AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company

AI Working Group

Status Update

November 2024

Today's Agenda

AQUA-AEROBIC SYSTEMS, INC.
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- Goals and Objectives
- Revere Meeting Summary
- Recommended Next Steps
- Action List
- Implementation Schedule
- Questions / Discussion

Overall Objectives for AI Implementation

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- Understand "guiderails" for use
- Understand potential pitfalls
- Identify initial focus areas
- Develop an implementation and testing plan
- Develop an implementation and testing schedule
- Continuous improvement

Who is Revere?

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- Similar size company to AASI
- Similar use cases, workflow and business environment

Revere Meeting Summary

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- Learned the workings of LLM-based AI models
- AI Adaptability: The tool itself is less important than how it's used. Focus on enhancing roles and training people
- Token Management: AI performance depends on token limits; tools like Gemini handle large documents by splitting them into manageable sections.
- Accuracy Testing to gain confidence in outputs
- Future Potential: Explore areas like data analysis, accuracy testing, and enhancing QA through AI.

Selecting Focus Areas

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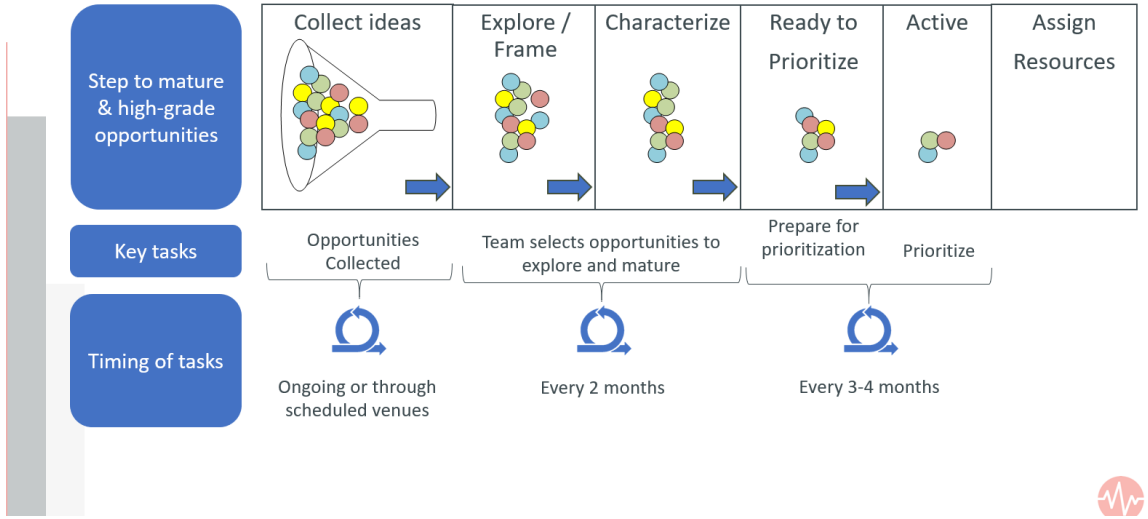
- Most AI initiatives fail because of failure in selecting the right projects
- AI project is 15% tech, 85% people
- "Buy-in" across the company
- Confirmation bias can be dangerous
- **Seek low-hanging fruit – impact, likelihood of success**

Continuous process to mature opportunities



Selecting Focus Areas

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- Portfolio of potential focus areas

