



Iain Adamson
ScottishPower Energy Retail



Michelle Homes
Metacoda

FROM COTTAGE INDUSTRY TO CRITICAL SYSTEM

HOW METACODA SOFTWARE ENABLES
PRODUCTIVITY AS YOUR SAS PLATFORM
BECOMES BUSINESS CRITICAL





**IAIN
ADAMSON**

SCOTTISHPOWER ENERGY RETAIL

Iain joined the data science team at ScottishPower in 2016. He went from working with genetic code to working with a variety of coding languages. Since joining ScottishPower, he has worked on smart metering and complaint modeling projects.

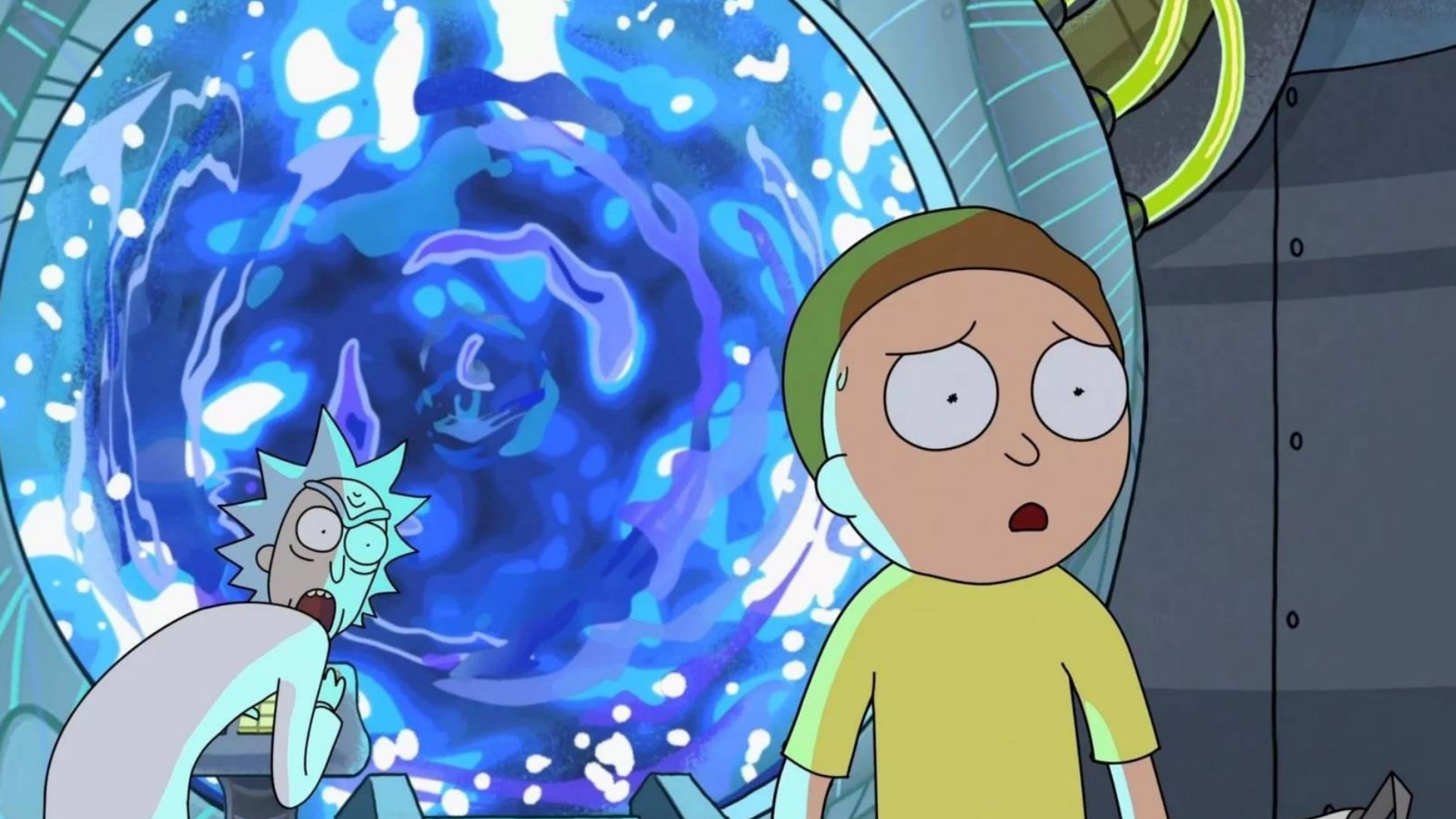


**MICHELLE
HOMES**

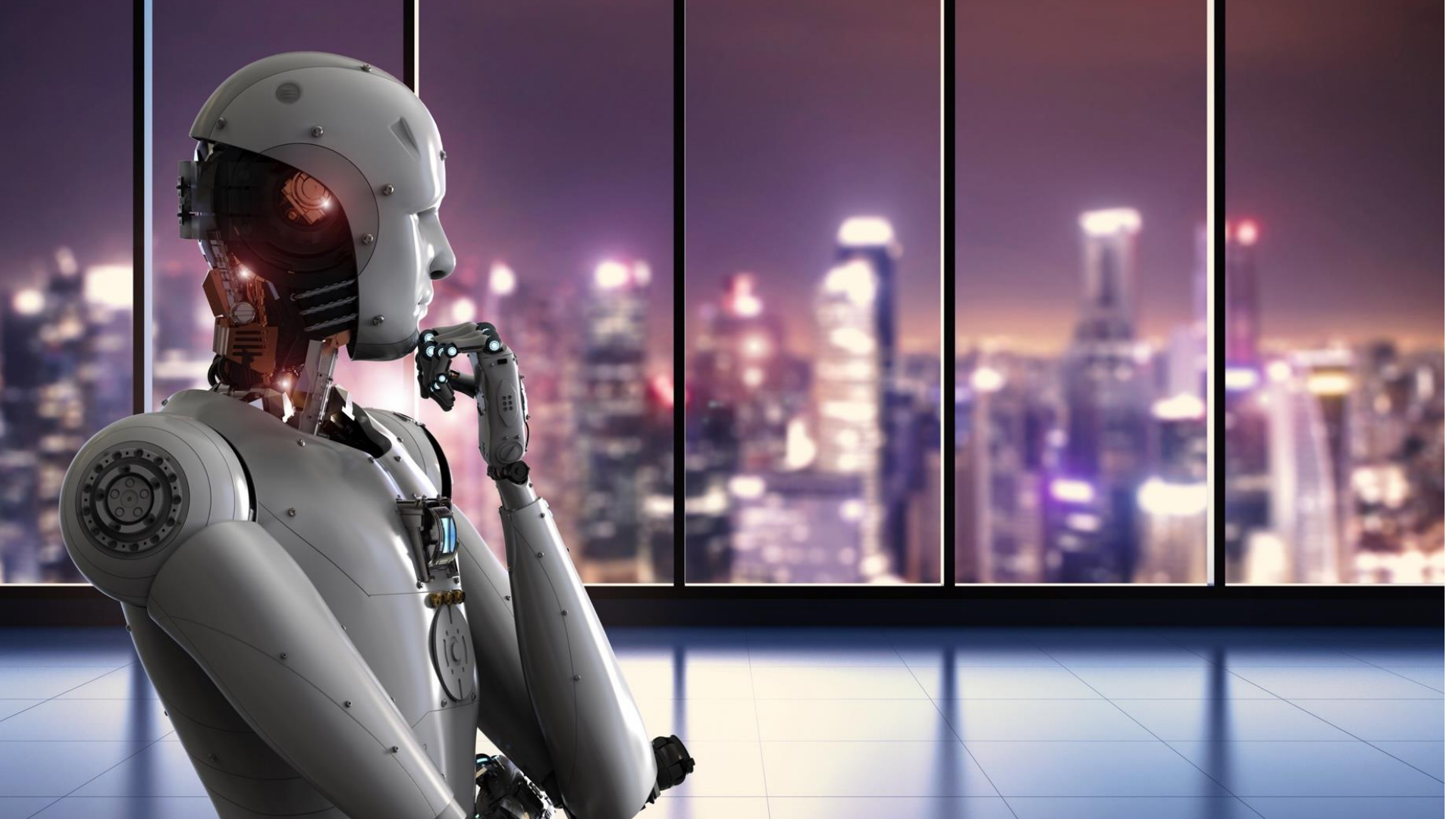
METACODA

Co-founder and Business Development Manager

Michelle Homes is an enthusiastic and active member of the SAS community and social sphere, and helps SAS customers keep their SAS platforms secure.








