2 Twelve Solutions

PROJECT

SANDE Integration and orchestration with ORE

DATE	CLIENT	PHASE
28 March 2023	Navy	1

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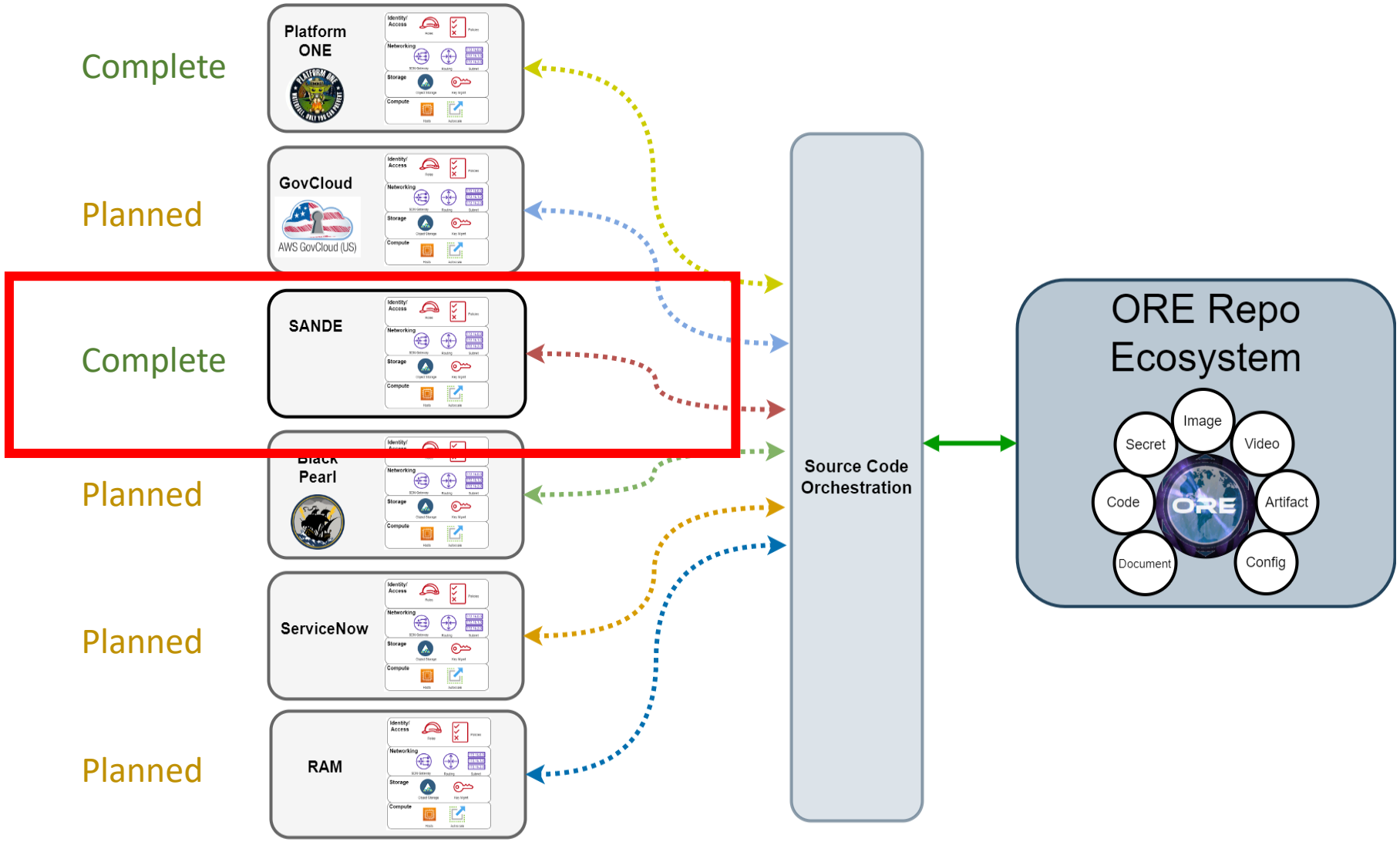
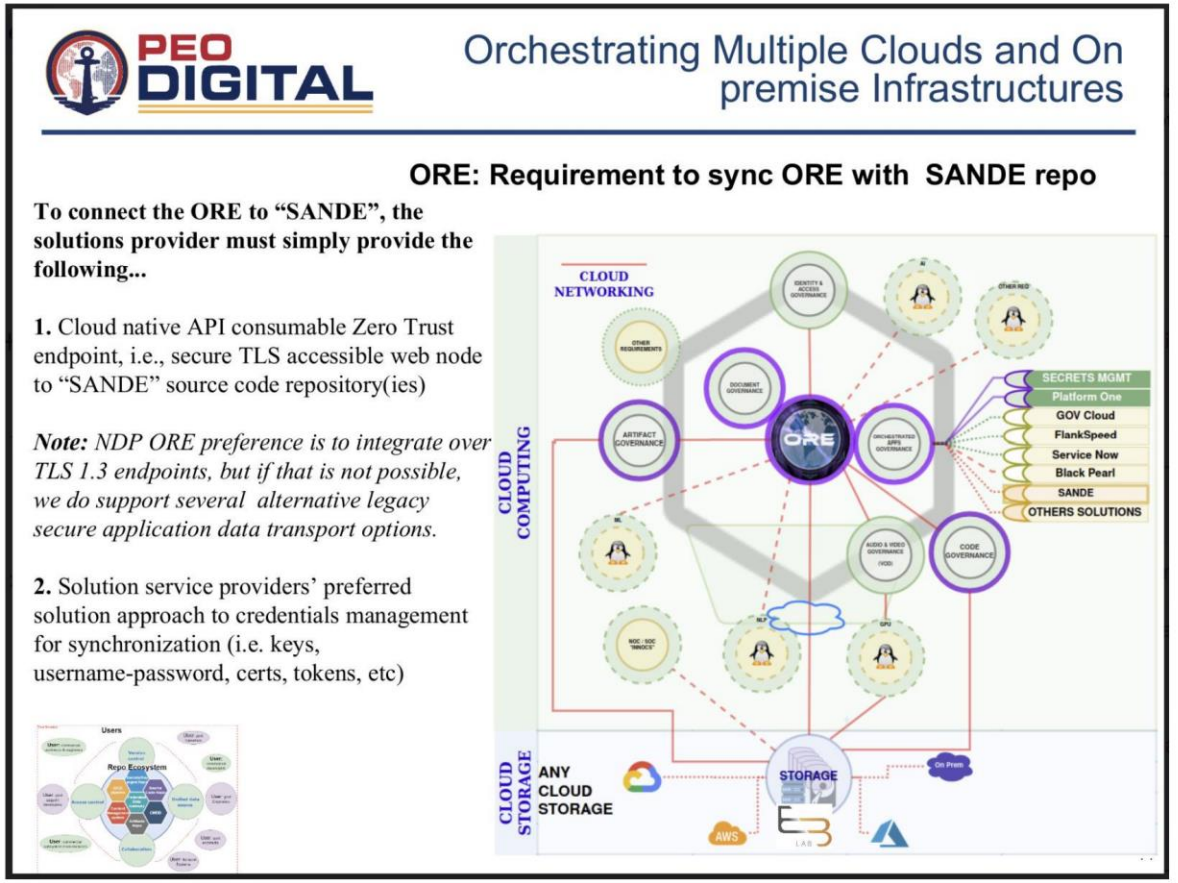
ORE Pilots: System Integrations