Name	Phase/ Dept	Champion	Definition	Type of application	End User	Bussiness Value	"+ Time Criticality	Reduction/Opportunity Enablement	CoD	/Job Size or Duration	"= WSJF"
Contract Evaluation	Estimating	Edward		NLP		★★★★★	Medium	Medium Risk	36	M	4.5
Specification Evaluation - Hardware recommendations 2nd gen	Estimating	Edward	2nd generation of the row 4			★★★★★	Lowest	Low Risk	26	M	3.25
Sage produces the pdf cutouts, of specs. of customer specs. with comments,	Estimating	Noah				★★★★★	Medium	Low Risk	33	M	4.125
Estimating Schedule Completion	PM					★★★★★	High	Medium Risk	41	XL	2.05
Historical Change order indexing	PM					★☆☆☆☆			#N/A		#N/A
Forecasting job performance using based of prior perfomance in Spectrum/GP Swing	Estimating, PM		Avoid loosing GP			★★★★☆			#N/A	XL	#N/A
Automated Invoicing		Katie	Automation not AI						#N/A		#N/A
Symbol recognition and classification from P&ID diagrams	Engineering		May wait on developing tech			★★★★★	Lowest	Low Risk	26	XL	1.3
Symbol recognition and classification from One-line diagrams			May wait on developing tech			★★★★★	Lowest	Low Risk	26	XL	1.3
O&M manuals. Automatically generating a manual out of BOMs		Noah	We believe that this is a good product			★★★☆☆	Low	No Risk	14	S	2.8
Indexing drawing archive. The Go-by.	CAD, Engineering, Estimating	Noah	ptor of the application and BOM to our archive. Doesnt need to be drawing			★★★★★	Medium	Low Risk	33	XL	1.65
Pruchasing and Inventory control	Panel Manufacturing	Katie	follow up action item						#N/A		#N/A
UL 508 bot to assist in panel shop	Panel Manufacturing	Bert				★★☆☆☆	Low	Low Risk	15	XS	15
NEC bot (i.e Wire, breaker sizing)	Panel Manufacturing	Noah				★★☆☆☆	Low	Low Risk	15	XS	15
PLC Code Generation	PLC Scada		May wait on developing tech			★★★★★	Lowest	Low Risk	26	XL	1.3
Migrating program. PLC and SCADA infrastructure, live values	PLC Scada	Bert	May wait on developing tech			★★★★★	Lowest	Low Risk	26	XL	1.3
Adaptive Loop tunning	Site Services		MPC does this.			★★★★☆	Lowest	No Risk	17	L	1.307692
AR tool taking a visual record and archiving service calls	Site Services	Bert							#N/A		#N/A
Chat bot for Field service, enginieering, production	Site Services	Edward	t. Keep records of field service, eng, production deficiencies and solution. Quality issu			★★★★☆	Low	Medium Risk	28	S	5.6
HR recruiting tool. Pair the job description with the resume of successful current employees	HR	Katie	Concensus is that there are tools developed						#N/A		#N/A
~~Find patterns in Spectrum data to gain insight into loosing and winning jobs~~		Katie							#N/A		#N/A
HVAC management		Noah				★☆☆☆☆	Lowest	No Risk	3	S	0.6
Cyber security using AI		Bert	erabilities related to products that we already work on. Penetration test.			★★★☆☆	Lowest	Medium Risk	17	M	2.125
Disaster recovery		Bert				★★★☆☆	Lowest	Low Risk	14	M	1.75
Open chatgpt to shop and personnel to just use it.		Edward	Looking at pricing for GPT enterprise						#N/A		#N/A
Soho data - Find patterns to determine good estimation vs bad estimation			Not having data increaes complexity			★☆☆☆☆	Medium	Low Risk	14	XL	0.7

Selecting Focus Areas

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- "WSJF" method to prioritize

List of opportunities – Weighted Shortest Job First

Name	Business Value	+ Time Criticality	+ Risk Reduction	CoD	/Job Size	=WSJF"
UL 508 Chatbot to assist in panel shop	★☆☆☆☆	Low	Low Risk	11	XS	3.667
Chatbot for Field service, engineering, production	★★★★☆	Low	Medium Risk	26	L	3.25
Contract Evaluation - Legal	★★★★★	Medium	Medium Risk	36	S	7.2
Specification Evaluation for Estimating	★★★★★	Medium	Low Risk	33	S	6.6
Symbol recognition and classification from P&ID diagrams	★★★★★	Very Low	Low Risk	26	XL	1.3
PLC Code Generation	★★★★★	Very Low	Low Risk	26	XL	1.3

Highest Priority

Business Value = ★★★★★
Time Criticality = Very Low, Low, Medium, High, Highest
Risk Reduction = Lowest, Low, Medium, High, Highest
Job Size = XS, S, M, L, XL

Weight Scale = Modified Fibonacci series (1, 2, 3, 5, 8, 13, 20)

$$WSJF = \frac{\text{User-Business Value} + \text{Time Criticality} + \text{Risk Reduction or Opportunity Enablement}}{\text{Job Size or Effort}}$$

Selecting Focus Areas

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- Employee survey

MVP Survey Results

What did we learn from the MVP Survey?