CLEAN ALL THE
DATA!

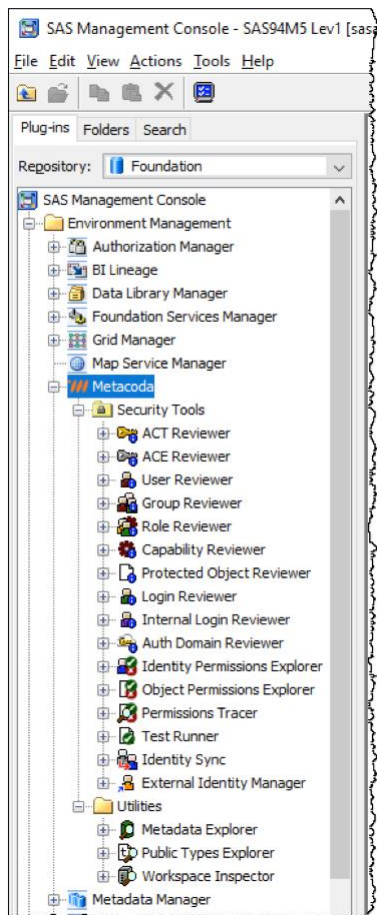




 IBERDROLA



SCOTTISHPOWER



WHO ARE METACODA?

Provide add-ons to SAS® Software for enhanced **metadata** visibility and exploitation

- Metacoda Identity Sync
- Metacoda Security Plug-ins
- Metacoda Testing Framework
- Metacoda Utility Plug-ins (free)

Goals

- Improving your productivity through metadata visibility
- Keeping your SAS platform secure



PASSWORD ENCODER

We use the password encoder to quickly take plain text passwords for inclusion in the autoexec. Much simpler than writing multiple PROC PWENCODES.

```
sasdemo@sas94m6lnx01:~/sascode
[sasdemo@sas94m6lnx01 sascode]$ cat report.sas
libname projdata odbc defer=yes datasrc=mydemodb user=mydemodb password=
proc print data=projdata.class;
run;

[sasdemo@sas94m6lnx01 sascode]$ /opt/sas94m6/config/Levl/SASApp/sas.sh /
emo/sascode/report.log -print /home/sasdemo/sascode/report.lst
[sasdemo@sas94m6lnx01 sascode]$
```

Password Encoder

Server: SASApp - Logical Workspace Server

Encoding Method: {sas002} SASProprietary Encryption (32-bit key)