SANDE repository orchestration

The ORE provides flexible integration mechanisms to federate multiple repository types, including code repositories.

This enables collaboration, transparency, and governance.



ORE Team Coordination: repo orchestration script

The ORE team provided the script shown on the right to the SANDE team, which allows for automatic code transfers between the two systems.

Specifically, this enables SANDE to push code to the ORE seamlessly.

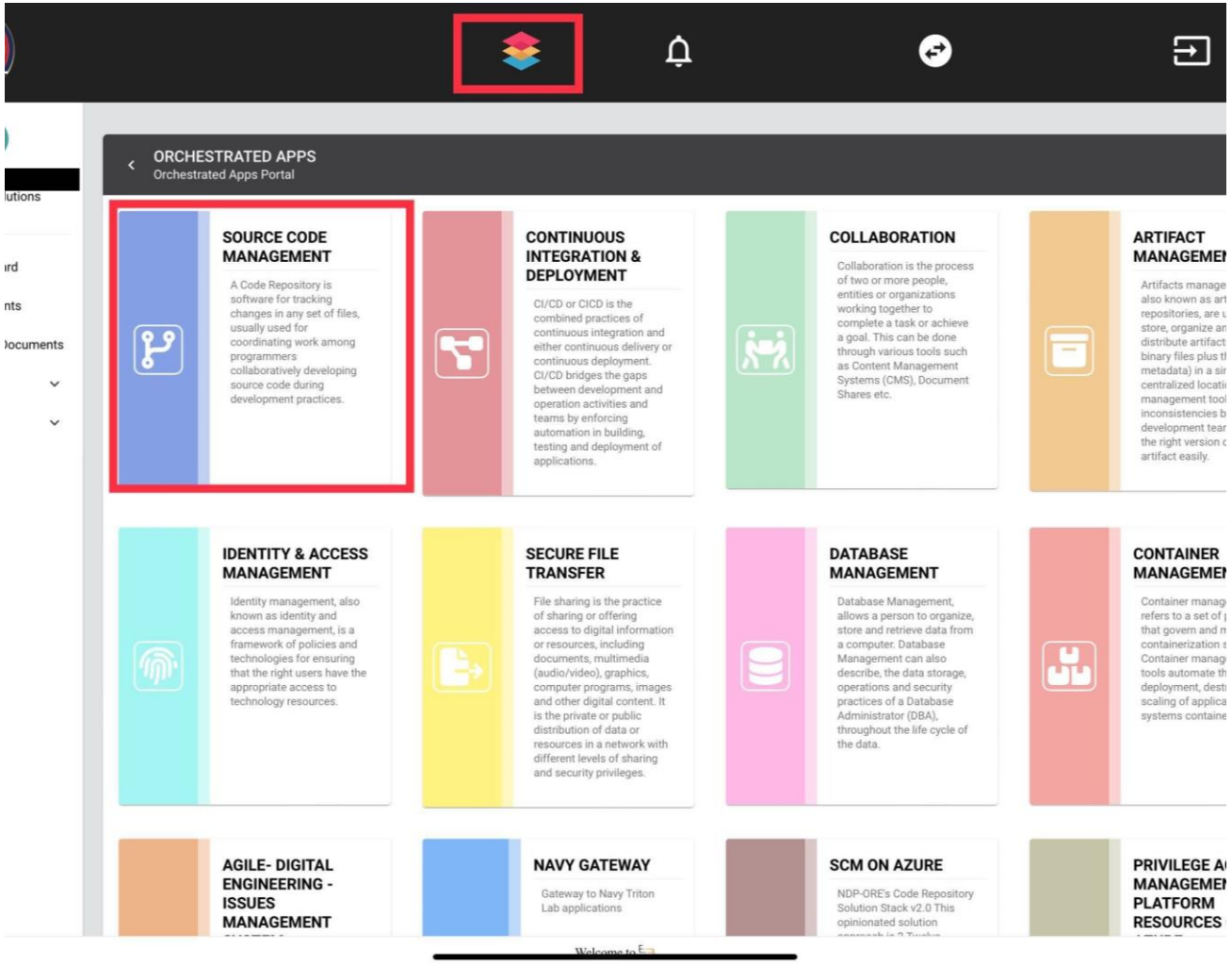
repo_sync

```
#!/bin/bash

# This script can be used to push any number of git repositories to any other git location.
# It expects authentication credentials to be available in the shell environment
#
# src_acct_user and src_acct_pass is optional. But it should be declared in the environment with the appropriate values set
#   if the source repositories require authentication.
#
# dest_acct_user and dest_acct_pass are required. It should be declared in the environment with the appropriate values set
#   without valid credentials the git pushes will fail


## array path to src and the respective dest repo
declare -A repo_names #do not remove this line
## below lines are examples. update or delete as appropriate. It syncs the repos from github to the repos at ore-scm
repo_names['github.com/usnistgov/OSCAL.git']='ore-scm.azure.e3labs.net/usnistgov/OSCAL.git'
#repo_names['github.com/usnistgov/800-63-3.git']='ore-scm.azure.e3labs.net/usnistgov/800-63-3.git'


## Start of the script. Do not edit below.
setup_sync_env() {
    # setup
    cat << 'EOF' > $HOME/cfpSendGitKey.sh
#!/bin/bash
echo $git_service_account_creds
EOF

    chmod +x $HOME/cfpSendGitKey.sh
}

sync_the_repo() {
    rm -rf the_repo

    export git_service_account_creds=$src_acct_pass # set git credentials for source repo
    export GIT_ASKPASS="$HOME/cfpSendGitKey.sh"

    echo "Cloning $1 repo"
    git clone https://$src_acct_user@$1 the_repo
    cd the_repo

    echo "Checkout branches"
    git branch -a | grep remotes | grep -v HEAD | grep -v master | xargs -I{} sh -c 'git branch --track ${1#remotes/origin/} {}' -- {}

    # set destination repo
    git remote add destorigin https://$dest_acct_user@$2

    export git_service_account_creds=$dest_acct_pass # set git credential for destination repo

    echo "Push to dest repo"
    git push --all destorigin
    test $? -eq 0 && echo "Sync completed" || echo "ERROR - CANNOT COMPLETE MERGE"
    echo "--------------"
}

setup_sync_env
```

