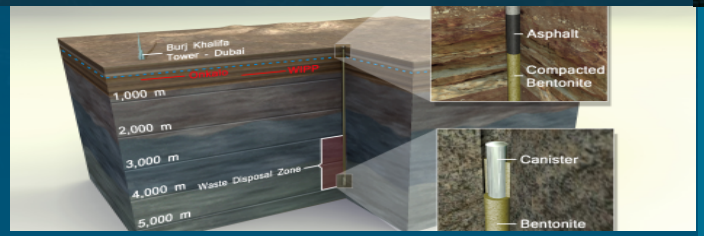
SAND2022-0457PE

Sandia National Laboratories

Overview Presentation to DOE-NE - Knowledge Management



PRESENTED BY

Janette E. Meacham, CKM
NWM Licensing and Knowledge Management Lead

Nuclear Energy Fuel Cycle Program, Sandia National Laboratories

January 25, 2022

U.S. DEPARTMENT OF ENERGY NNSA

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

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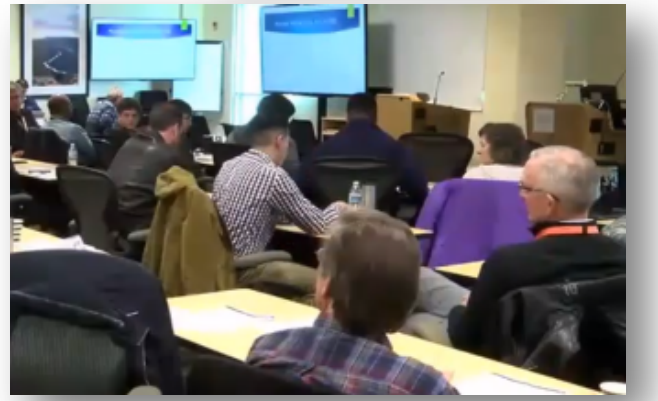
NE Knowledge Management Project

Loss of expertise in the field of Nuclear Waste Management is a critical problem worldwide

- NWM SMEs are retiring without an effective means to transfer their experience to new or less experienced staff
- NRC estimates an average 10-15 year turnover rate for experts
- More than 70% of Lab staff have no experience working on an active NWM project

DOE-NE Knowledge Management Program was established in with a focus on **Subject Matter Expert Tacit Knowledge Capture** before experts are lost due to retirement or attrition

- Quick Start-up required – With Experts retiring, there was no time to lose
- Phased approach used for strategy implementation



KM PROGRAM STRATEGY DEVELOPMENT

NEFC STAFF FOCUS GROUPS

MULTI-DAY WORKSHOP

14 PRESENTATIONS

10 HALF-DAY DEEP DIVE SESSIONS

KM REPOSITORY & TAXONOMY DEVELOPMENT

The Strategy for a Full KM Program

4 Main Components

- Content Management
- Knowledge Capture and Transfer
- Collaboration
- Subject Matter Experts

3 Types of KM Enablers

- Supporting KM Processes & Methods
- Governance & Operations
- Technology

KM COMPONENTS

CONTENT MANAGEMENT	KNOWLEDGE CAPTURE & TRANSFER	COLLABORATION	SUBJECT MATTER EXPERTS
» Enterprise Content Management » Content Taxonomy and Metadata Schema » Robust Search Capabilities » Document Management	» Knowledge Capture and Transfer - Tacit and Explicit » Knowledge Retention for both 1) execution and 2) Continuity of Trust » Best Practices » Lessons Learned » Training, Coaching, Mentoring skills transfer on the job	» Communities of Practice » Communities of Interest (blogs/wikis) » Centers of Excellence » Collaboration Workspaces » Workshops/Forums	» Experts - what we know, ask, and share » Skills Documentation » Community Finder » Skills/People Finder

