Microsoft

AI For Permitting

Increase Efficiency, Reduce Costs

U.S. Nuclear Regulatory Commission (NRC) | AI Workshop

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Greenlighting Permitting with GenAI

[Updating Permitting Technology for the 21st Century – The White House]

[Trump Administration Advances First Wave of Critical Mineral Production Projects – The White House]

The Permitting Bottleneck

Reviewing environmental permits currently takes years and significant expense.

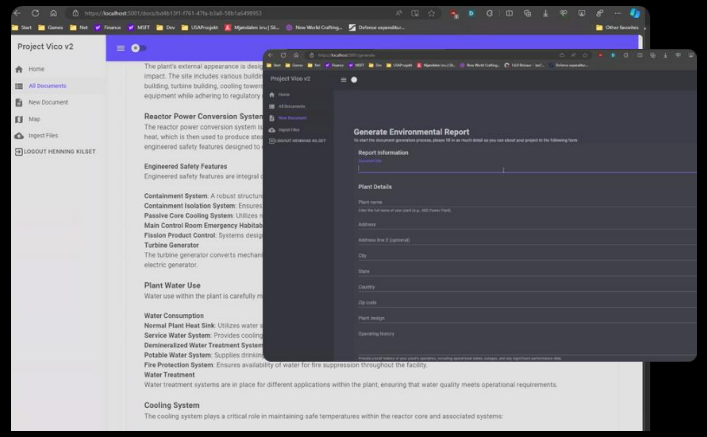
Objective: Accelerate industries by applying Generative AI to greatly reduce the cost and time to license projects.

Use Cases for the Industry

Key Features

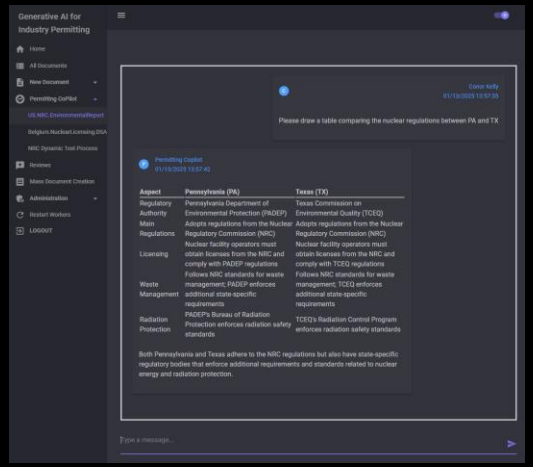
AUTOMATED DOCUMENTS CREATION

Drafting documents with multiple calls to the GenAI model(s), using previous permitting data, project specific data, and enterprise datasets—ready for human review and refinement.



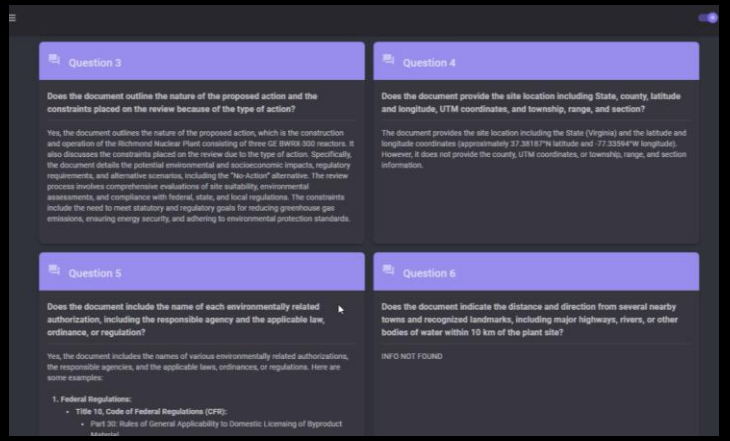
COPILOT AGENT WITH TRAINED BACKEND DURING REFINEMENT STAGE

A "Copilot" allowing ad-hoc queries to the trained backend for all permitting specialists to search large document sets, request drafting of sections, etc.



