, ...)**

*Enroll and manage individuals into your Identity and Access Management systems in diverse ways*



## **Synthesis**

*Combine information about a person from different sources (Systems of Record) into a single, comprehensive record*



## **Organization/group Modeling**

*Model your organization as broad “groups” and attaching this group information to identity records; transfer to LDAP*



## **Basic Provisioning/De-provisioning**

*Provision information to directly manage access to systems or services, or to manage access via other tools like midPoint or Grouper*



# COMANAGE CAPABILITIES

What capabilities should you consider as you select (or build) a registry for your higher education or research organization? COmanage has the following capabilities.

Onboarding

Match and  
Linking

Identifier

User Life  
Cycle

Provisioning

Web SSO

Efficiency





Solution  
FLEXIBILITY

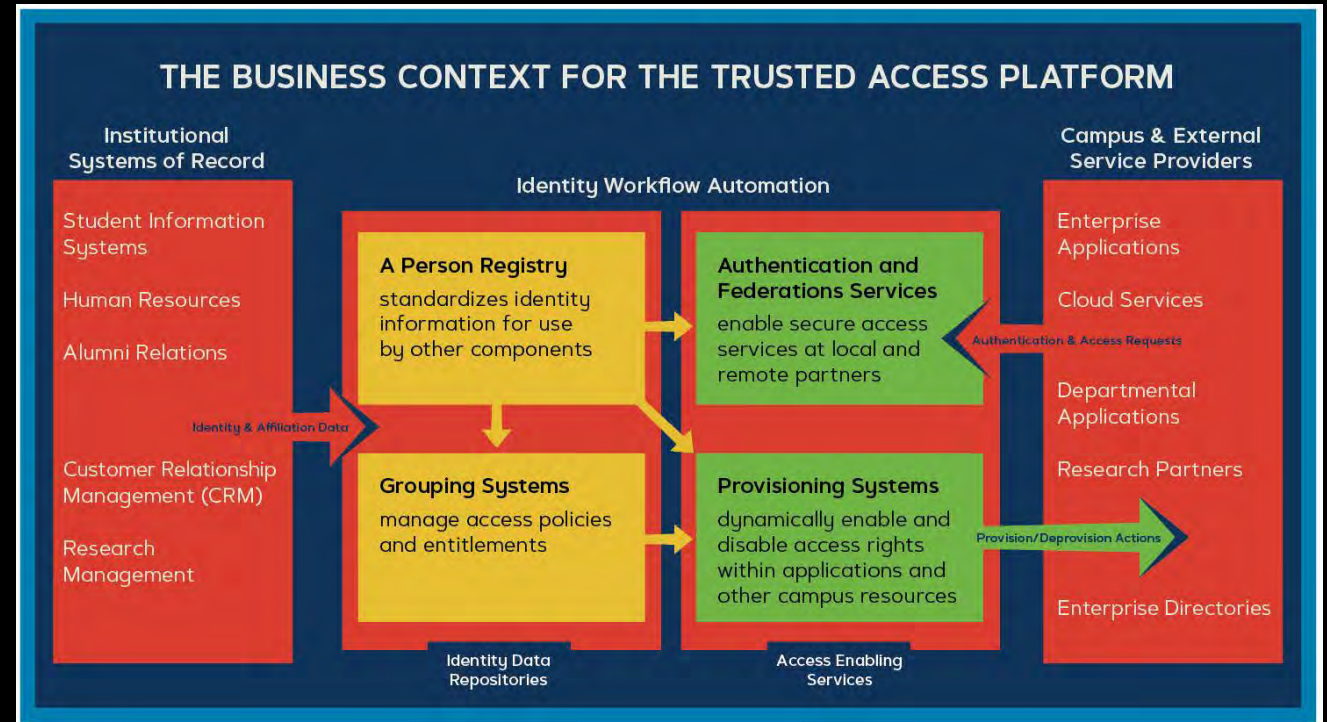
Implementation  
COMPLEXITY

# THE CAMPSITE

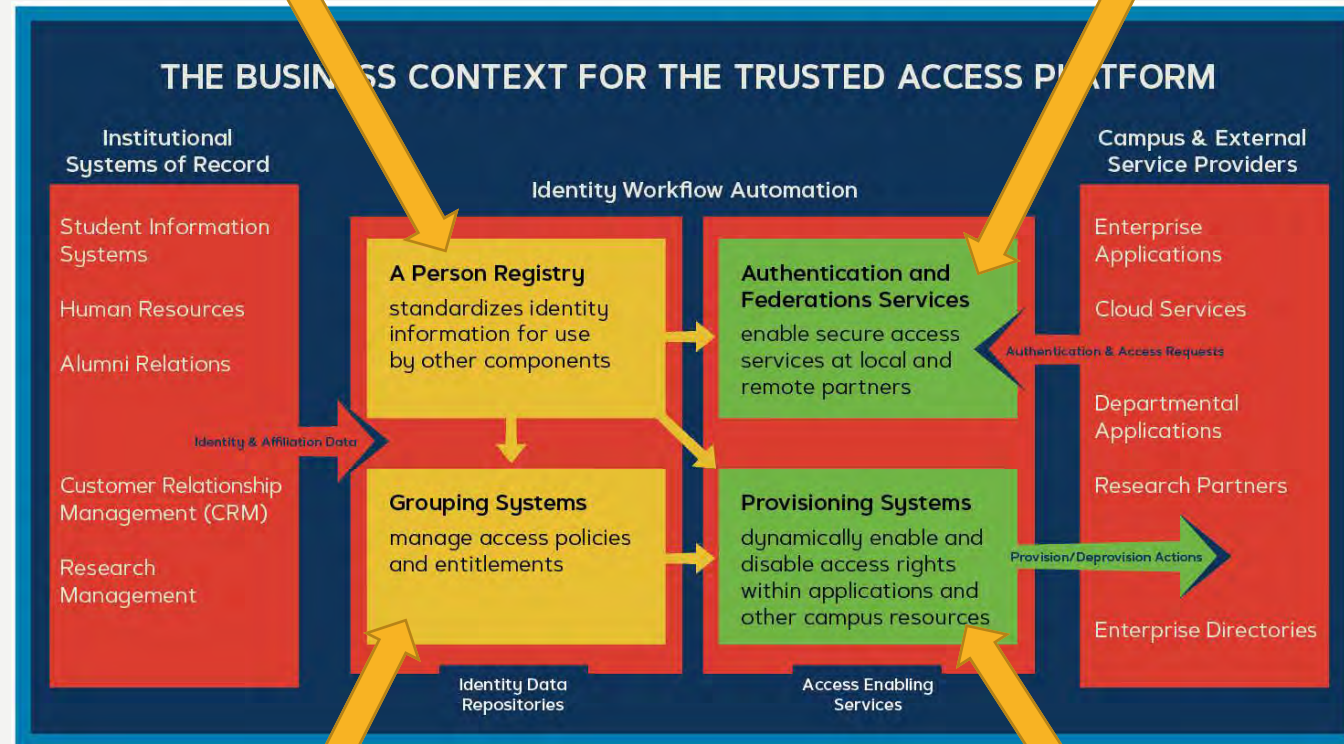


UNDERSTANDING THE COMANAGE ENVIRONMENT

# TRUSTED ACCESS PLATFORM CONTEXT

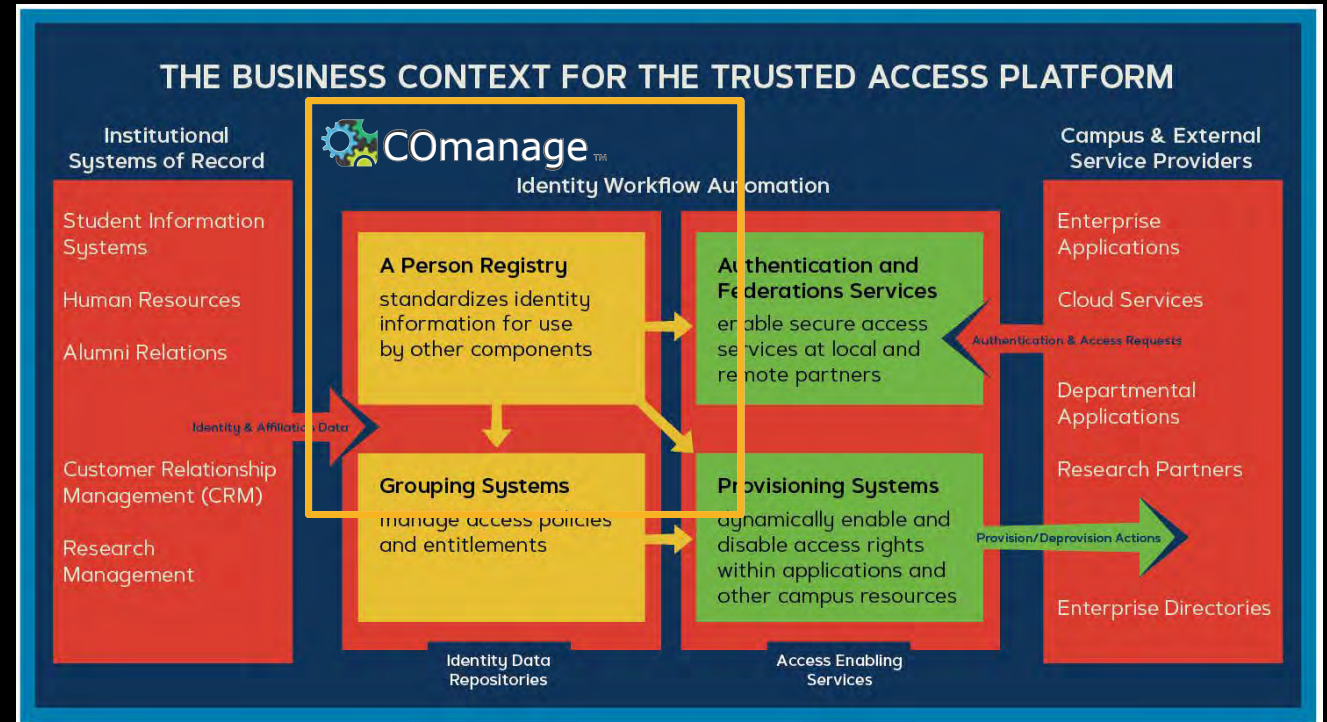


# TAP SOFTWARE CENTERS



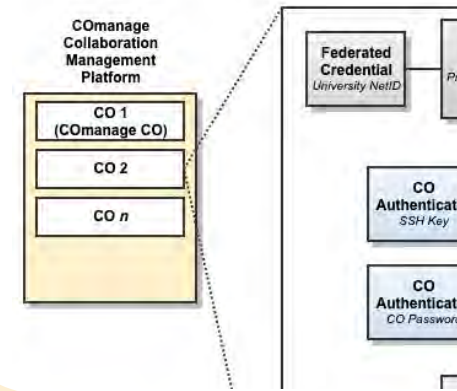
# TRUSTED ACCESS PLATFORM CONTEXT

COMANAGE IS A  
PERSON REGISTRY...  
PLUS...