Password: *****

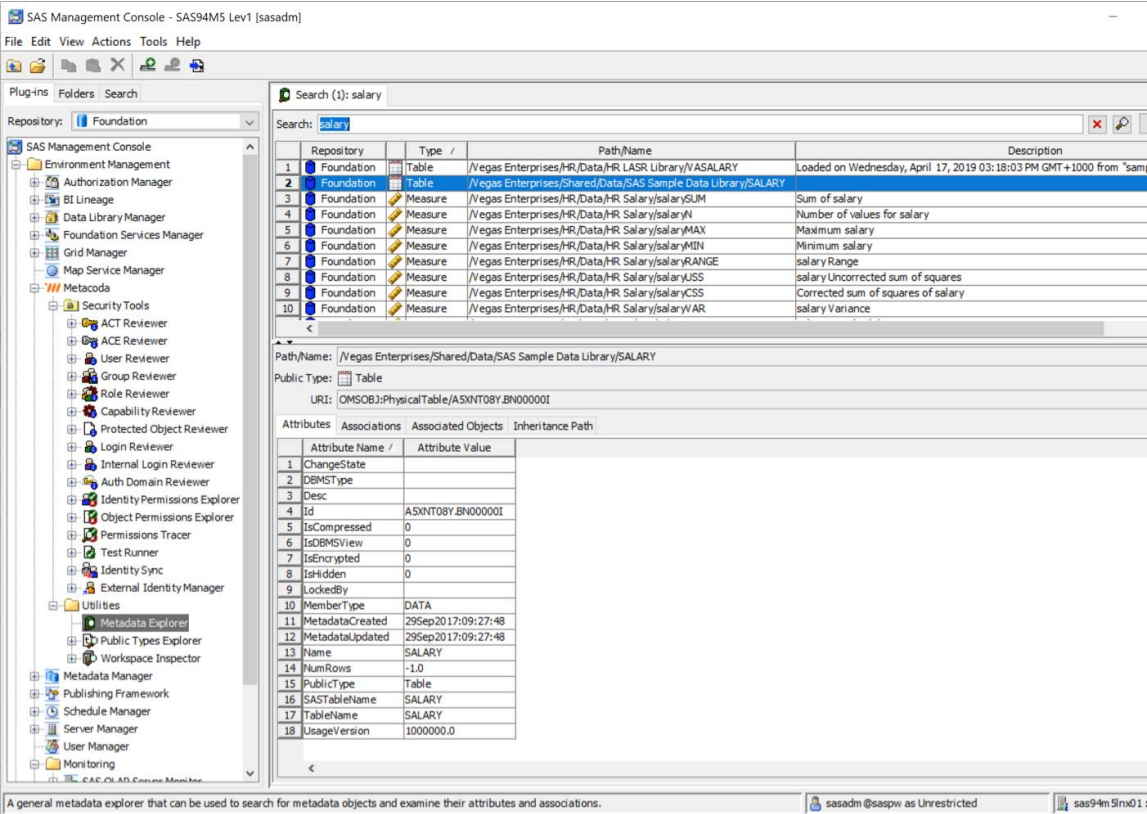
Show password

Encoded Password: {sas002}05C6153E3289264E53C70981

Buttons: Encode, Encode to Clipboard, View SAS Log, Close

FINDING THINGS

Being able to search for metadata quickly inside the SAS Management Console using Metacoda Metadata Explorer was invaluable, especially as our team grew and the data volume increased.



SAS Management Console - SAS94M5 Lev1 [sasadm]

File Edit View Actions Tools Help

Plug-ins Folders Search

Repository: Foundation

- Map Service Manager
- Metacoda
 - Security Tools
 - ACT Reviewer
 - ACE Reviewer
 - User Reviewer
 - Group Reviewer
 - Role Reviewer
 - Capability Reviewer
 - Protected Object Reviewer
 - Login Reviewer
 - Internal Login Reviewer
 - Auth Domain Reviewer
 - Identity Permissions Explorer
 - Object Permissions Explorer
 - Permissions Tracer
 - Test Runner
 - Identity Sync
 - External Identity Manager
 - Utilities
 - Metadata Explorer
 - Public Types Explorer
 - Workspace Inspector
 - Metadata Manager
 - Publishing Framework

Identity Sync Profile: C:\Metacoda IdSync\ad02\dsp

Server: SASApp - Logical Workspace Server

Emails (2) Phones (2) Locations (2) Domains (0) Exceptions (91) Validation (0) Failures (0)

Groups (0) Users (3) Memberships (4) Logins (2)

	Group/Role Name	Action	Member Name
1	Vegas Enterprises: AU/SA	+ Add Member	Ulric Upton
2	Vegas Enterprises: DB2 Users	+ Add Member	Kate Knowles
3	Vegas Enterprises: Oracle Users	+ Add Member	Kate Knowles
4	Vegas Enterprises: AU/NSW	+ Add Member	Kate Knowles

Synchronize Identities (users and groups) from external identity sources such as a SAS Metadata Server or Microsoft Active Direct... sasadm@saspw as Unrestricted sas94m 5lnx01 : 8561