Scripts 2 Twelve provided to assist the Gov Engineering SANDE team to push source code from Commercial WWT Git to the Navy's ORE.

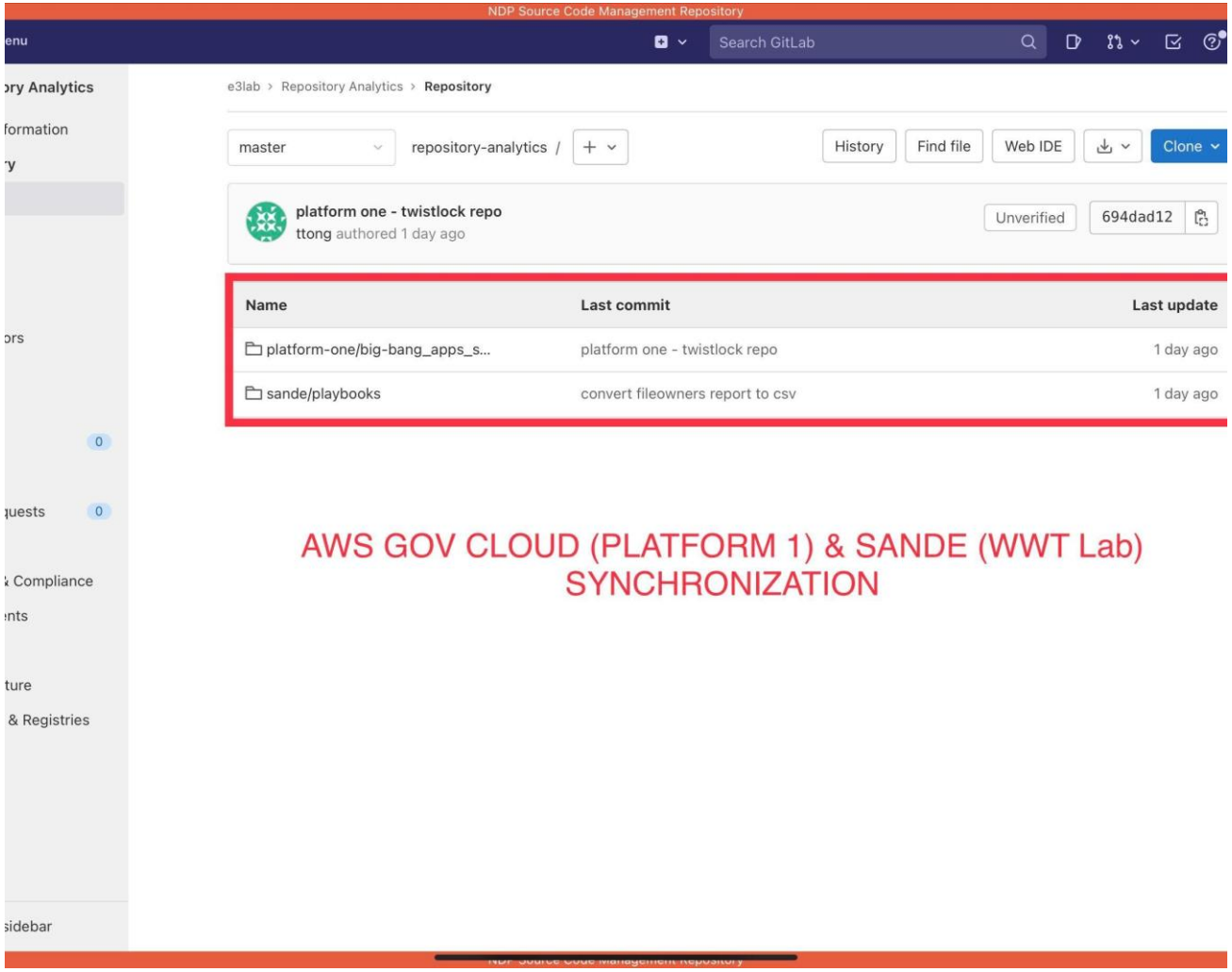
ORE Orchestrated Apps page: Source Code Management

Navigate to the Source Code Repository through the orchestrated apps page in the ORE.



