



STEP UP
YOUR GAME



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Automation Efforts in EDR Analysis and AI Generated Interpretation

A Phase 1 Environmental Site Assessment Case Study

Presented by Bill H. Jarrell



CEC Quality Policy WP-07

- Key Points to implement adoption:
 - Technical, infrastructural, **legal** and **ethical** review
 - Review substantiates “The potential impacts on data privacy, security and other operational risks”
 - Periodical review by IT leadership
- Key restrictions
 - “Utilizing confidential data, including client information or project plans, with unapproved AI tools is strictly prohibited” under **Privacy** protection
 - “Employees are required to substantiate their work products... with traceable sources” for **Accuracy**
 - “All reviewers and managers of [work constructed with AI assistance] must be made aware of when and how AI was used in producing a work product” for **Honesty**

Defining Automation vs. AI

Machine Automation

- “Accomplishing a task(s) using technology without human intervention.”
 - Programmed automation
 - Defined by static value

Artificial Intelligence

- “A *computer program with the ability to perform tasks commonly associated with intelligent beings.”
 - Defined by dynamic value

Automation vs. AI (continued)

- In this study, there are two fields to consider:
 - Document Analysis
 - Report Generation
- For analysis, we are primarily using automation
- For generation, we are primarily using Artificial Intelligence
 - AI trained and dedicated to a specific task is known as an “Agent”.

The Tools of the Trade

- **CoPilot** – An Artificially Intelligent assistant within the Microsoft suite
- **Power Automate** – A Microsoft program that helps automate transitional tasks
- **Excel** – A user and computer friendly language
- **CoPilot Agents** – Turns qualified, interpreted data into generated reports



Copilot

What Can it do?

- [Meet Copilot, Your AI Assistant for Work | Microsoft 365](#)
- The ultimate Excel tutor

Where it fits in a P1ESA –

- Used for agent creation and Drafting “no-code / low-code” automation solutions.

Power Automate

- Power Automate allows for the reception, unpacking, storage, and processing initiation of documents to occur without human intervention
- Automates repetitive, rule-based tasks with RPA (Robotic Process Automations)

Analysis via Converting Information to Excel

- Information from PDFs and DOCx files must be converted into Excel
- This is completed with Excel's "Power Query" data transformation engine
 - Prewritten, manually input "FILTER" functions matching the EDR section being analyzed work to parse the data further.

Behind the Curtain: Agent Development

Defining an agent: An AI assistant optimized to complete certain tasks

- How do you build an agent?
 - Within CoPilot Studio, a created agent is instructed to operate under framework favorable to accurate P1ESA report generation
 - The framework is composed of generic “Madlib” style P1ESA templates
 - Restrict the agent to interpret templates for structure and style only
- Why use an agent?
 - Greater streamlined control over style and structure
 - Cuts down on “hallucinations” and “bleed-through”, and improves accuracy

58	
59	Layer
60	1
61	2
62	3
63	Soil Component Name:
64	Soil Surface Texture:
65	Hydrologic Group:
66	Corrosion Potential - Uncoated Steel:
67	Depth to Bedrock Min:
68	Depth to Watertable Min:
69	Soil Component Name:
70	Soil Surface Texture:
71	Hydrologic Group:
72	Soil Drainage Class:
73	Corrosion Potential - Uncoated Steel:
74	Depth to Bedrock Min:
75	Depth to Watertable Min:
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78	Layer
79	1
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81	3
82	Soil Component Name:
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85	Soil Drainage Class:
86	Corrosion Potential - Uncoated Steel:

Beaucoup Silty Clay Loam

The Beaucoup Silty Clay Loam is characterized by a silty clay loam surface texture. It falls into hydrologic soil group B, indicating moderate infiltration rates. The soil is poorly drained. The profile of this soil is as follows:

- 0 to 16 inches: Silty clay loam
- 16 to 64 inches: Silty clay loam
- 64 to 79 inches: Stratified silty clay loam to very fine sandy loam

Dumps

The Dumps soil type has a silty clay loam surface texture. It is classified under hydrologic soil group B, which signifies moderate infiltration rates. The profile of this soil is as follows:

- 0 to 79 inches: Silty clay loam

Landes Very Fine Sandy Loam

The Landes soil type has a very fine sandy loam surface texture. It belongs to hydrologic soil group B, indicating moderate infiltration rates. The soil is well drained. The profile of this soil is as follows:

- 0 to 14 inches: Very fine sandy loam
- 14 to 38 inches: Very fine sandy loam
- 38 to 79 inches: Stratified silt loam to very fine sand

Orthents, Loamy

The Orthents, Loamy soil type has a loam surface texture. It falls into hydrologic soil group B, which indicates moderate infiltration rates. The soil is well drained. The profile of this soil is as follows:

- 0 to 5 inches: Loam
- 5 to 59 inches: Loam

Shaffton Clay Loam

The Shaffton soil type has a clay loam surface texture. It is classified under hydrologic soil group B, indicating moderate infiltration rates. The soil is somewhat poorly drained. The profile of this soil is as follows:

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Generation Sections

Currently Researching

- Physical Map Report
 - Soils
 - Hydrogeologic
 - Site Topography
- Database results
 - Subject Property
 - Surrounding Area / Orphan sites

Future Potential

- Aerial and Topographical maps
- Site Visits
 - Utilizing Talk-to-Text note taking to streamline process

Benefits

- Lower production cost
- Quicker turn around time
- Model training allows for expanded services over time

Issues to Overcome

- Dependability
- Development and appreciation of professional knowledge

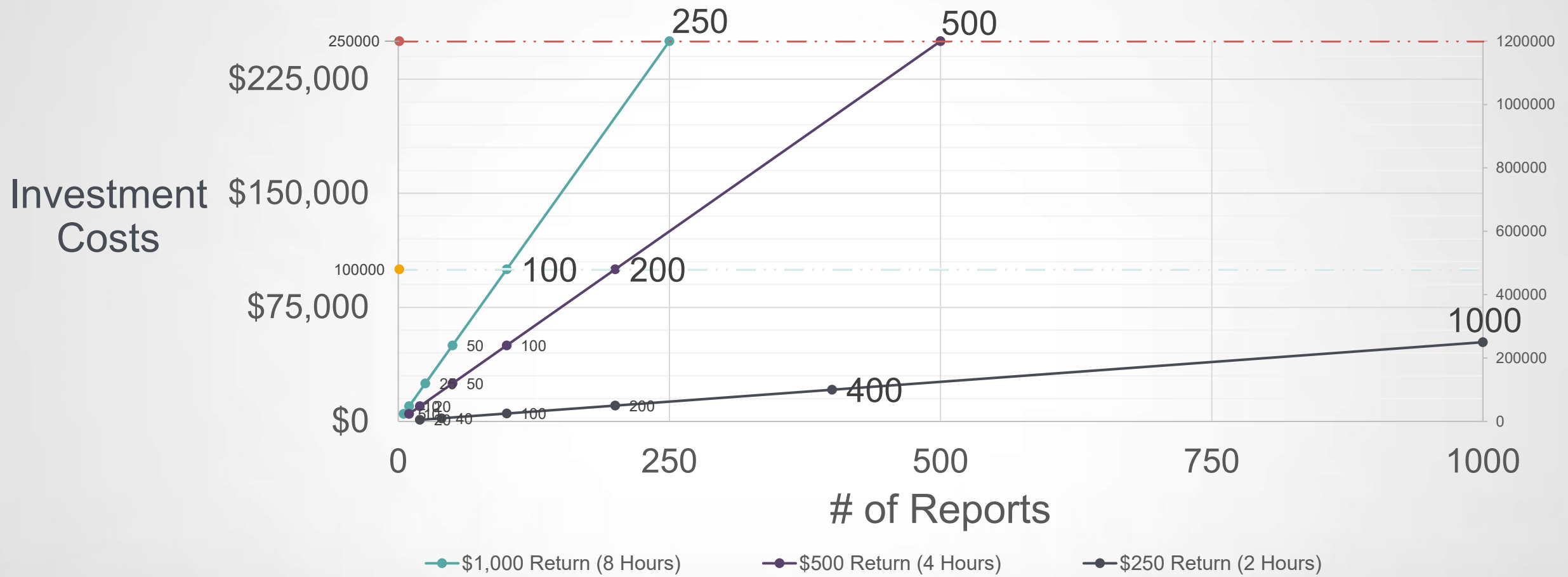
Disadvantages

- Extensive start-up
- Currently, an overly complex solution for minimal reward

Feasibility

- YES! Practical... not yet

Potential Agent Implementation Time and Cost Savings



The Big Question: The Client

- This technology is capable, but not “out of the box” ready
- The truth: When analytical and generative tech is “out of the box” ready for an uninformed individual to successfully, confidently complete a professional service we offer, we risk becoming redundant
- Who defines a successful, confident completion? We do!

Conclusion

Championing Automation and AI integration

- Piloting a Process Engineer Computer Scientist hire/employee for automation at major office or region
- Conduct showcases to inform employees of new tech
- Rewarding automation innovators with new work-agreements

Matters for further discussion

- Ethical implications
- Human roles in the workforce
- Security implications
- Largescale affect on productivity

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- Mr. Jarrell is a Project Consultant with 6 months of experience in the environmental engineering field, where he assists professional engineers with tasks encompassing a broad range of responsibilities. Performing both computational work and field services, Mr. Jarrell has assisted in CAA, CWA and FESOP related permitting, annual and biennial RCRA reporting, document drafting including FPOPs, SPCCs, NOV response letters and Phase 1 ESA's, along with related field duties including well sampling. While Continuing his expansion of knowledge on a path for professional licensure, Mr. Jarrell's current professional interest is the automation of complex data processing in the environmental field.

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QUESTIONS?