- Out of 27 participants the acceptance was 77% Positive, 15% Middle, and 8% Negative.
- Efficiency and possible quality improvements were the positive themes.
- Missing relevant information was the predominant fear.
- Features needed
  - High level list of deliverables
  - Summary

A chatbot can satisfy the features needed

Poe App

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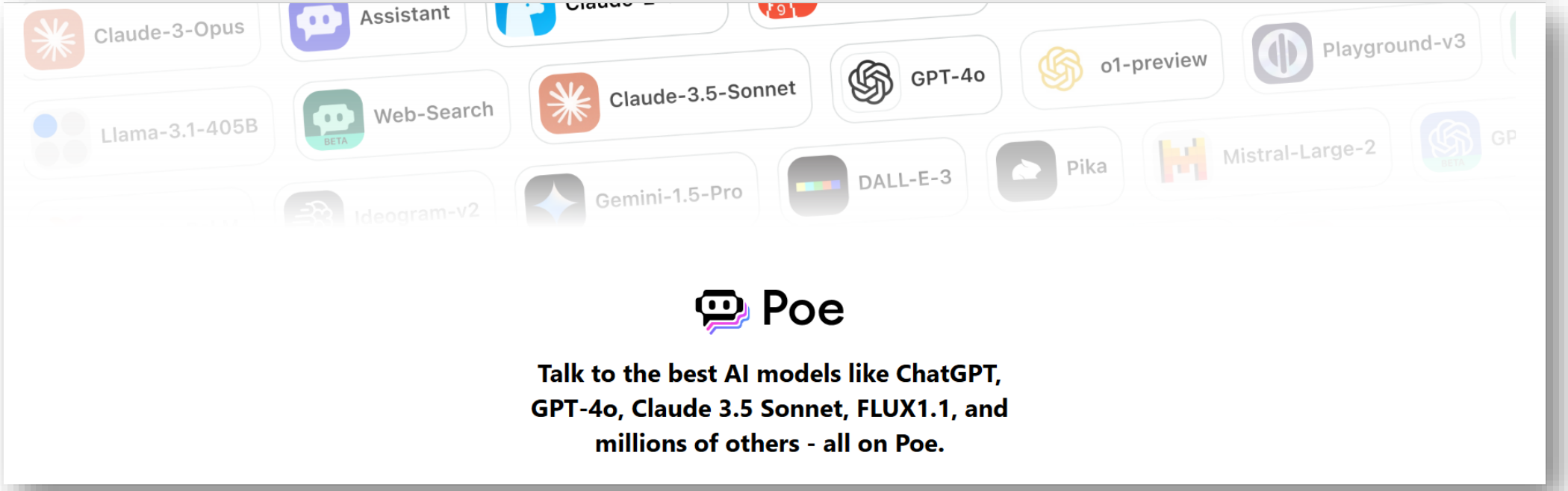
- Allows for use of many different AI for same monthly fee
- Each AI has its strengths and weaknesses
- AI models are evolving rapidly – don't just choose 1
- Different AI's handle document types and prompts differently (i.e. engineering drawings)



Prompting and Questionnaires

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Prompts

- **Training people to use effective prompts is critical**
- "Start fresh" – old query chains can skew output by perpetuating bias
- Training is in the user, not the model
- Trial and error

Questionnaires

- Frame the required output from AI (i.e. summarizing elements of a document)
- Developing robust context-based questionnaires to query AI is critical
  - Subject matter experts for each group
  - Living documents that are maintained and refined over time to become very reliable