IDENTITY SYNCHRONISATION

USING METACODA SOFTWARE WAS THE ONLY PRACTICAL WAY OF ON-BOARDING ALL OUR USERS WHEN WE MOVED TO ACTIVE DIRECTORY

Duncan Bain
Lead Data Scientist
Scottish Power

SECURITY ACCESS CONTROLS

SAS Management Console - SAS94M5 Lev1 [sasadm]

File Edit View Actions Tools Help

Plugins Folders Search

Repository: Foundation

Map Service Manager

Metacoda

Security Tools

- ACT Reviewer
- ACE Reviewer
- User Reviewer
- Group Reviewer
- Role Reviewer
- Capability Reviewer
- Protected Object Reviewer
- Login Reviewer
- Internal Login Reviewer
- Auth Domain Reviewer
- Identity Permissions Explorer
- Object Permissions Explorer
- Permissions Tracer
- Test Runner
- Identity Sync
- External Identity Manager

Utilities

- Metadata Explorer
- Public Types Explorer
- Workspace Inspector
- Metadata Manager
- Publishing Framework
- Schedule Manager
- Server Manager
- User Manager

Filter: name or description contains

Repository	Name /	Description	Protected?	In Use?	Redundant?	User Ref?	Permissions S
Foundation	Default ACT	Controls access to the repository.	Yes	Yes	No	No	PUBLIC: -RM,-WM,-WMM,-CM,-R,-W,-C,-D,-I,-S,-U,-CT
BiLineage	Default ACT	Controls access to the repository.	No	Yes	No	No	PUBLIC: -RM,-WM,-WMM,-CM,-R,-W,-C,-D,-I,-S,-U,-CT
TestingCustom	Default ACT	Controls access to the repository.	Yes	Yes	No	No	PUBLIC: -RM,-WM,-WMM,-CM,-R,-W,-C,-D,-I,-S,-U,-CT
Foundation	Demo: ACT with Users	Demonstrates an ACT that contai...	Yes	Yes	No	Yes	SAS Demo User (Person): +RM
Foundation	Demo: Empty ACT	Demonstrates an ACT which has ...	Yes	Yes	Yes	No	
Foundation	Demo: Unprotected ACT	Demonstrates an ACT that has no...	No	Yes	No	Yes	SAS Demo User (Person): +RM
Foundation	Demo: Unused ACT	Demonstrates an ACT which has ...	Yes	No	No	No	SASUSERS: +RM
Foundation	Portal ACT		Yes	Yes	No	Yes	SAS Trusted User (Person): +RM,+WMM; PUBLIC: -RM
Foundation	Private User Folder ACT	Gives the SAS Administrators gro...	Yes	Yes	No	No	PUBLIC: -RM,-WM,-CM; SAS Administrators: +RM,+V
Foundation	SAS Administrator Settings	Gives the SAS Administrators gro...	Yes	Yes	No	No	SAS Administrators: +RM,+WM,+CM,+A; SAS System
Foundation	SAS Environment Manager Data Mart ACT		No	Yes	No	No	SASUSERS: -RM,-WM,-WMM,-CM,-R,-W,-C,-D,-I,-S,-U,
TestingCustom	TestCustomRepoACT		No	No	No	No	TestCustomRepoGroup: +RM
Foundation	Vegas Enterprises: Analysts (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: Business Analysts: +RM,+R; Veg
Foundation	Vegas Enterprises: Analysts (Update)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: Data Scientists: +RM,+WMM,+R,
Foundation	Vegas Enterprises: Asia Pacific (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: Asia Pacific Region: +RM,+R; Ve
Foundation	Vegas Enterprises: AU/ACT (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: AU/ACT: +RM,+R; Vegas Enterp
Foundation	Vegas Enterprises: AU/NSW (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: AU/NSW: +RM,+R; Vegas Enterp
Foundation	Vegas Enterprises: AU/NT (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: AU/NT: +RM,+R; Vegas Enterpris
Foundation	Vegas Enterprises: AU/QLD (Read)	An ACT that can be applied to op...	Yes	Yes	No	No	Vegas Enterprises: AU/QLD: +RM,+R; Vegas Enterpr