KM ENABLERS

SUPPORTING KM PROCESSES & METHODS	**Knowledge Management Transfer Methods** » Critical Knowledge Assessments and Mapping, Process and Skills Mapping » Peer Assistance, Lessons Learned/After Action Reviews/Storytelling » Knowledge Capture, Retention and Transfer » Best Practice Harvest, Lunch & Learns, Knowledge Cafes
GOVERNANCE & OPERATIONS	**Operational Support** » KM Governance/ Code of Practice. Performance Management and KPIs » Staff Engagement - Rewards and Recognition » Change Management, Communications, Branding, Training
TECHNOLOGY	**Technology Enablers** » Information Portal, Collaboration, Team Sites, Document Management » Content/Social/Search/Video Enabled/Business Intelligence/Analytics » Enterprise Information & Data

NEFC Knowledge Management

Knowledge Management Strategy

About our Speakers

NEFC KM Workshops | December 17-19, 2019

Agenda

Tuesday, December 17

Introduction - Carol L. Adkins, Evaristo J. (Tito) Bonano & William J. Boyle
Overview of the Back End of the Nuclear Fuel Cycle - Evaristo J. (Tito) Bonano
Sandia's History of Storage & Transportation Projects - Kenneth B. Sorenson
Sandia's History of Disposal Projects - Evaristo J. (Tito) Bonano
Waste Isolation Pilot Plant Overview - Paul E. Shoemaker
Storage & Transportation Regulations - Kenneth B. Sorenson

Wednesday, December 18

Past Repository Siting Process - Peter N. Swift
Disposal Legal Regulatory Framework - Cyrus M. Nezhad
A Nuclear Waste Management Project; Not Just Science & Engineering - William J. Boyle
Licensing Process from Applicant's Perspective - Nicholas P. DiNunzio

Thursday, December 19

Licensing Process from Regulator's Perspective - Donald A. Beckman
Regulatory Compliance - Peter N. Swift
Social Perspectives - Hank C. Jenkins-Smith & Kuhika Gupta
Overview of the Budget Process and Congressional
Committees with Authority for Nuclear Waste Management - Erik M. Ridley & Valerie N. Salim-Meza
Workshop Wrapup

NEFC Deep Dive

Agenda

Tuesday, January 28

Design and Implement
David C. Dobson
Uncertainty and Sensit
Project -
Jon C. Helton

Wednesday, January

Development of a Safe
SNL's Performance Ass

Thursday, March 5

Elicitation and Use of E
Preclosure/Postclosure
Camphouse

Past Repository Siting Process

Focusing on the siting process followed for the proposed Yucca Mountain repository. It will not cover the WIPP siting process, which will have been described in a previous talk. Discussion following the presentation, however, can appropriately include both WIPP and YMP siting experiences and implications for future siting programs.

Discuss Past Repository Siting Process

new discussion

Recent | My discussions | Unanswered questions | ...

There are no items to show in this view of the "Past Repository Siting Process" discussion board.

About the Presenter

Peter N. Swift
Senior Scientist
Nuclear Energy Fuel Cycle
Sandia National Laboratories

Peter Swift is a Senior Scientist at Sandia National Laboratories, and he is the National Technical Director of the Department of Energy's Office of Nuclear Energy Spent Fuel and Waste Science and Technology R&D Campaign. Dr. Swift is a geologist by training, and has 30 years of experience in evaluating the technical basis for radioactive waste disposal, including both the Waste Isolation Pilot Plant in New Mexico and the proposed Yucca Mountain repository in Nevada.

Dr. Swift received a Ph.D. in Geosciences from the University of Arizona in 1987, Master's and Bachelor's degrees in Geology from the University of Wyoming in 1982 and 1980, and a B.A. in English from Yale University in 1974.