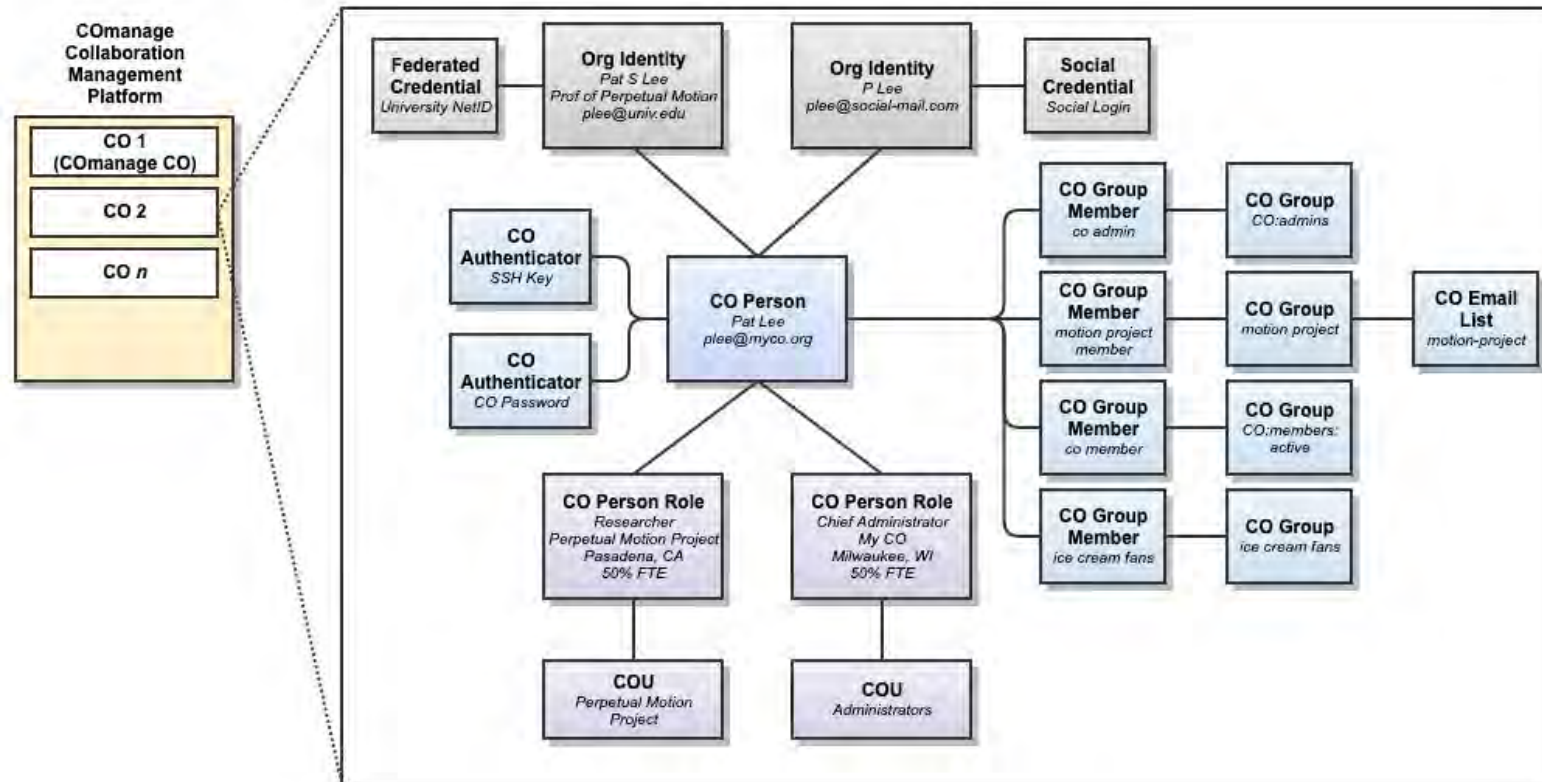
# COLLABORATIVE ORGANIZATIONS

- Collaborative Organizations (CO): the main object of COmanage
- A CO is any formal or informal group of individuals working collaboratively in a digital setting
- For each installation of COmanage, one or more top—level Collaborative Organizations (tenants)



The screenshot shows the COmanage Registry web interface. At the top right, it says 'Platform Administrator' with a user icon. The main header is 'COmanage Registry' with the COmanage logo. A yellow notification bar states: 'Your last login as admin was at 2020-07-21 17:31:34 from 69.121.134.254'. Below this, a message says 'Welcome to COmanage Registry. Please select a collaboration.' The section 'Available Collaborations' contains a table with two columns: 'Name' and 'Description'.

Name	Description
<a href="#">COmanage</a>	COmanage Registry Internal CO
<a href="#">Redcurrant University (Not a Member)</a>	A Progressive Institution of Science and Tautology



# INSIDE A CO: THE COMANAGE ARCHITECTURE

# SETTING UP THE TENT



CONFIGURING COMANAGE





## PEOPLE

COmanage is a registry for people. People are modeled through the information stored about them from other systems, their roles in organization structures, their memberships in groups, and how they authenticate.



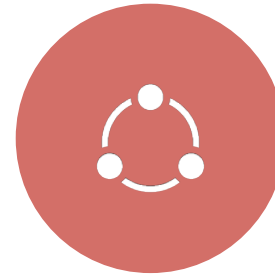
## ORGANIZATIONS

How the people naturally fall into groups, perhaps by organizational unit, project team or the activities that a group of people can do. Comanage has several structures to model your Collaborative Organization.



## EXTERNAL SYSTEM LINKS

COmanage is particularly good at linking stored people to their representations in other systems. These systems include “inbound systems” that provide information to Comanage, as well as “outbound systems” that enables provisioning this collected information.



## ENROLLMENT FLOWS

Extremely powerful and flexible workflows to import, create, configure, and manage people in COmanage and share this information with other systems.

# COMANAGE CONCEPTS

**DEMO**

SCG QA SYSTEM

# MODELING PEOPLE

## CO Person

the representation of a person in COmanage

- **Identifiers** – unique identifiers representing individuals in COmanage & elsewhere
- **CO Person Role** – the roles the individual plays in the CO
- **Org Identity** – stores attributes about the person
  - Often from an external system (System of Record)
  - Includes attributes from Systems of Record
  - Can include an authenticator for sign in

Home > Redcurrant University > My Population > Chris Aaron

## Edit Chris Aaron

Name	Actions
Chris Aaron (Primary, Official)	<a href="#">Edit</a>
Chris Aaron (HRMS, Official)	<a href="#">View</a>
Chris Aaron (SIS, Official)	<a href="#">View</a>

Identifiers	Actions
9c88fdb6-808d-4485-89fc-296ee8aef916 (Match Reference)	<a href="#">Edit</a> <a href="#">Delete</a>
041-62-3236 (National)	<a href="#">Edit</a> <a href="#">Delete</a>
9c88fdb6-808d-4485-89fc-296ee8aef916 (HRMS, Match Reference)	<a href="#">View</a>
041-62-3236 (HRMS, National)	<a href="#">View</a>
hrms43281 (HRMS, System of Record ID)	<a href="#">View</a>
9c88fdb6-808d-4485-89fc-296ee8aef916 (SIS, Match Reference)	<a href="#">View</a>
041-62-3236 (SIS, National)	<a href="#">View</a>
sisH43281 (SIS, System of Record ID)	<a href="#">View</a>

Email Addresses [Add](#)

URLs [Add](#)

Groups [Manage Group Memberships](#)

Person Attributes

Role Attributes [Add](#)

Order	COU	Title	Affiliation	Valid From	Valid Through	Status	Actions
	Employees	Employee	Employee			Active	<a href="#">Edit</a> <a href="#">Relink</a> <a href="#">Delete</a>
	Students	Student	Student			Active	<a href="#">Edit</a> <a href="#">Relink</a> <a href="#">Delete</a>





Organizational Identities [Link](#)

Name	Source	Organization	Valid From (America/New_York)	Valid Through (America/New_York)	Login Identifiers	Actions
Chris Aaron	LPRMC					<a href="#">Edit</a> <a href="#">Relink</a>

# MODELING ORGANIZATIONS

- **CO** – Collaborative Organization
- **COU** – CO Unit  
the structural sub-units of the CO
- **CO Group** – flexible groups  
can be open or closed; can support distributed management
- **CO Department** –  
store information useful for describing parts of the organization

Organization Objects Comparison Summary

	 <b>CO</b>	 <b>COU</b>	 <b>CO Department</b>	 <b>CO Group</b>
<b>Belongs To</b>	COmanage Platform	CO	CO; COU	CO; COU (for automatic groups only)
<b>Has Many</b>	CO; CO Group	CO Person Roles; CO Departments		CO People (via CoGroupMember); CO Email List
<b>Hierarchical</b>	No	Yes	No	No
<b>Object Type</b>	Structural Object	Structural Object	Primary Registry Object	Primary Registry Object
<b>Supported Attributes</b>	None	None	Addresses; Email Addresses; Identifiers; Telephone Numbers; URLs; Leadership Group; Administrative Group; Support Group	Open / Closed; Managers (via CoGroupMember); Email Addresses (via CoEmailList); Identifiers