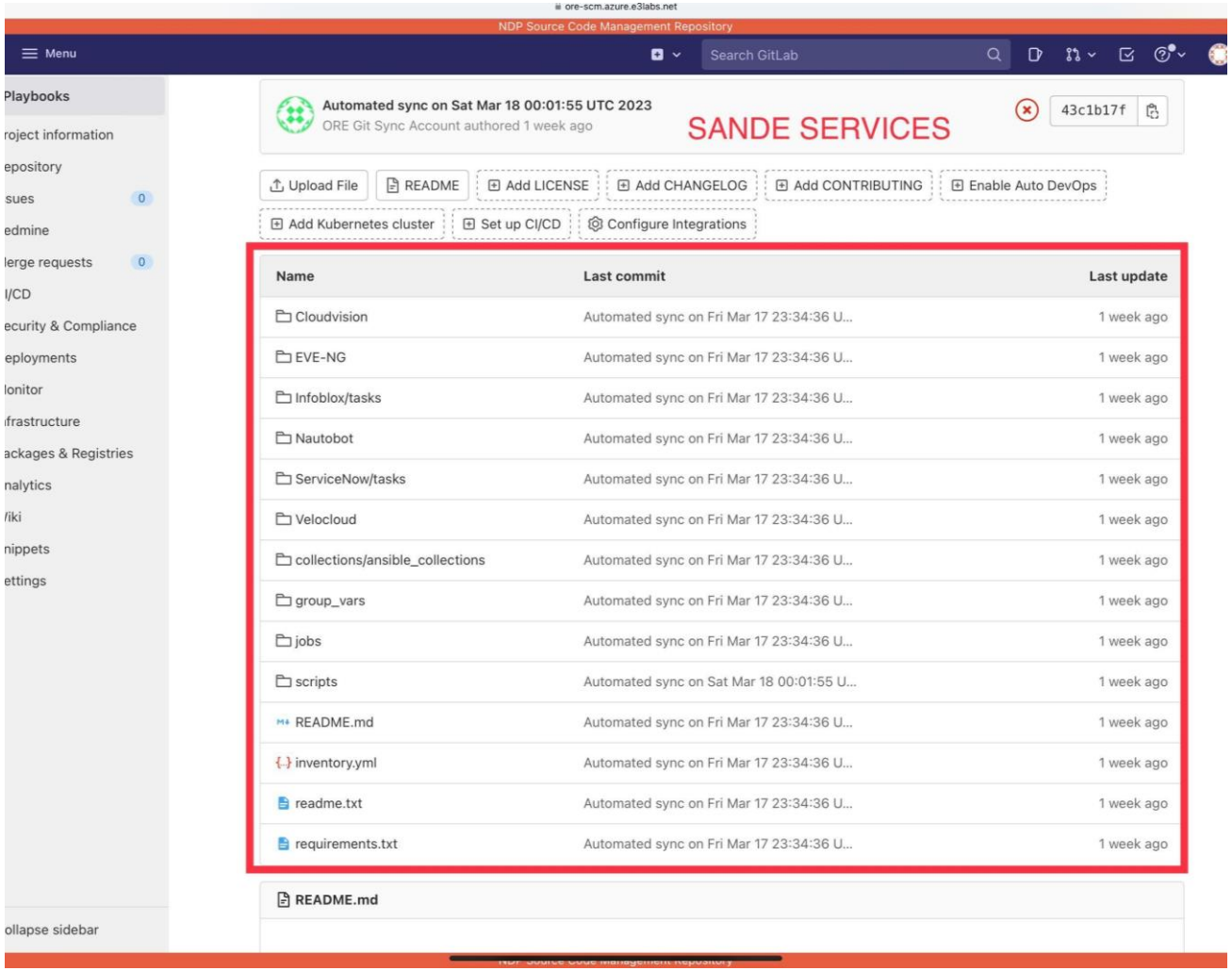
ORE SCM: Synchronized External Repositories

The Source Code Repository in the ORE synchronizes external repositories from various platforms to enable centralized review of multiple repositories in one location.