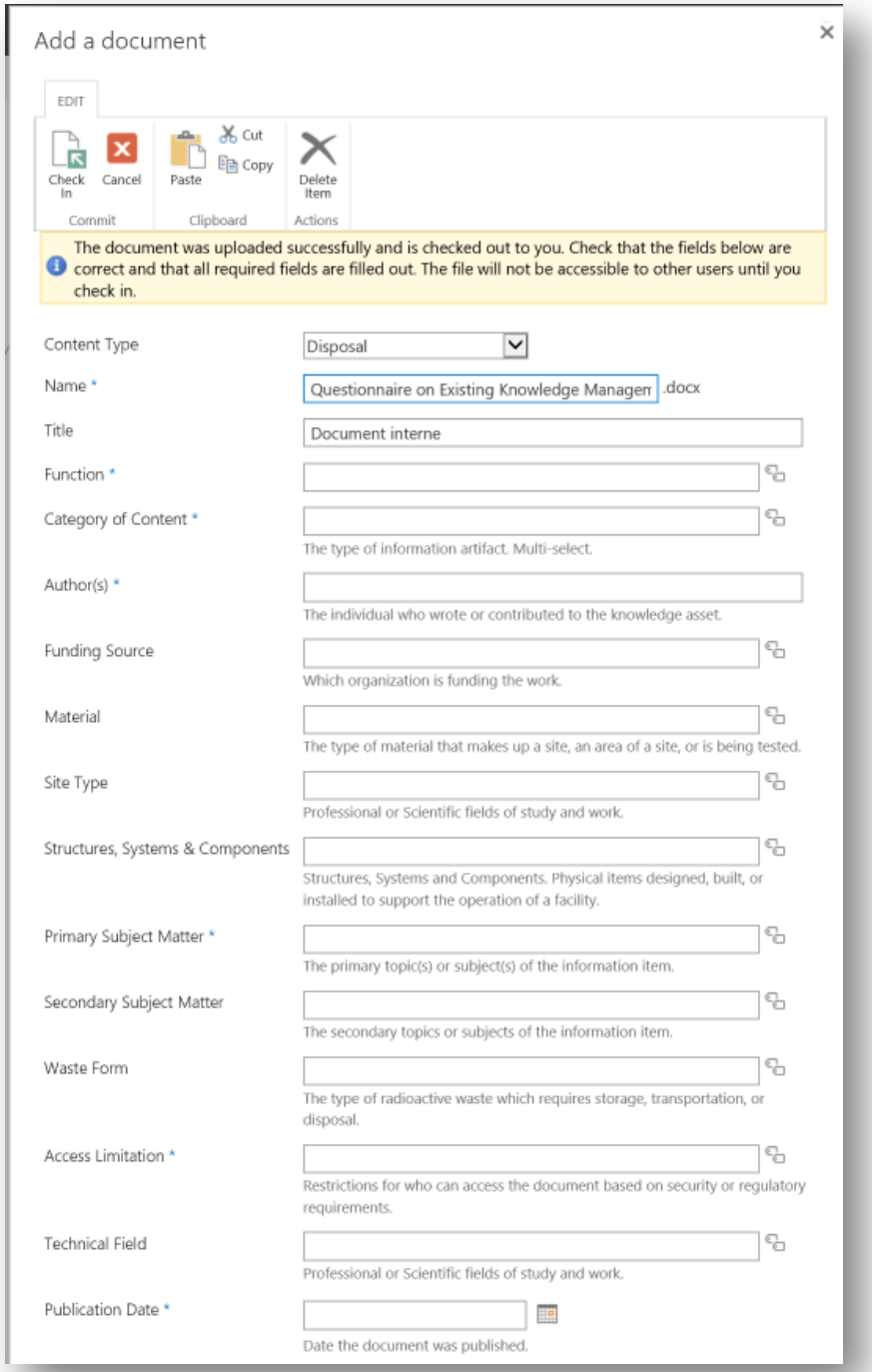
Resources & Reading List

Workshop Presentation Slides
Workshop Transcript
References

The NWM Taxonomy

- **Controlled vocabulary** used to describe or characterize explicit concepts of NWM information for capturing, managing and searching