# EXTERNAL SYSTEM LINKS



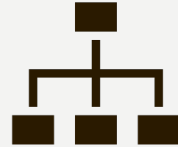
## Incoming: Systems of Record

### PROVIDE

- Attributes
- Identifiers

### ENABLE

- Sign in via other tools
- Identity matching & linking



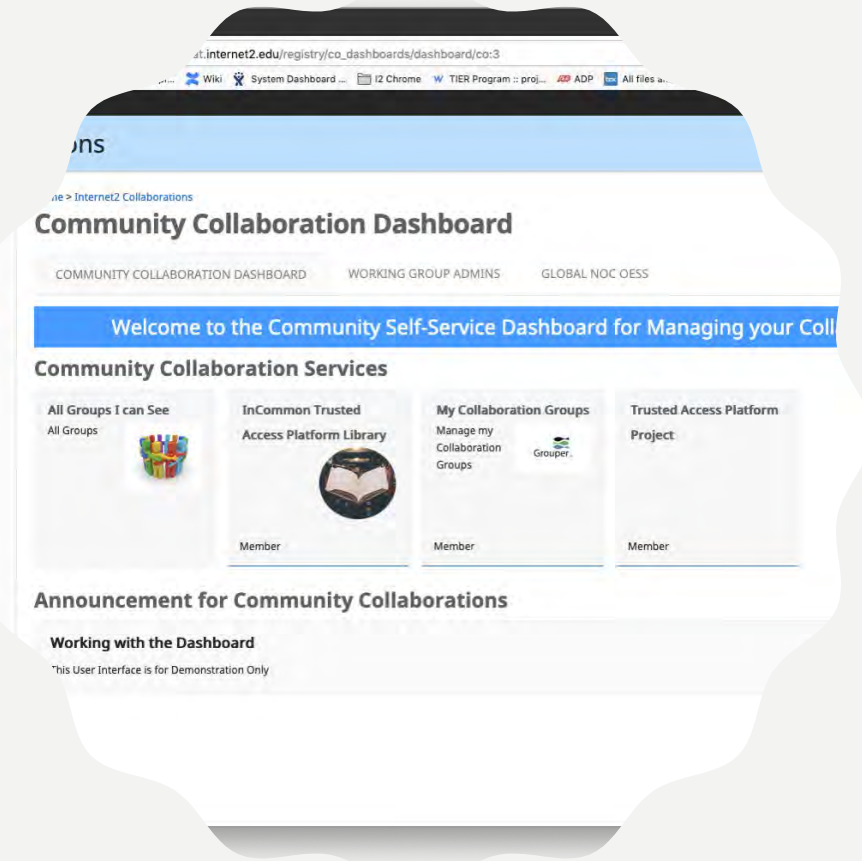
## Outgoing: Provisioned Services

### PROVIDE

- Attributes to enable system use
- Managed provisioning & deprovisioning based on business rules
- Provisioning to Grouper and other systems for more sophisticated group management

### ENABLE

- Real-time checking of incoming system attributes
- Dashboard UI for quick access from COmanage



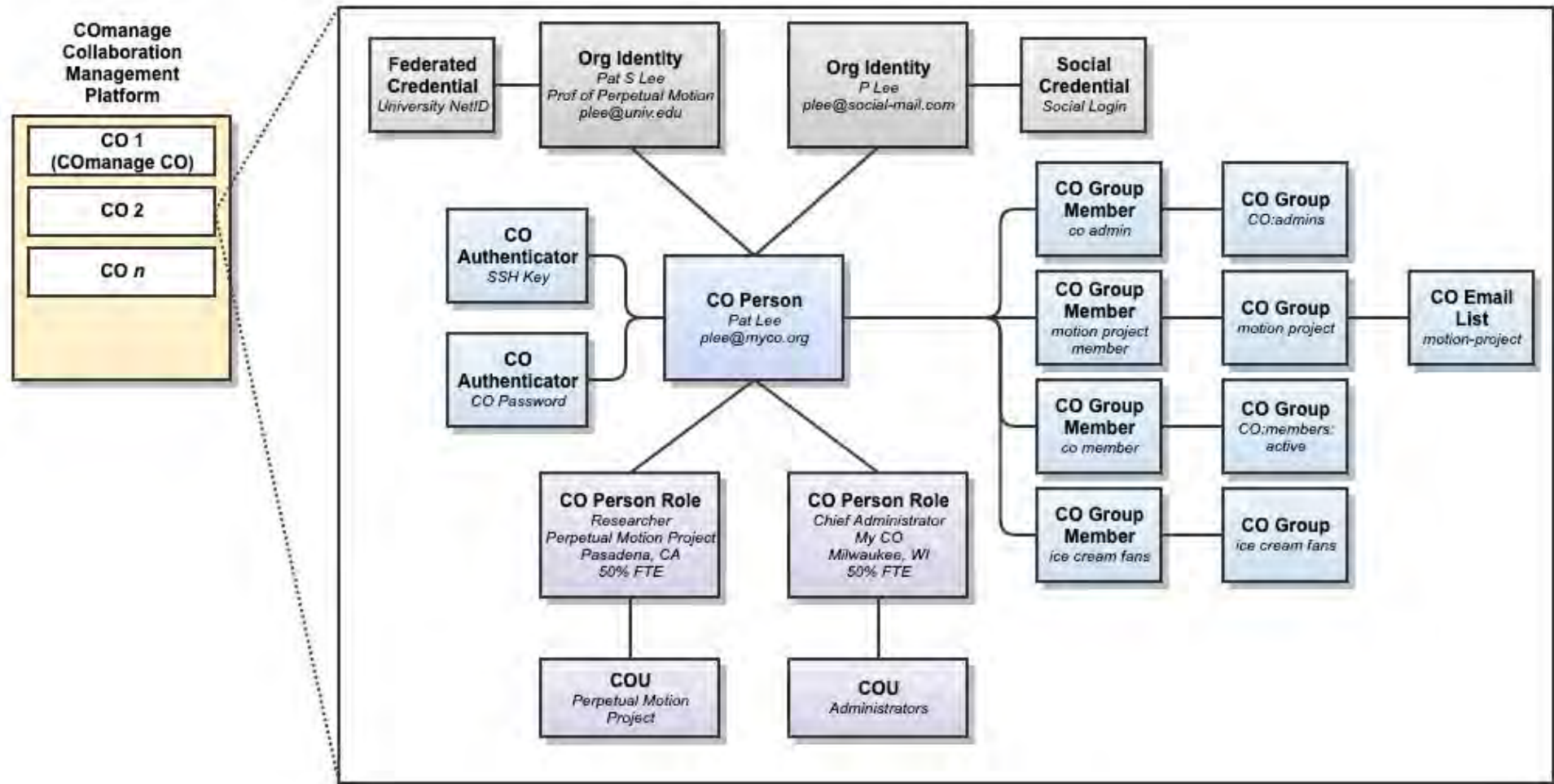
# ENROLLMENT WORKFLOW FEATURES

Register	Register individuals to connect to digital tools and resources
Match	Perform identity matching to prevent duplicates
Add	Add individuals to COUs, and CO Groups
Approve	Trigger approval steps as needed
Link	Link to external sources, using attributes to pre-populate information about the individual
Identifiers	Associate internal and external identifiers with the person
Review	Have the individual authenticate to gain access to privileges, verify email addresses, accept terms and conditions
Provision	Provision access to tools, systems and resources
Communicate	Send communications to the individual and others about the enrollment



# OTHER WORKFLOWS

- Add a role
- Identity linking
- Setting grace periods (for loss of privileges/access)
- Off boarding



# INSIDE A CO: THE COMANAGE ARCHITECTURE



# COMANAGE MATCH

- System for matching items
- Use directly in COmanage - match people as they are registered
- API to integrate with other systems