SANDE code repo shown in ORE SCM

ORE synchronization – The image displays all SANDE ansible playbooks synchronized into the ORE to enable a centralized view of the SANDE development occurring within a sandboxed environment at WWT Labs.



Source Code Health Analysis

The team leveraged a tool to run data queries on source code repositories.

This allows the team to gather insights about the source-code repositories through automated means. The ORE team is currently working on developing dashboard visualizations that can provide valuable insights and help better understand the health of source code repositories.

Sample SQL query for authors

```
→  mergestat git:(main) ✗ mergestat "select count(*), author_name from commits group by author_name order by count(*) desc"
+----------+-----------------------+
| COUNT(*) | AUTHOR_NAME           |
+----------+-----------------------+
| 538      | Patrick DeVivo        |
+----------+-----------------------+
| 278      | Derrick Newberry      |
+----------+-----------------------+
| 26       | Riyaz Ali             |
```

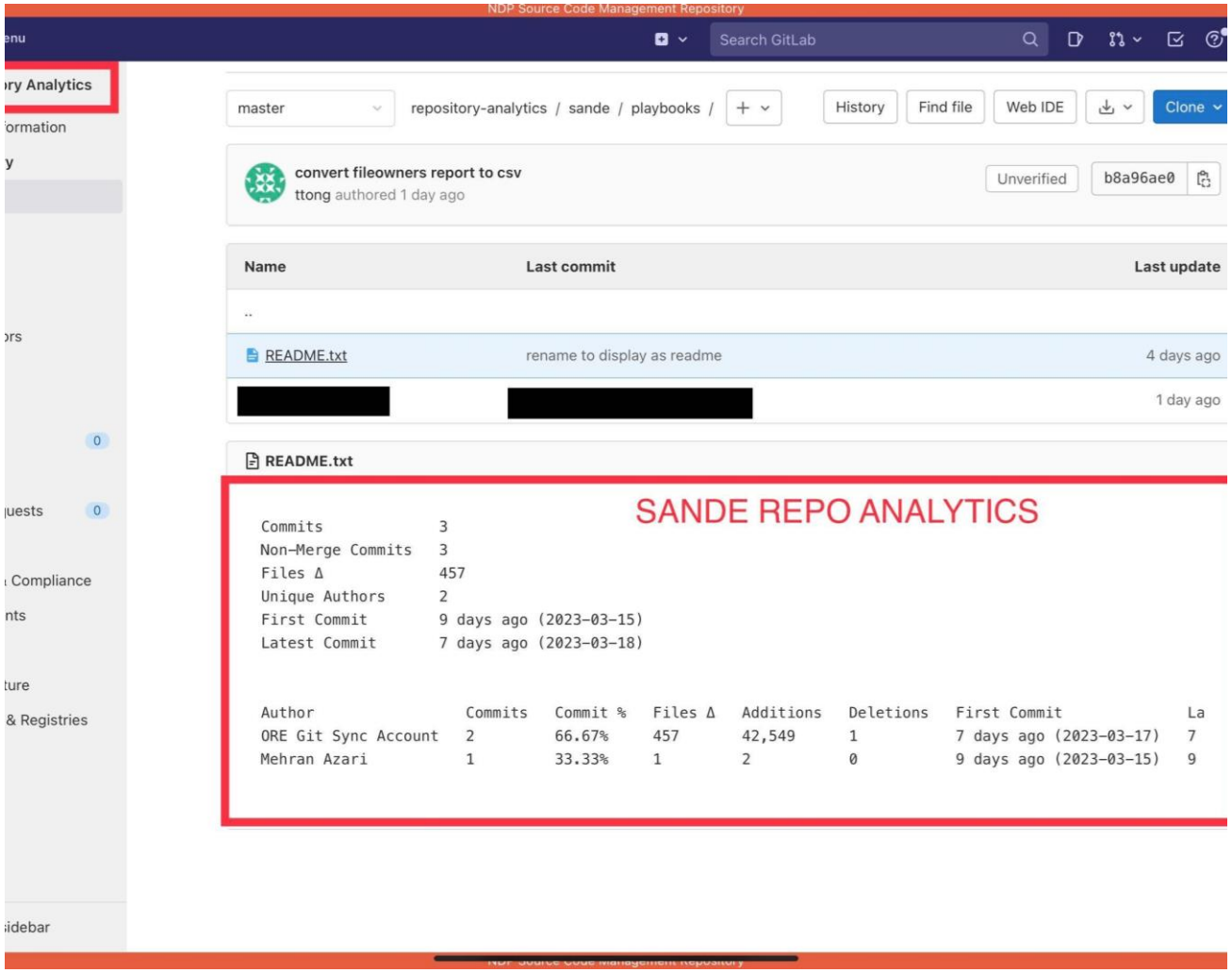
Sample SQL query to summarize commits and author stats

```
→  mergestat git:(readme-update) ✗ mergestat summarize commits
Commits             847
Non-Merge Commits   662
Files Δ             377
Unique Authors      10
First Commit        2 years ago (2020-07-03)
Latest Commit       5 days ago (2022-03-02)


Author                Commits   Commit %   Files Δ   Additions   Deletions   First Commit
Patrick DeVivo        533       62.93%     336       329,060     48,502      2 years ago (2020-07-03)
Derrick Newberry      278       32.82%     114       16,726      5,124       2 years ago (2020-07-07)
Riyaz Ali             26        3.07%      92        251,453     6,928       a year ago (2021-03-26)
Malyaka-Imran         3         0.35%      12        980         17          8 months ago (2021-07-25)
vaibhavnshah          2         0.24%      25        506         12          8 months ago (2021-07-26)
```