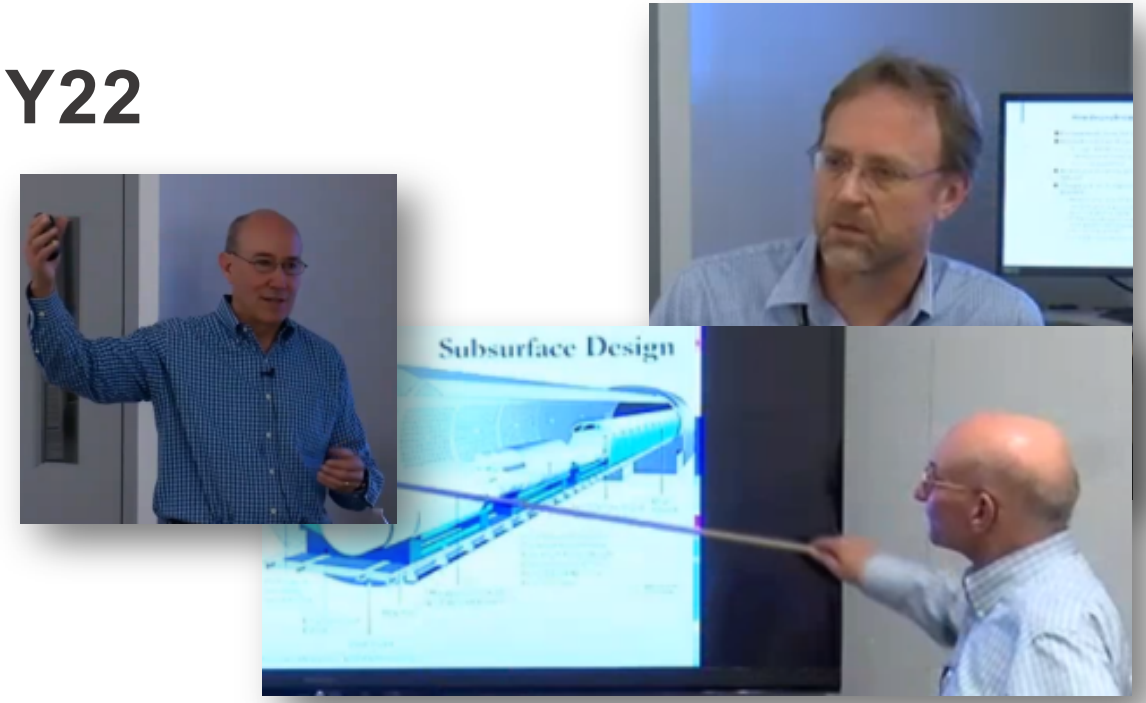
- **Unique database using the NWM taxonomy** with the intent to capture NE critical knowledge and make it widely available
- **Developed for tagging content with metadata specific** to the field of nuclear waste management
- We have a first version of the taxonomy
  - Entering Testing and Validation phase



Knowledge Management in FY22

Collaboration Phase for NE

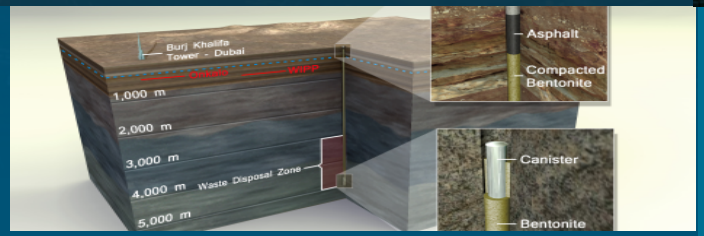
- Deep Dive coordinated with other Laboratories
- KM Library available outside Sandia
- Knowledge Sharing
  - NE Primer
  - Lessons Learned document