1. Define the attributes to be used for matching
2. Set up rules for matching (Canonical and Potential)
3. As items are evaluated, the rules are checked
  1. Items matching canonical rules > matching Reference ID
  2. Items matching none > new Reference ID
  3. Items matching potential rules flagged for manual review
4. UI for resolving potential matches

The screenshot shows the COmanage Match interface. The main heading is "Reconcile Unresolved Requests". Below this is a table with columns for Reference ID (173064d..., 173064d..., New) and a row for Attributes. The table contains the following data:

Attributes	173064d...	173064d...	New
id	43	45	62
sor	registry	registry2	sis
sorid	II160	JJ160	553815121
request_time	2019-07-28 12:16:32	2019-07-28 12:26:36	2019-10-27 12:43:55
resolution_time	2019-07-28 12:16:32	2019-07-28 12:26:36	
dob	1991-11-22	1991-11-22	1991-11-22
lastname	Doyle	Doyle	Dayle
firstname	Tom	Thomas	Tommy
ssn	7107137986085	7107137986085	7107137986085
netid			

The "lastname" row is highlighted with a yellow border. A callout box on the right provides a magnified view of this row.

dob	1991-11-22	1991-11-22	1991-11-22
lastname	Doyle	Doyle	Dayle
firstname	Tom	Thomas	Tommy
ssn	7107137986085	7107137986085	7107137986085

# WRAPPING UP THE DAY



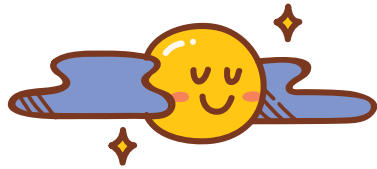
WHAT YOU CAN LOOK FORWARD TO

# THE SUN IS SETTING, BUT THERE IS SO MUCH MORE...

- Offboarding workflows
- User Interface customization
- Fun with plugins!
- Duplicate management with COmanage Match
- Extending the COmanage data model



# TO LEARN MORE



Video by [Vladimir Maric](#) from [Pixabay](#)

**COmanage software page**

[www.incommon.org/software/comanage/](http://www.incommon.org/software/comanage/)

**COmanage training page**

[www.incommon.org/academy/comanage/](http://www.incommon.org/academy/comanage/)

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COMANAGE MATCH



**BONUS SLIDES!**

**COMANAGE  
MATCH**

**FEATURE SET IN SCREEN SHOTS**

# COMANAGE MATCH

- System for matching items
- Use directly in COmanage - match people as they are registered
- API to integrate with other systems

1. Define the attributes to be used for matching
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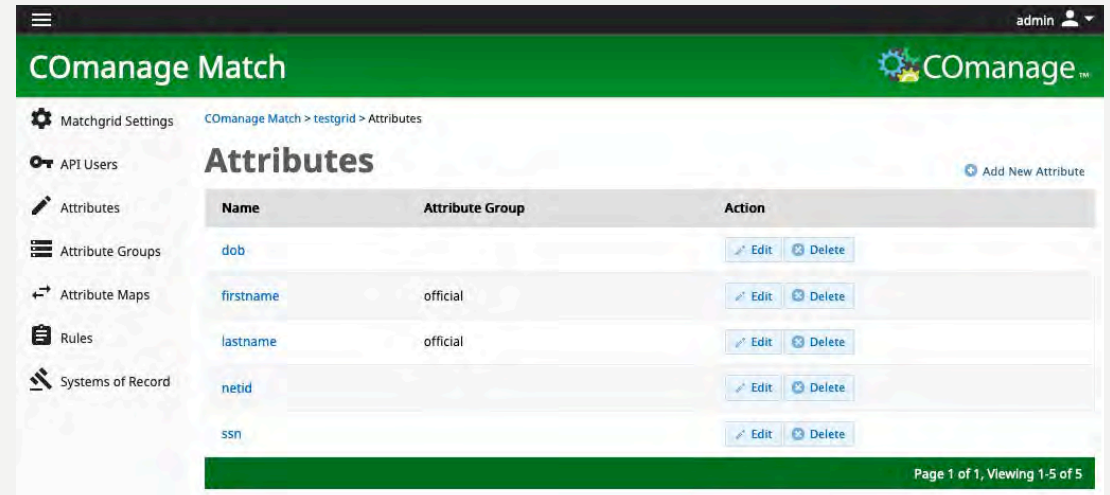
The screenshot shows the COmanage Match interface. The main heading is "Reconcile Unresolved Requests". Below this is a table with three columns representing different Reference IDs: "173064d...", "173064d...", and "New". The table lists various attributes for each item, such as id, sor, sorid, request\_time, resolution\_time, dob, lastname, firstname, ssn, and netid. The "lastname" row is highlighted with a yellow border, showing "Doyle", "Doyle", and "Dayle" respectively. A callout box on the right provides a magnified view of this row.

Attributes	173064d...	173064d...	New
id	43	45	62
sor	registry	registry2	sis
sorid	II160	JJ160	553815121
request_time	2019-07-28 12:16:32	2019-07-28 12:26:36	2019-10-27 12:43:55
resolution_time	2019-07-28 12:16:32	2019-07-28 12:26:36	
dob	1991-11-22	1991-11-22	1991-11-22
lastname	Doyle	Doyle	Dayle
firstname	Tom	Thomas	Tommy
ssn	7107137986085	7107137986085	7107137986085
netid			

dob	1991-11-22	1991-11-22	1991-11-22
lastname	Doyle	Doyle	Dayle
firstname	Tom	Thomas	Tommy
ssn	7107137986085	7107137986085	7107137986085

# SELECT & CONFIGURE THE ATTRIBUTES

- Doesn't have to be about people
- Define attributes that are of similar quality across your sources
- Configure attributes – what constitutes a match?
  - How closely the need to match
  - Substring matches allowed?
  - Exact match required?
  - Attribute map to use...