PRE-SUBMISSION DOCUMENTS REVIEW

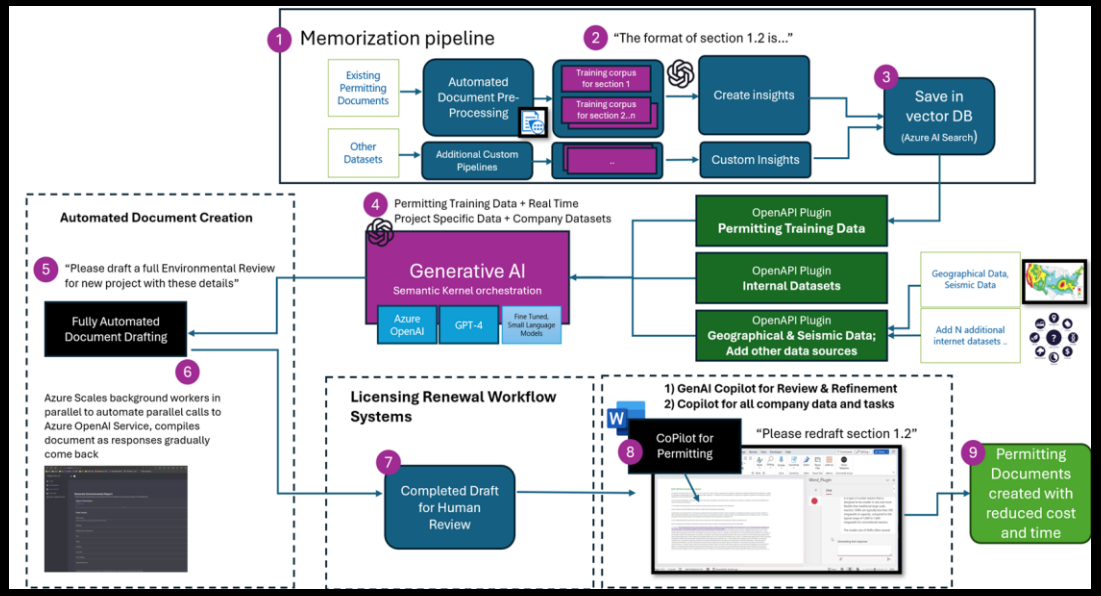
Assess a Permitting Application against regulations to quickly spot missing information, which would otherwise result in a long roundtrip with regulators. Enabling regulators to more quickly identify information & issues.



Microsoft accelerates permitting with Generative AI

Drastically increase efficiency and reduce costs

Generative AI accelerator solution



Benefits estimate

BUSINESS VALUE

The solution is positioned to **save 25% - 75%** of the **cost** for compiling new permitting documents

NEW OPPORTUNITIES

The solution can be extended to further scenarios (e.g. New Document Types, Translating Documents between languages or regions globally, Site Selection, etc.) and performs additional savings

[Idaho National Laboratory collaborates with Microsoft to streamline nuclear licensing - Idaho National Laboratory]

Idaho National Laboratory collaborates with Microsoft to streamline nuclear licensing