Source Code Health Analysis: SANDE

Note that the history of the SANDE source code repository has been scrubbed prior to synchronization to the ORE. It makes it impossible to know who collaborated and in what manner on the code base.

Nonetheless, the Navy will be able to see development of the SANDE source code repository evolve over time in the ORE.

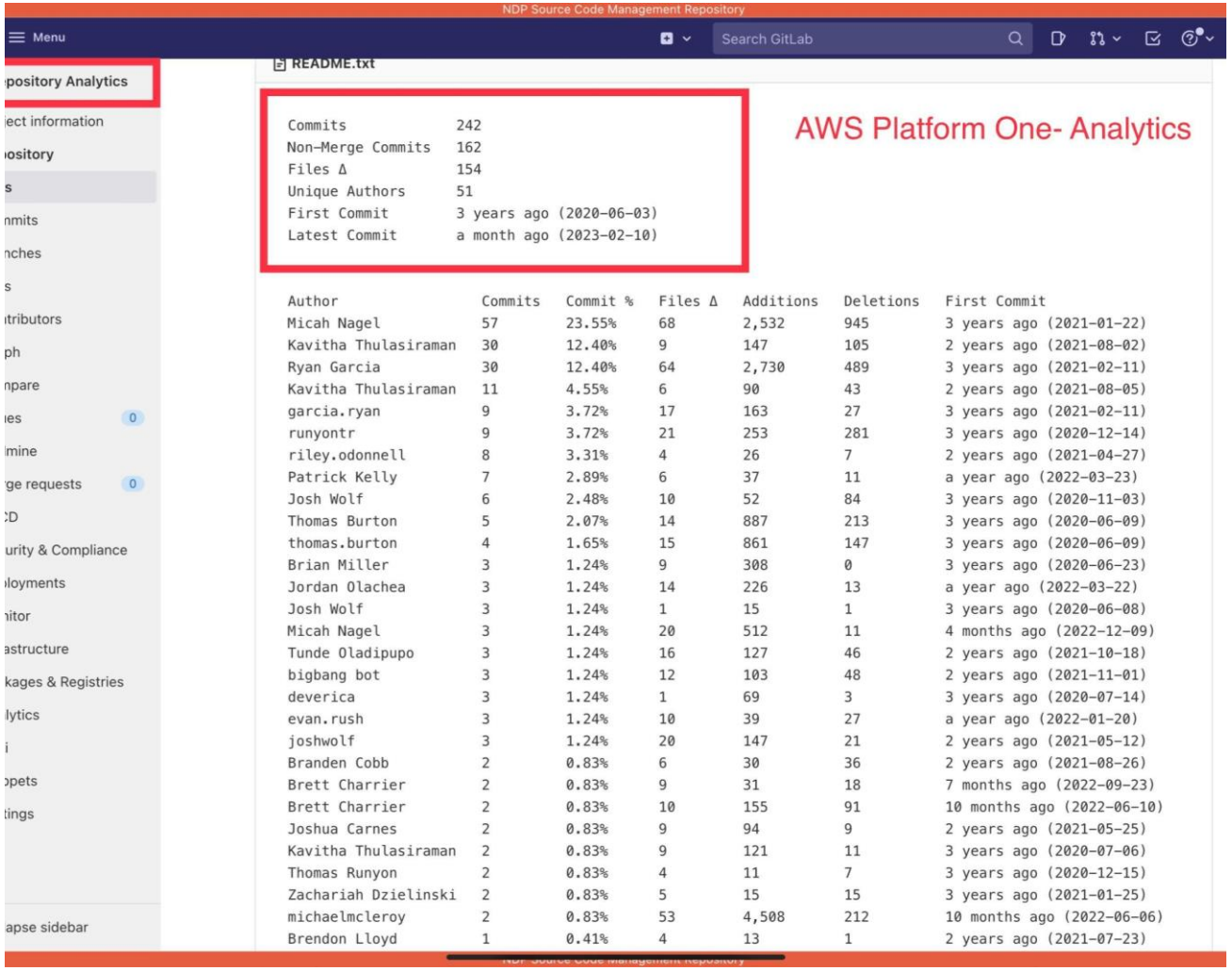


Comparison Source Code Health Analysis: Platform One

As a point of reference, when the automation is run against a repository from PlatformOne that has been fully synchronized with all history intact, more information can be gathered about the health and maturity of the code base.

Note the number of active authors, duration, number of commits and branches. This shows a more collaborative, active team and development workflow.

The visibility and maturity of these synchronized analytics provides trust and confidence in the processes and decisions for secure, quality tested, production ready code.



Commits	242
Non-Merge Commits	162
Files Δ	154
Unique Authors	51
First Commit	3 years ago (2020-06-03)
Latest Commit	a month ago (2023-02-10)

Author	Commits	Commit %	Files Δ	Additions	Deletions	First Commit
Micah Nagel	57	23.55%	68	2,532	945	3 years ago (2021-01-22)
Kavitha Thulasiraman	30	12.40%	9	147	105	2 years ago (2021-08-02)
Ryan Garcia	30	12.40%	64	2,730	489	3 years ago (2021-02-11)