CManage Match

admin

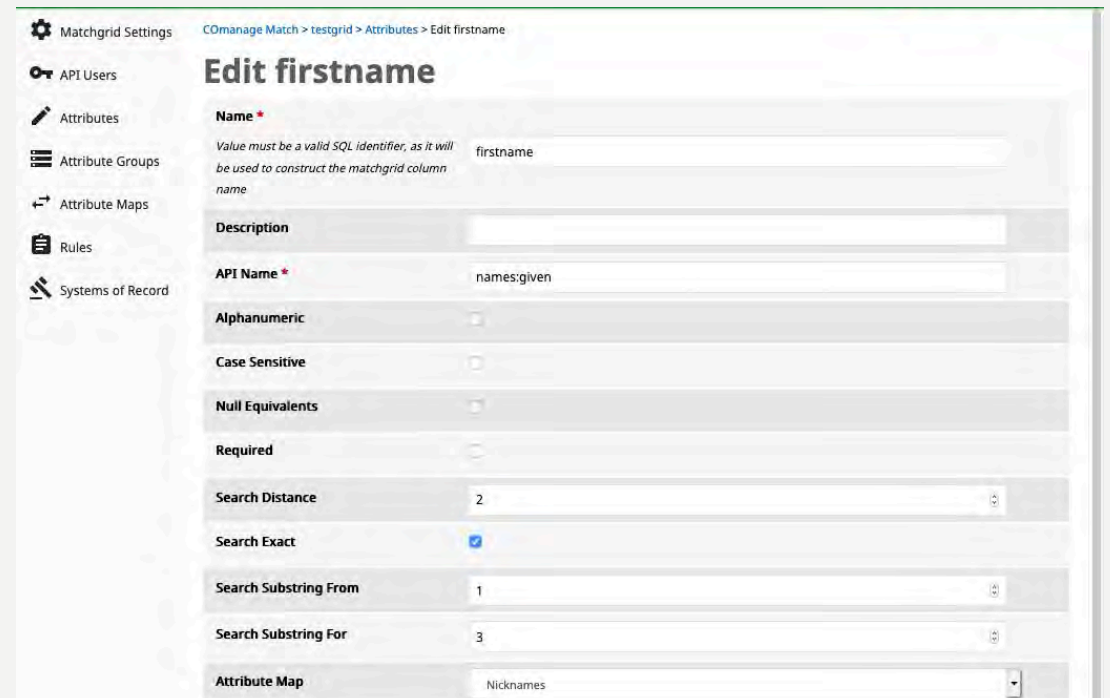
Matchgrid Settings > CManage Match > testgrid > Attributes

### Attributes

[Add New Attribute](#)

Name	Attribute Group	Action
dob		<a href="#">Edit</a> <a href="#">Delete</a>
firstname	official	<a href="#">Edit</a> <a href="#">Delete</a>
lastname	official	<a href="#">Edit</a> <a href="#">Delete</a>
netid		<a href="#">Edit</a> <a href="#">Delete</a>
ssn		<a href="#">Edit</a> <a href="#">Delete</a>

Page 1 of 1, Viewing 1-5 of 5



Matchgrid Settings > CManage Match > testgrid > Attributes > Edit firstname

### Edit firstname

**Name \***   
Value must be a valid SQL identifier, as it will be used to construct the matchgrid column name

**Description**

**API Name \***

**Alphanumeric**

**Case Sensitive**

**Null Equivalents**

**Required**

**Search Distance**

**Search Exact**

**Search Substring From**

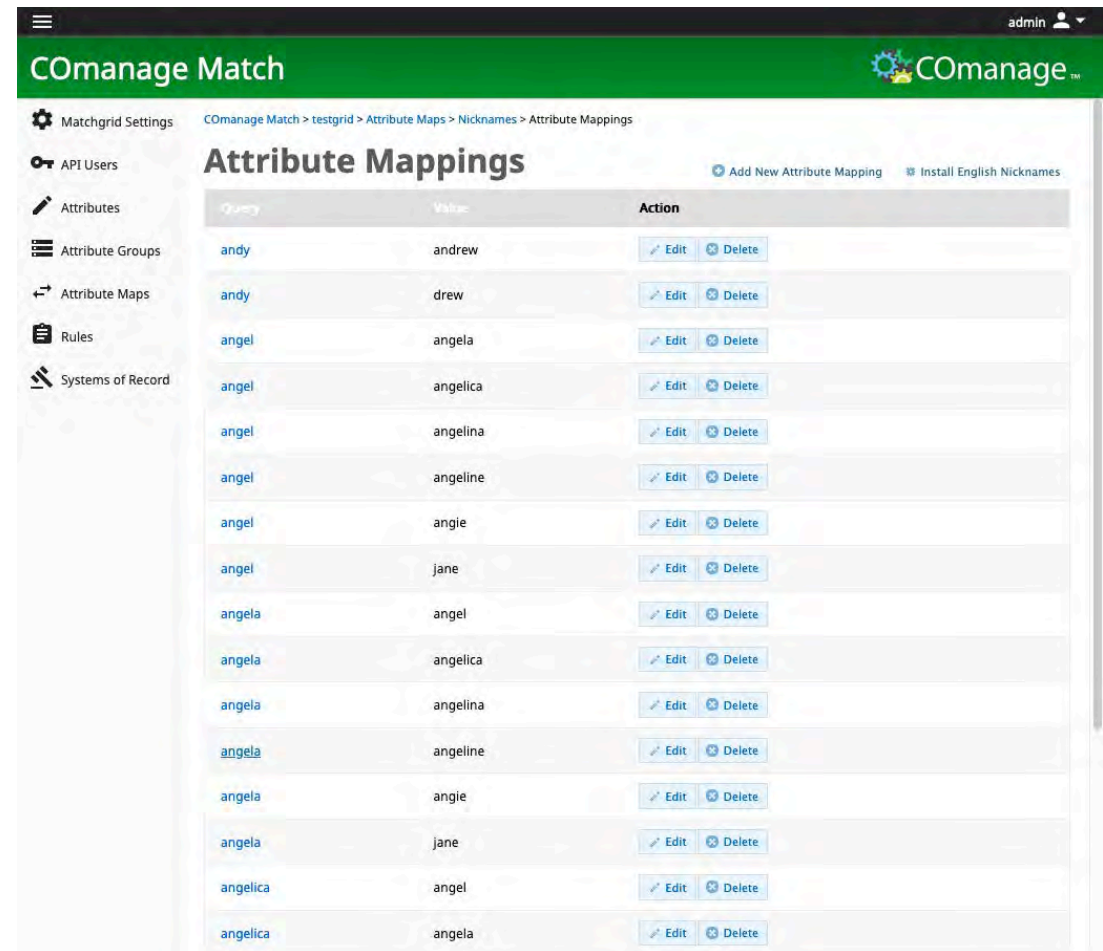
**Search Substring For**

**Attribute Map**



# ATTRIBUTE MAPS

- Maps of values that should be treated similarly
  - Nicknames
  - Updated names
  - Alternate names
- Different maps for different attributes

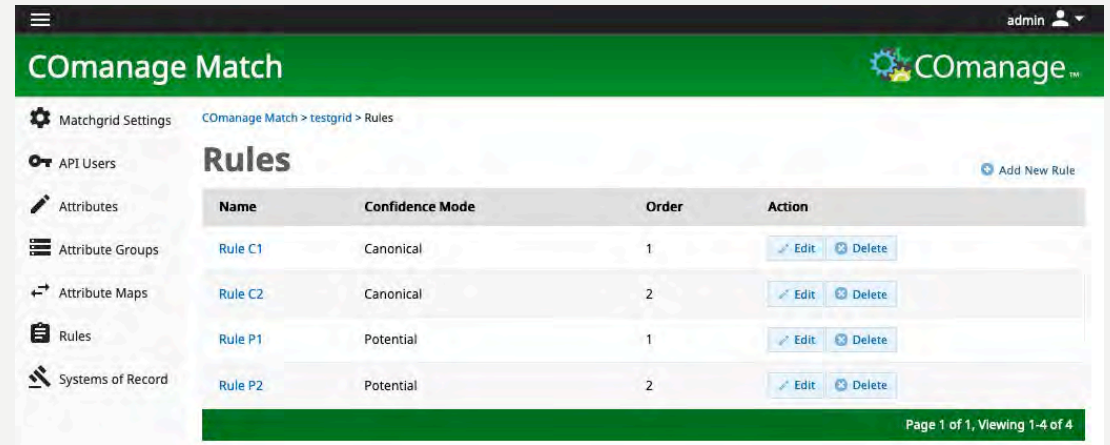


The screenshot shows the COmanage Match web interface. The top navigation bar is green with the COmanage logo and the text "COmanage Match". The user is logged in as "admin". The breadcrumb trail is "COmanage Match > testgrid > Attribute Maps > Nicknames > Attribute Mappings". The main heading is "Attribute Mappings". There are two buttons: "Add New Attribute Mapping" and "Install English Nicknames". The table below has three columns: "Query", "Value", and "Action".