July 16, 2025

By INL Media Relations

Microsoft

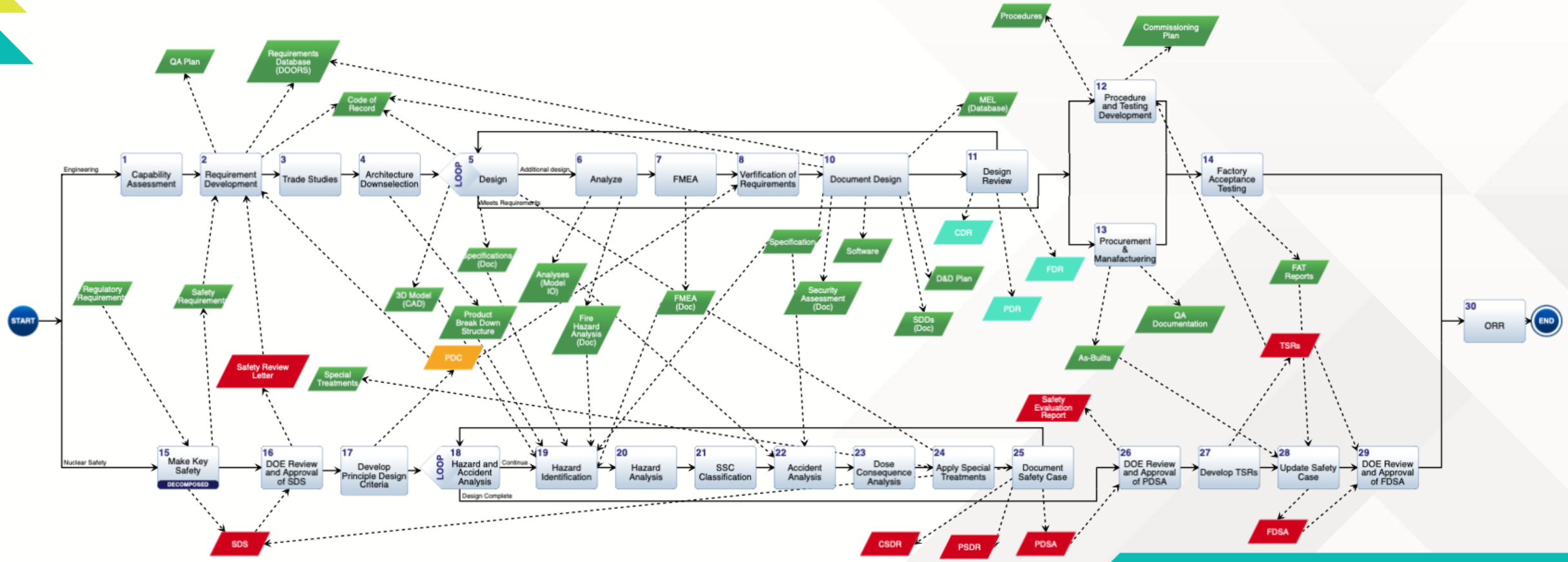
NRIC

INL Idaho National Laboratory

AI for Permitting Questions?

- Please contact, Dr. Nelli Babayan, Microsoft AI Director - Federal Civilian
- nellibabayan@microsoft.com

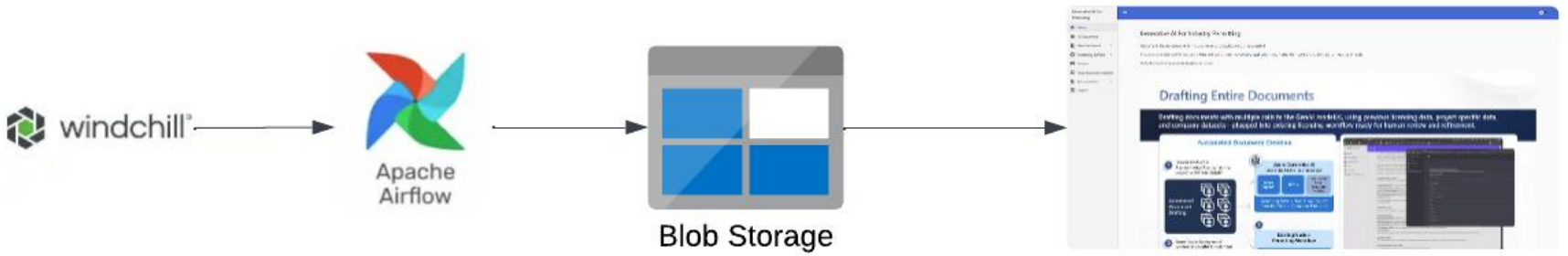
Integrating Safety and Design is Difficult in a Document-Based Industry