Kavitha Thulasiraman	11	4.55%	6	90	43	2 years ago (2021-08-05)
garcia.ryan	9	3.72%	17	163	27	3 years ago (2021-02-11)
runyontr	9	3.72%	21	253	281	3 years ago (2020-12-14)
riley.odonnell	8	3.31%	4	26	7	2 years ago (2021-04-27)
Patrick Kelly	7	2.89%	6	37	11	a year ago (2022-03-23)
Josh Wolf	6	2.48%	10	52	84	3 years ago (2020-11-03)
Thomas Burton	5	2.07%	14	887	213	3 years ago (2020-06-09)
thomas.burton	4	1.65%	15	861	147	3 years ago (2020-06-09)
Brian Miller	3	1.24%	9	308	0	3 years ago (2020-06-23)
Jordan Olachea	3	1.24%	14	226	13	a year ago (2022-03-22)
Josh Wolf	3	1.24%	1	15	1	3 years ago (2020-06-08)
Micah Nagel	3	1.24%	20	512	11	4 months ago (2022-12-09)
Tunde Oladipupo	3	1.24%	16	127	46	2 years ago (2021-10-18)
bigbang bot	3	1.24%	12	103	48	2 years ago (2021-11-01)
deverica	3	1.24%	1	69	3	3 years ago (2020-07-14)
evan.rush	3	1.24%	10	39	27	a year ago (2022-01-20)
joshwolf	3	1.24%	20	147	21	2 years ago (2021-05-12)
Branden Cobb	2	0.83%	6	30	36	2 years ago (2021-08-26)
Brett Charrier	2	0.83%	9	31	18	7 months ago (2022-09-23)
Brett Charrier	2	0.83%	10	155	91	10 months ago (2022-06-10)
Joshua Carnes	2	0.83%	9	94	9	2 years ago (2021-05-25)
Kavitha Thulasiraman	2	0.83%	9	121	11	3 years ago (2020-07-06)
Thomas Runyon	2	0.83%	4	11	7	3 years ago (2020-12-15)
Zachariah Dzielinski	2	0.83%	5	15	15	3 years ago (2021-01-25)
michaelmcleroy	2	0.83%	53	4,508	212	10 months ago (2022-06-06)
Brendon Lloyd	1	0.41%	4	13	1	2 years ago (2021-07-23)