Permissions (2) Objects (12) ACTs (1) ACEs (0)

	Identity	User Ref?	RM	WM	WMM	MMM	MCM	CM	R	W	C	D	I	S	U	CT	DT	AT	A	X	RF	
1	Vegas Enterprises: Data Scientists	No	✓		✓				✓	✓	✓	✓										
2	Vegas Enterprises: Business Analysts	No	✓		✓				✓	✓	✓	✓										

Found 37 Access Control Templates (ACTs) in 0.729 seconds.

sasadm@saspw as Unrestricted

sas94m5lnx01 : 8561

SECURITY USERS

SAS Management Console - SAS94M5 Lev1 [sasadm]

File Edit View Actions Tools Help

Plug-ins Folders Search

Repository: Foundation

Map Service Manager
Metacoda
Security Tools
ACT Reviewer
ACE Reviewer
User Reviewer
Group Reviewer
Role Reviewer
Capability Reviewer
Protected Object Reviewer
Login Reviewer
Internal Login Reviewer
Auth Domain Reviewer
Identity Permissions Explorer
Object Permissions Explorer
Permissions Tracer
Test Runner
Identity Sync
External Identity Manager
Utilities
Metadata Explorer
Public Types Explorer
Workspace Inspector
Metadata Manager
Publishing Framework
Schedule Manager
Server Manager
User Manager

Filter: name, display name, description, or login ids contain

	Display Name /	Name	Description	Title	Protected?	ACE Identity?	Logins?	Internal?	Login Ids
16	Harry Hanes	demoharry	Account Rep. (NZ)	Account Rep. (NZ)	No	No	Yes	No	demoharry
17	Ian Irons	demoian	HR Consultant	HR Consultant	No	No	Yes	No	demoian
18	Ivy Ives	demoivy	Sales Director (AU)	Sales Director (AU)	No	No	Yes	No	demoivy
19	Jack Jamieson	demojack	NSW State Manager (AU)	NSW State Manager (AU)	No	No	Yes	No	demojack
20	Jane Jacobs	demojane	SAS Platform Administrator	SAS Platform Administrator	No	No	Yes	No	demojane
21	Jane Jacobs (Unrestricted)	AdminJane	SAS Platform Administrator	SAS Platform Administrator	Yes	No	Yes	Yes	AdminJane@saspw
22	Kate Knowles	demokate	Account Rep. (AU/NSW)	Account Rep. (AU/NSW)	No	No	Yes	No	demokate
23	Koby Kogan	demokoby	SAS Platform Administrator	SAS Platform Administrator	No	No	Yes	No	demokoby
24	Koby Kogan (Unrestricted)	AdminKoby	SAS Platform Administrator	SAS Platform Administrator	Yes	No	Yes	Yes	AdminKoby@saspw
25	Larry Lomax	demolarry	VIC State Manager (AU)	VIC State Manager (AU)	No	No	Yes	No	demolarry
26	Lisa Lowes	demolisa	Data Scientist	Data Scientist	No	No	Yes	No	demolisa
27	Mandy Morton	demomandy	Account Rep. (AU/VIC)	Account Rep. (AU/VIC)	No	No	Yes	No	demomandy
28	Mike Mitchell	demomike	Data Scientist	Data Scientist	No	No	Yes	No	demomike
29	Natalie Nixon	demonatalie			No	No	Yes	No	demonatalie

Groups (3:9) Roles (0:11) Capabilities (300/399) Logins (3) Int. Login (0) ACT Part. (0) ACE Part. (0) ACTs (0) ACEs (0) Ext Ids (1)

Kate Knowles

- Vegas Enterprises: AU/NSW
 - Vegas Enterprises: Australia
 - Vegas Enterprises: Asia Pacific Region
 - Vegas Enterprises: Report Consumers
 - SASUSERS
 - BI Dashboard Users
 - PUBLIC
 - Vegas Enterprises: DB2 Users
 - Vegas Enterprises: Oracle Users