International Collaboration

- Recruited by IAEA to their KMAV Mission: KM training provided to NPPs in various countries
  - Upcoming KMAV Mission to Laguna Verde NPP
- IAEA TechDoc on Nuclear Knowledge Management
- NEA Expert Group on Knowledge Management (IDKM:EGKM)
- ISO Standard Development

Overview Presentation to DOE-NE - Cloud-Based QA Infrastructure



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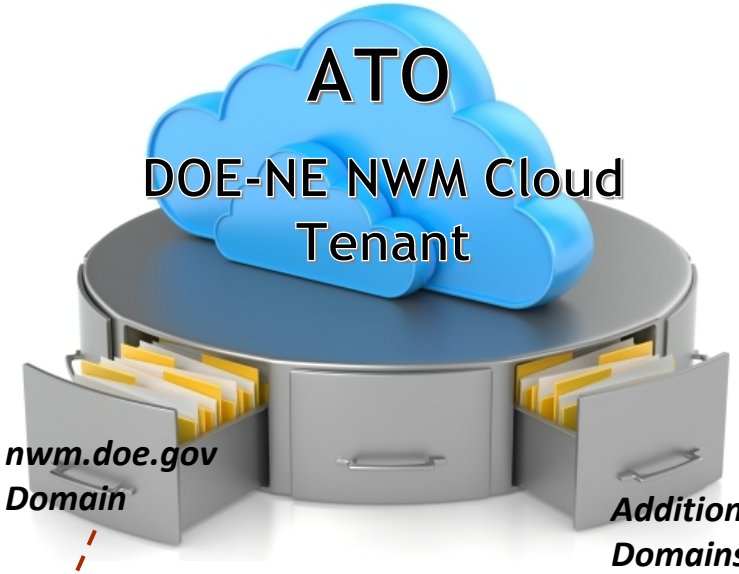
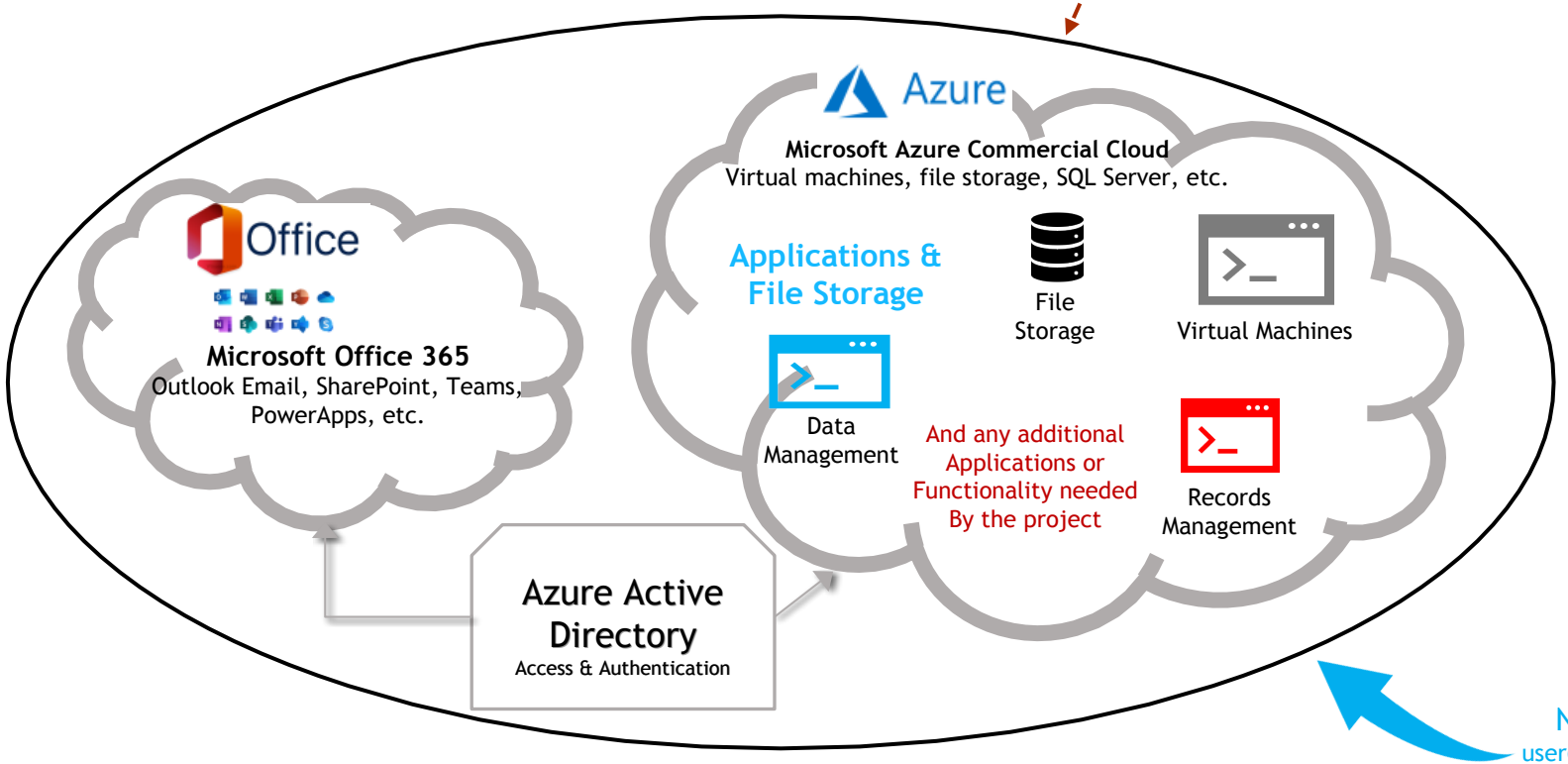
The DOE-NE Nuclear Waste Management (NWM) Cloud