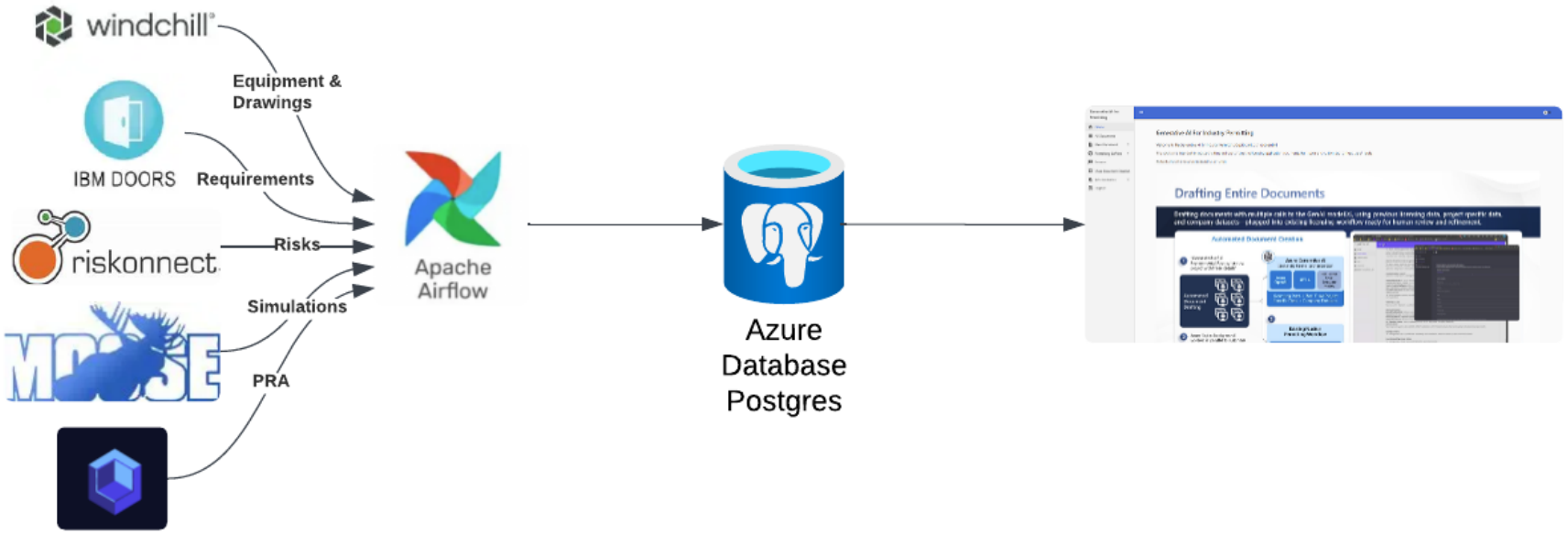
NRIC National Reactor Innovation Center

Developing a Digital Engineering Ecosystem

Today's Document-Based Workflow



Tomorrow's Data-Driven Workflow



Pilot Projects

- DOE Use Cases
  - Demonstration and Operation of Microreactor Experiments (DOME) test bed Preliminary Documented Safety Analysis (PDSA)
- NRC Use Cases
  - Idaho State University (ISU) AGN-201 Reactor License Application Renewal (LAR) per NUREG-1537
  - Radiant Microreactor Experiment in DOME Part 52 Manufacturing License, ML or Part 52 Design Certification)

Verification & Validation of AI Tools

- Using AI in a regulatory setting requires a strict methodology for V&V of the AI-generated results
- Leverage INL subject matter experts to review and mimic the questions of regulators
- Quantify error rates for future tool improvement

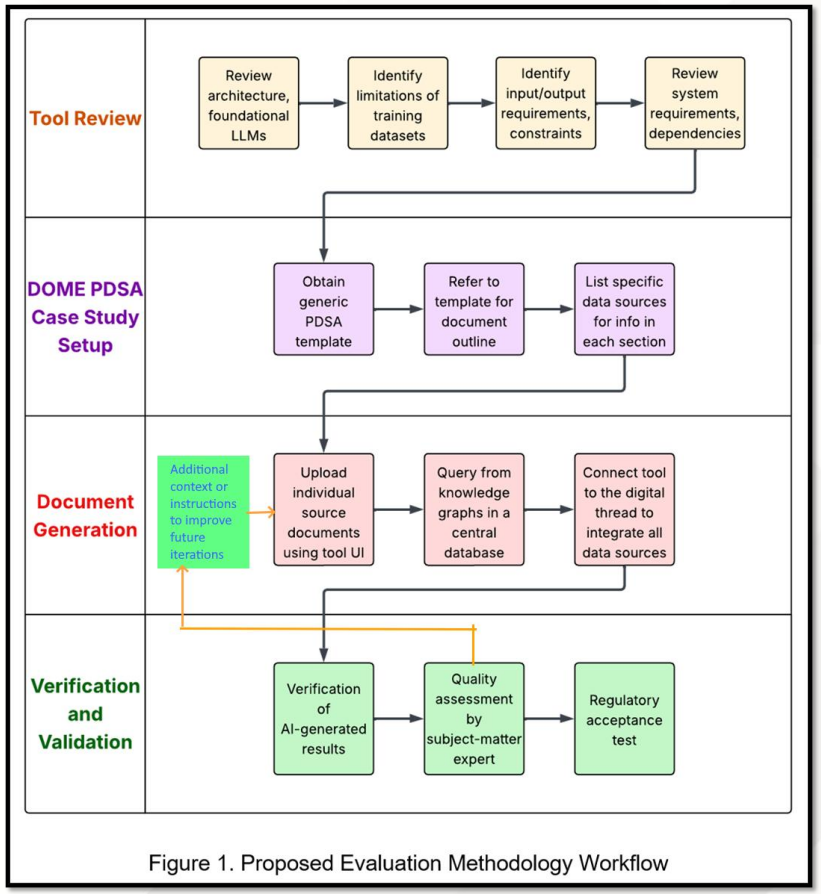


Figure 1. Proposed Evaluation Methodology Workflow

Conclusion

1. Enhanced Collaboration & Communication
2. Single Source of Truth (SOT)
3. Improved Change Management
4. Automation of Routine Tasks
5. Enhanced Data Analysis & Decision Making
6. Reduced Development Time
7. Risk Mitigation
8. Consistency and Standardization