Filter: name contains

	Level	Name	Repository	Membership Path
1	0	Kate Knowles	Foundation	
2	1	Vegas Enterprises: AU/NSW	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW
3	1	Vegas Enterprises: DB2 Users	Foundation	Kate Knowles « Vegas Enterprises: DB2 Users
4	1	Vegas Enterprises: Oracle Users	Foundation	Kate Knowles « Vegas Enterprises: Oracle Users
5	2	Vegas Enterprises: Australia	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia
6	3	Vegas Enterprises: Asia Pacific Region	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia « Vegas Enter
7	4	Vegas Enterprises: Report Consumers	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia « Vegas Enter
8	5	SASUSERS	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia « Vegas Enter
9	6	BI Dashboard Users	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia « Vegas Enter
10	7	PUBLIC	Foundation	Kate Knowles « Vegas Enterprises: AU/NSW « Vegas Enterprises: Australia « Vegas Enter

Found 51 users in 3.555 seconds.

sasadm@saspw as Unrestricted | sas94m5lnx01 : 8561

SAS Management Console - SAS94M5 Lev1 [sasadm]

File Edit View Actions Tools Help

Plug-ins Folders Search

Repository: Foundation

Authorization manager

- BI Lineage
- Data Library Manager
- Foundation Services Manager
- Grid Manager
- Map Service Manager
- Metacoda
- Security Tools
 - ACT Reviewer
 - ACE Reviewer
 - User Reviewer
 - Group Reviewer
 - Role Reviewer
 - Capability Reviewer
 - Protected Object Reviewer
 - Login Reviewer
 - Internal Login Reviewer
 - Auth Domain Reviewer
 - Identity Permissions Explorer**
 - Object Permissions Explorer
 - Permissions Tracer
 - Test Runner
 - Identity Sync
 - External Identity Manager
- Utilities
 - Metacoda Explorer
 - Public Types Explorer
 - Workspace Inspector
- Metacoda Manager
- Publishing Framework
- Schedule Manager
- Server Manager
- User Manager
- Monitoring
- SAS OLAP Server Monitor
- Maintenance
- Application Management
- Configuration Manager
- Deployment Tester
- Enterprise Miner

Filter: name, display name, description, or logins ids contain

ID	Display Name	Description	Login Ids
31	Jane Jacobs	SAS Platform Administrator	demojane
32	Jane Jacobs (Unrestricted)	SAS Platform Administrator	AdminJane@saspw
33	Kate Knowles	Account Rep. (AU/NSW)	demokate
34	Koby Kogan	SAS Platform Administrator	demokoby

Filter: member name contains

Type	Name /	Access Level	RM	WM	WMM	CM	R	W	C	D	I
1	Folder Vegas Enterprises	View metadata & data	✓	✗	✗	✗	✓	✗	✗	✗	✗
2	Folder User Folders	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
3	Folder TestingCustom	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
4	Folder System	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
5	Folder Shared Data	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
6	Folder Products	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
7	Tree Portal Application Tree	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
8	Folder Metacoda Demos	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗
9	Folder BILineage	Hide metadata	✗	✗	✗	✗	✗	✗	✗	✗	✗
10	Root folder	View metadata	✓	✗	✗	✗	✗	✗	✗	✗	✗

Find a user or group and explore their effective permissions over a number of metadata objects across all repositories.

sasadm@saspw as Unrestricted

SECURITY USER ACCESS

SAS Management Console - SAS94M5 Lev1 [sasadm]

File Edit View Actions Tools Help

Plug-ins Folders Search

Repository: Foundation

SAS Management Console

- Environment Management
- Authorization Manager
- BI Lineage
- Data Library Manager
- Foundation Services Manager
- Grid Manager
- Map Service Manager
- Metacoda
- Security Tools
 - ACT Reviewer
 - ACE Reviewer
 - User Reviewer
 - Group Reviewer
 - Role Reviewer
 - Capability Reviewer
 - Protected Object Reviewer
 - Login Reviewer
 - Internal Login Reviewer
 - Auth Domain Reviewer
 - Identity Permissions Explorer
 - Object Permissions Explorer
 - Permissions Tracer
 - Test Runner
 - Identity Sync
 - External Identity Manager
 - Utilities
 - Metadata Explorer