- Microsoft Licensed Tenant
- FedRAMP Government Certified
- ATO (Authority to Operate) signed by DOE OCIO as Authorizing Official (AO)
- Domain: nwm.doe.gov

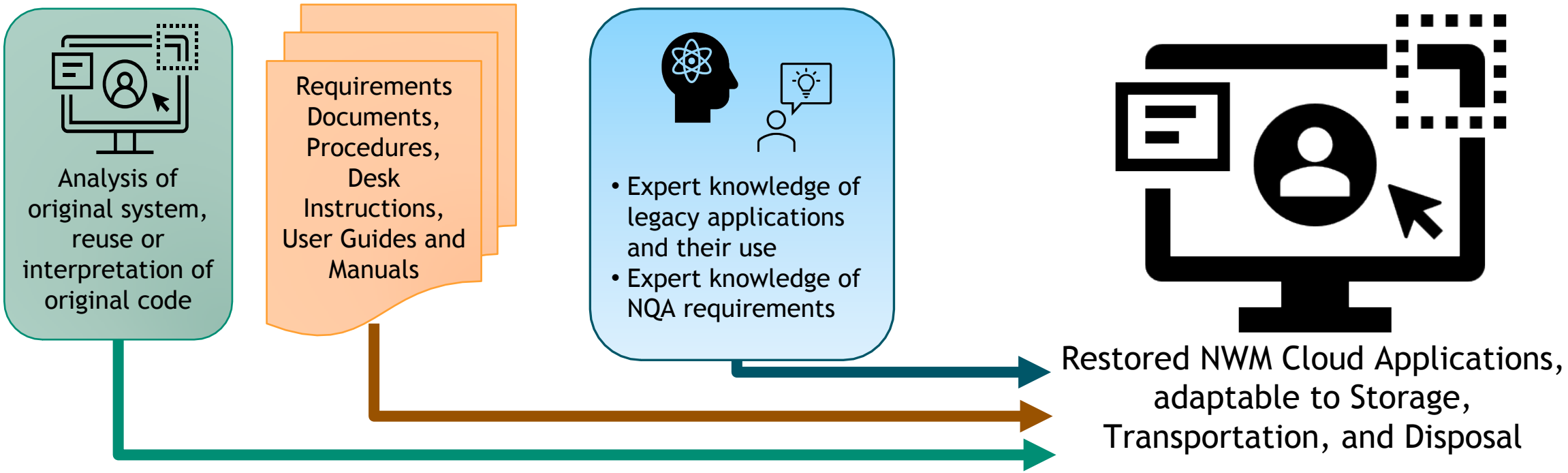


The NWM Domain



Our Task

- Analyze the YMP legacy applications and data stored at the Office of Legacy Management
- Duplicate and restore the functionality and processes that meet QA requirements to the NWM Cloud for use by any future nuclear waste program
- Migrate all the YMP project data for future ease of access



The NWM Cloud - “QA in a Box”

A collaborative O365 environment to support a geographically distributed workforce

Not just the science and engineering information:

- it’s ***how*** **that work was conducted**, the **processes** that supported it

It is **the tools that are required to implement the procedures** and the specific tools that do it the right way

The NRC has reviewed these tools and validated them as meeting its requirements and the QA plan

A whole system of processes and controls for siting, investigating, and licensing NWM facilities and processes

Requirements Compared across Regulations: The NWM Cloud Meets Them All

NQA-1	Part 50, App. B	10 CFR Part 63	10 CFR Part 71	10 CFR Part 72	QARD	
Req. 1	I.	§63.142(b)	§71.103	§72.142	Section 1	Organization
Req. 2	II.	§63.142(c)	§71.105	§72.144	Section 2	Quality Assurance Program
Req. 3	III.	§63.142(d)	§71.106	§72.146	Section 3	Design Control
Req. 4	IV.	§63.142(e)	§71.107	§72.148	Section 4	Procurement Document Cont
Req. 5	V.	§63.142(f)	§71.109	§72.150	Section 5	Procedures, Instructions, and