Effective Prompts

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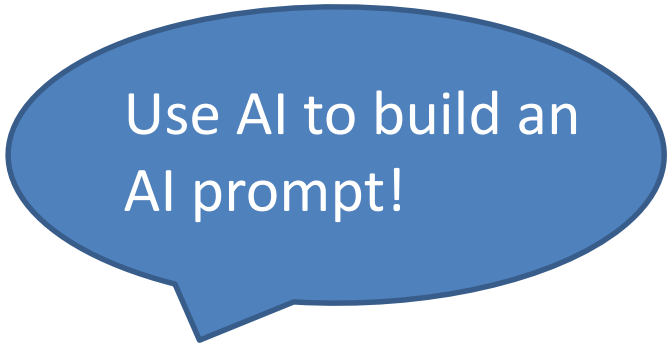
- Be specific
- "Act as if"
- Specify output presentation
- Use "do" and "don't"
- Use examples
- Specify tone and audience
- Build on previous prompts
- Save for future use

Good resource for prompting best practices:
https://huit.harvard.edu/news/ai-prompts



Token Calculator and PDF Splitter

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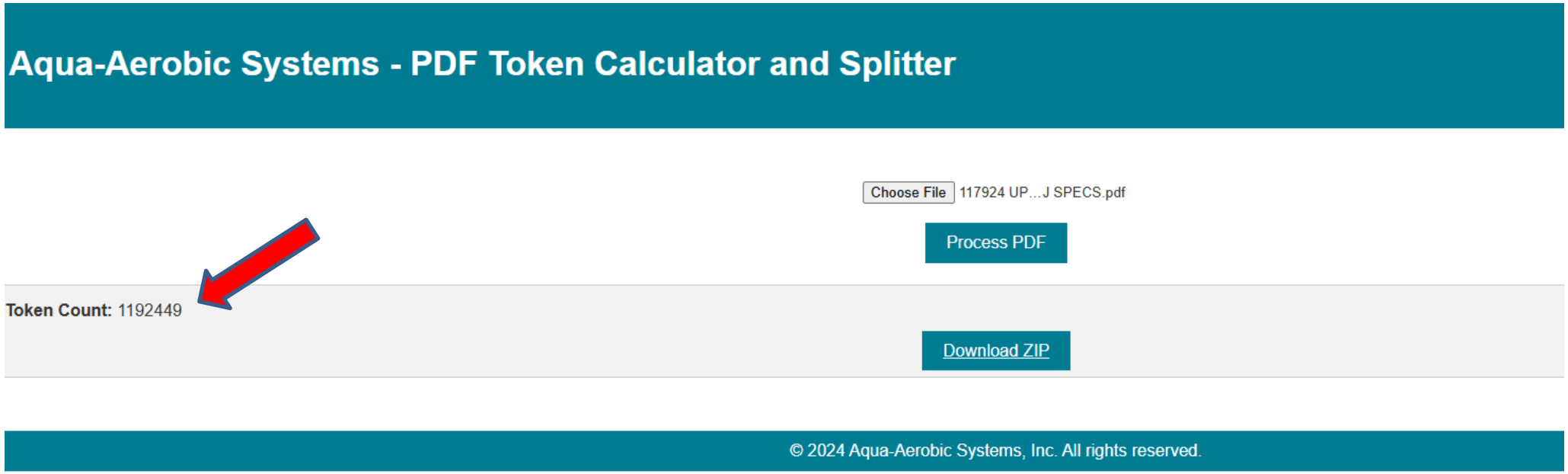
- Calculating token "weight" and splitting PDF is key
- Pairing with appropriate AI "context window" to prevent coherency loss
- Files with images have large token counts