Filter: auth domain name contains

	Name	Description	In Use?	Logins?	Login Count	Connections?	Connection Count	Libraries?	Library Count	Outbound Only?	Trusted Only?
1	DefaultAuth		Yes	Yes	45	Yes	20	No	0	No	No
2	WebInfrastructurePlatformDataServer9.4Admin		Yes	Yes	1	Yes	1	No	0	No	No
3	JobMonitorDataServerAdmin		Yes	Yes	1	Yes	1	No	0	No	No
4	DataRemediationDataServerAdmin		Yes	Yes	1	Yes	1	No	0	No	No
5	DataManagement_JobMntr_Svc_Auth		Yes	Yes	1	No	0	No	0	No	No
6	DataRemediationMid_Auth		Yes	Yes	1	No	0	No	0	No	No
7	SASEnvironmentManagerDatabase		Yes	Yes	1	No	0	No	0	No	No
8	DB2Auth		Yes	Yes	1	No	0	No	0	No	No
9	OracleAuth		Yes	Yes	1	Yes	1	Yes	1	No	No
10	PGSQLAuth		Yes	Yes	1	Yes	1	Yes	1	Yes	No
11	MySQLAuth		Yes	Yes	1	Yes	1	Yes	1	Yes	No

Logins (1) Connections (1) Libraries (1)

Filter: user id or displayName contains

Repository	User Id	Password?	Identity
1 Foundation	scott	Yes	Vegas Enterprises: Oracle Users

Found 11 authentication domains in 4.75 seconds.

**SECURITY
TRANSPARENT
PASSWORD
MANAGEMENT**

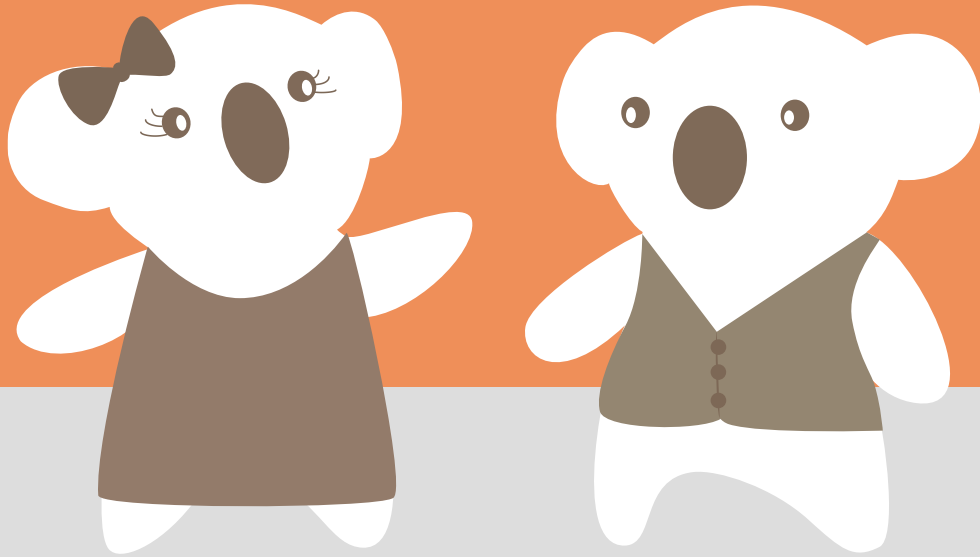
**THE JOURNEY
NOW AND NEXT**



**01.
SECURITY
REVIEW**

**02.
FUTURE
SECURITY
PLANNING**

QUESTIONS?





CONTACT US



info@metacoda.com & iadamson@scottishpower.com



www.metacoda.com



twitter.com/metacoda



facebook.com/Metacoda



linkedin.com/company/metacoda



www.youtube.com/user/metacoda