Query	Value	Action
andy	andrew	<a href="#">Edit</a> <a href="#">Delete</a>
andy	drew	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angela	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angelica	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angelina	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angelina	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angeline	<a href="#">Edit</a> <a href="#">Delete</a>
angel	angie	<a href="#">Edit</a> <a href="#">Delete</a>
angel	jane	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angel	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angelica	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angelina	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angelina	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angeline	<a href="#">Edit</a> <a href="#">Delete</a>
angela	angie	<a href="#">Edit</a> <a href="#">Delete</a>
angela	jane	<a href="#">Edit</a> <a href="#">Delete</a>
angelica	angel	<a href="#">Edit</a> <a href="#">Delete</a>
angelica	angela	<a href="#">Edit</a> <a href="#">Delete</a>

# CONFIGURE THE MATCHING RULES

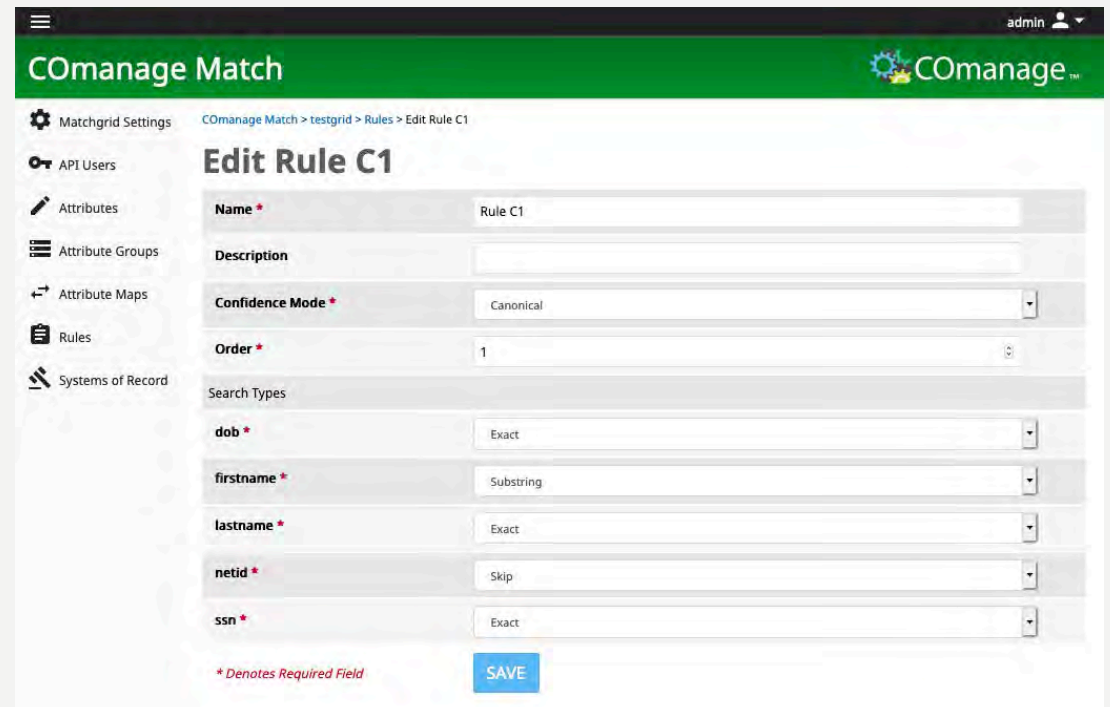
- Create a set of rules
  - Canonical – if all rules are met, the records are a match
  - Potential – if at least one rule is met, the records are a potential match
  - None of the rules match? No match!  
A new record is needed.
- Decide the order the rules should be evaluated
- What attributes are considered?



The screenshot shows the COmanage Match interface. The top navigation bar includes a hamburger menu, the text 'COmanage Match', and a user profile icon labeled 'admin'. Below the navigation bar is a breadcrumb trail: 'COmanage Match > testgrid > Rules'. A sidebar on the left contains icons and labels for 'Matchgrid Settings', 'API Users', 'Attributes', 'Attribute Groups', 'Attribute Maps', 'Rules', and 'Systems of Record'. The main content area is titled 'Rules' and features a table with the following data:

Name	Confidence Mode	Order	Action
Rule C1	Canonical	1	<a href="#">Edit</a> <a href="#">Delete</a>
Rule C2	Canonical	2	<a href="#">Edit</a> <a href="#">Delete</a>
Rule P1	Potential	1	<a href="#">Edit</a> <a href="#">Delete</a>
Rule P2	Potential	2	<a href="#">Edit</a> <a href="#">Delete</a>

At the top right of the table area is a button labeled 'Add New Rule'. At the bottom right of the page, it says 'Page 1 of 1, Viewing 1-4 of 4'.