Req. 6	VI.	§63.142(g)	§71.111	§72.152	Section 6	Document Control
Req. 7	VII.	§63.142(h)	§71.113	§72.154	Section 7	Control of Purchased Materia
Req. 8	VIII.	§63.142(i)	§71.115	§72.156	Section 8	Identification and Control of Components
Req. 9	IX.	§63.142(j)	§71.117	§72.158	Section 9	Control of Special Processes
Req. 10	X.	§63.142(k)	§71.119	§72.160	Section 10	Inspection
Req. 11	XI.	§63.142(l)	§71.121	§72.162	Section 11	Test Control
Req. 12	XII.	§63.142(m)	§71.123	§72.164	Section 12	Control of Measuring and Test
Req. 13	XIII.	§63.142(n)	§71.125	§72.166	Section 13	Handling, Storage, and Shipp
Req. 14	XIV.	§63.142(o)	§71.127	§72.168	Section 14	Inspection, Test and Operatin
Req. 15	XV.	§63.142(p)	§71.129	§72.170	Section 15	Nonconforming Material, Part
Req. 16	XVI.	§63.142(q)	§71.131	§72.172	Section 16	Corrective Action
Req. 17	XVII.	§63.142(r)	§71.133	§72.174	Section 17	Quality Assurance Records
Req. 18	XVIII.	§63.142(s)	§71.135	§72.176	Section 18	Audits

The DOE-NE Nuclear Waste Management (NWM) Cloud

The NWM Cloud's Value to DOE-NE

- **All functionality required for an NQA-1/NRC** regulated NWM disposal, storage or transportation project in an easily accessible platform
- State-of-the-Art, **project-ready platform for collaboration and program operations**
- **Host additional DOE-NE domains** on demand, such as one for an Interim Storage Facility (ISF) project
- **The ATO (Authority to Operate)** is a very valuable asset to DOE-NE and the DOE-OCIO, and could accommodate any new domains that DOE chose to install in the tenant without delay or production time