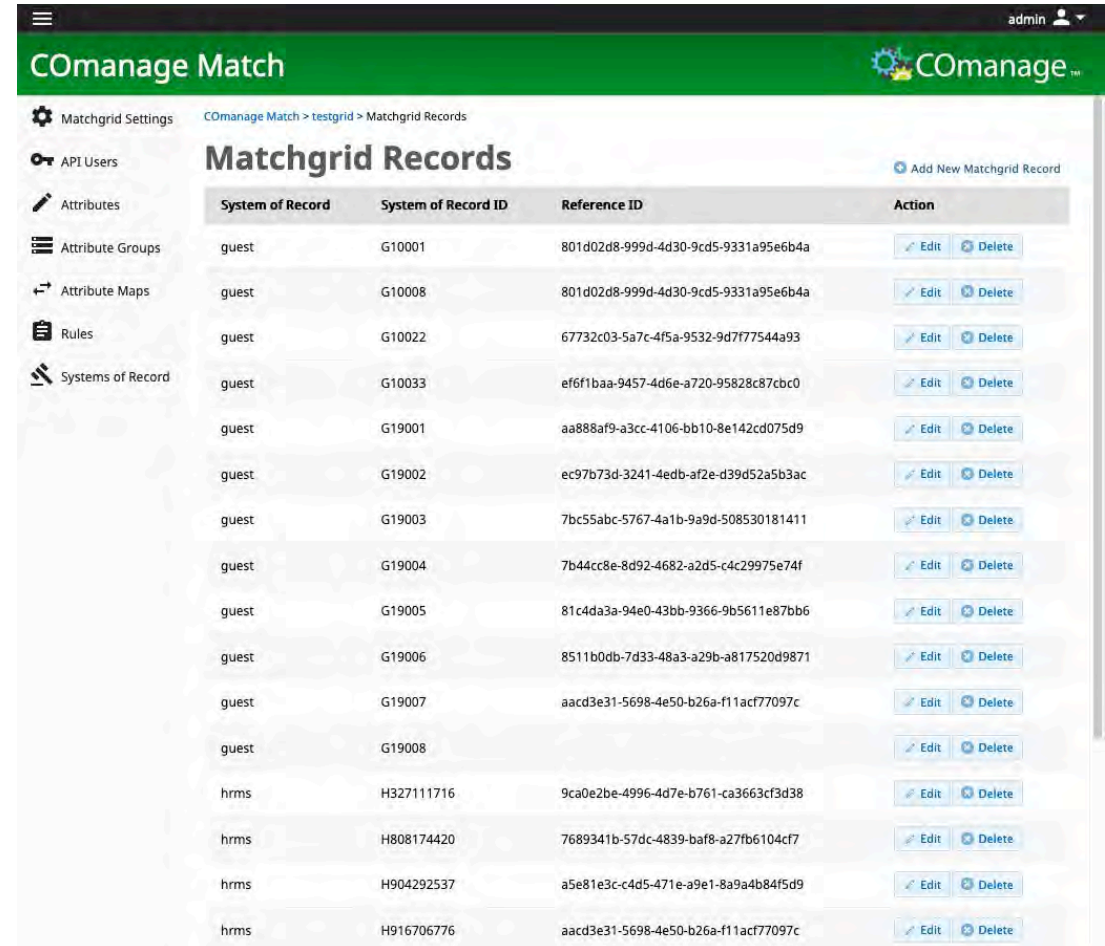
The screenshot shows the 'Edit Rule C1' page in the COmanage Match interface. The top navigation bar is identical to the previous screenshot. The breadcrumb trail is 'COmanage Match > testgrid > Rules > Edit Rule C1'. The sidebar is also identical. The main content area is titled 'Edit Rule C1' and contains a form with the following fields:

- Name \***: Rule C1
- Description**: (empty text field)
- Confidence Mode \***: Canonical (dropdown menu)
- Order \***: 1 (input field)
- Search Types**: (header for the following fields)
- dob \***: Exact (dropdown menu)
- firstname \***: Substring (dropdown menu)
- lastname \***: Exact (dropdown menu)
- netid \***: Skip (dropdown menu)
- ssn \***: Exact (dropdown menu)

At the bottom left of the form area, there is a note: '\* Denotes Required Field'. At the bottom right, there is a blue 'SAVE' button.

# EVALUATING THE RECORDS

- As evaluated, records are added to the “Matchgrid”
  - No ambiguity? Reference ID is assigned
    - Match – ID is that of matching record
    - No Match – New ID is assigned
  - Potential match? Reference ID is blank
- Reference IDs used by relying systems to prevent duplicates
- Potential matches are resolved manually



The screenshot shows the CManage Match web application interface. The top navigation bar includes the CManage logo and the user name 'admin'. The main content area is titled 'Matchgrid Records' and contains a table with the following columns: System of Record, System of Record ID, Reference ID, and Action. The table lists 18 records, each with an 'Edit' and 'Delete' button in the Action column.

System of Record	System of Record ID	Reference ID	Action
guest	G10001	801d02d8-999d-4d30-9cd5-9331a95e6b4a	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G10008	801d02d8-999d-4d30-9cd5-9331a95e6b4a	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G10022	67732c03-5a7c-4f5a-9532-9d7f77544a93	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G10033	ef6f1baa-9457-4d6e-a720-95828c87cbc0	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19001	aa888af9-a3cc-4106-bb10-8e142cd075d9	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19002	ec97b73d-3241-4edb-af2e-d39d52a5b3ac	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19003	7bc55abc-5767-4a1b-9a9d-508530181411	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19004	7b44cc8e-8d92-4682-a2d5-c4c29975e74f	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19005	81c4da3a-94e0-43bb-9366-9b5611e87bb6	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19006	8511b0db-7d33-48a3-a29b-a817520d9871	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19007	aacd3e31-5698-4e50-b26a-f11acf77097c	<a href="#">Edit</a> <a href="#">Delete</a>
guest	G19008		<a href="#">Edit</a> <a href="#">Delete</a>
hrms	H327111716	9ca0e2be-4996-4d7e-b761-ca3663cf3d38	<a href="#">Edit</a> <a href="#">Delete</a>
hrms	H808174420	7689341b-57dc-4839-baf8-a27fb6104cf7	<a href="#">Edit</a> <a href="#">Delete</a>
hrms	H904292537	a5e81e3c-c4d5-471e-a9e1-8a9a4b84f5d9	<a href="#">Edit</a> <a href="#">Delete</a>
hrms	H916706776	aacd3e31-5698-4e50-b26a-f11acf77097c	<a href="#">Edit</a> <a href="#">Delete</a>

# RESOLVING POTENTIAL MATCHES

- Interface for reconciling potential matches
  - See group of potential matches
  - Select the matching record, or create a new one
  - System assigns a Reference ID based on your choice
- Information available via the API for use in other systems

The screenshot shows the COmanage Match interface. The header is green with the COmanage logo and the text 'COmanage Match'. Below the header, there is a navigation menu with items like 'Matchgrid Settings', 'API Users', 'Attributes', 'Attribute Groups', 'Attribute Maps', 'Rules', and 'Systems of Record'. The main content area is titled 'Reconcile Unresolved Requests (testgrid)' and shows '3 Pending Matches'. A table lists the matches with columns for 'System of Record', 'System of Record ID', and 'Request Time'.

System of Record	System of Record ID	Request Time
sis	971194844	2019-03-21 00:32:33
sis	553815121	2019-10-27 12:43:55
guest	G19008	2020-02-16 10:07:46

Powered By COmanage

The screenshot shows the COmanage Match interface for a specific record. The header is green with the COmanage logo and the text 'COmanage Match'. Below the header, there is a navigation menu with items like 'Matchgrid Settings', 'API Users', 'Attributes', 'Attribute Groups', 'Attribute Maps', 'Rules', and 'Systems of Record'. The main content area is titled 'Reconcile Unresolved Requests' and shows a comparison of two records for Reference ID 173064d... and a 'New' record. A table lists the attributes for each record, with columns for 'Attributes', '173064d...', '173064d...', and 'New'.

Attributes	173064d...	173064d...	New
id	43	45	62
sor	registry	registry2	sis
sorid	II160	JJ160	553815121
request_time	2019-07-28 12:16:32	2019-07-28 12:26:36	2019-10-27 12:43:55
resolution_time	2019-07-28 12:16:32	2019-07-28 12:26:36	
dob	1991-11-22	1991-11-22	1991-11-22
lastname	Doyle	Doyle	Dayle
firstname	Tom	Thomas	Tommy
ssn	7107137986085	7107137986085	7107137986085
netid			