Context Window

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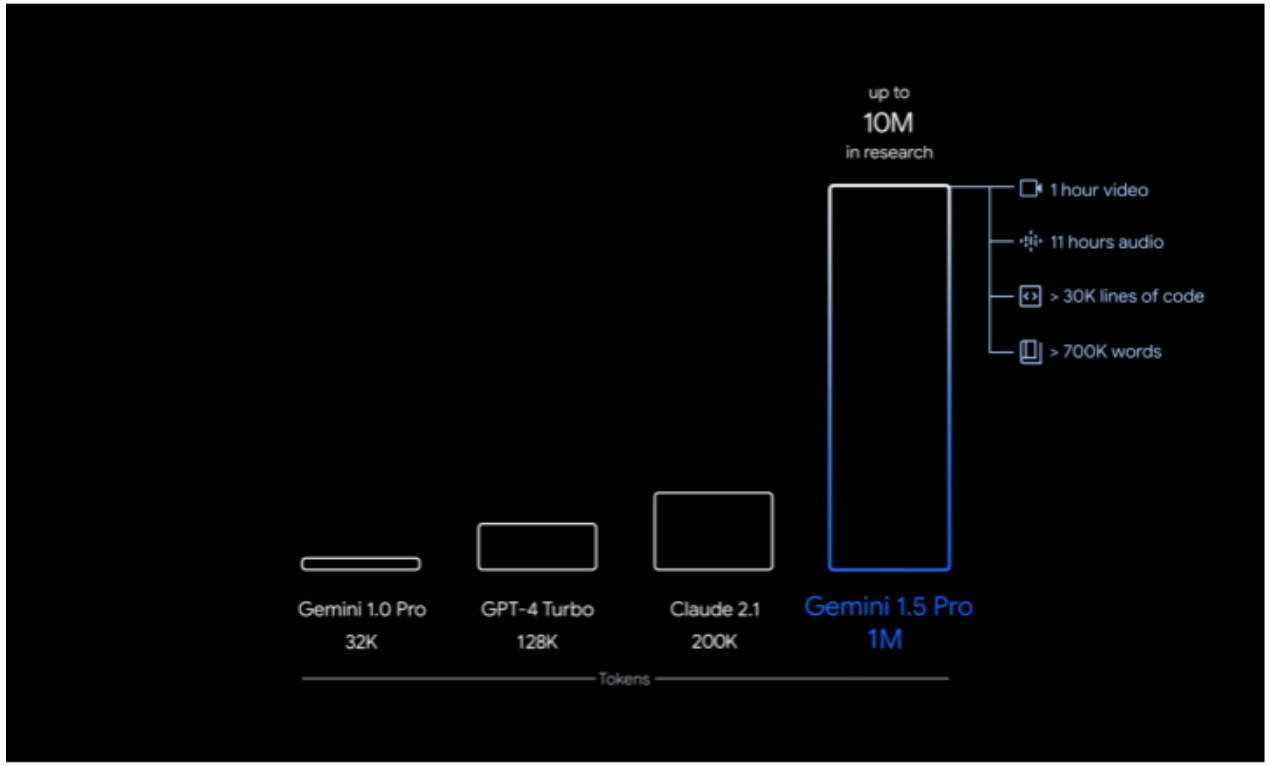
- # tokens a model can process in a single interaction
- Gemini 1.5 Flash **1M**



Context lengths of leading foundation models

Revere – Spec Review Process

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1. **Poe AI Toolbox**:
   - Offers various AI models for different use cases.
   - Uses Gemini 1.5 Flash 1M Model (1M refers to the number of tokens handled in one session).
   - Poe manages API tokens in the cloud.
2. **Run PDF through Token Counter**:
   - Example: PDF contains 700k tokens, Gemini model's limit is 1M tokens per question.
3. **Run PDF through Splitter**:
   - Splits PDF into sections to preserve tokens.
   - Smaller sections are easier for processing.
4. **Load Question Set**:
   - Uses predetermined prompts from a word document.
   - Starts fresh each session to avoid contamination.
5. **Load Spec Review**:
   - Copy and paste a premade prompt, such as “You are an engineer,” to focus LLM's perspective.
6. **Generate Output**:
   - Save the output into a text file and organize responses into a .csv file for further analysis.

Confidentiality and Copyright Protection

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- Best practice is to scrub docs of sensitive info. Can write a program to do this
- Generally speaking, AI output is not copyright protected as it is computed by a generative model, therefore should be "original". Many universities and company now allow it with proper citing
- Regulations and legal analysis is evolving rapidly; may change in future
- Enterprise AI versions have ability to create "closed" networks, but lose access to the global database (and costs more $)

Accuracy Testing

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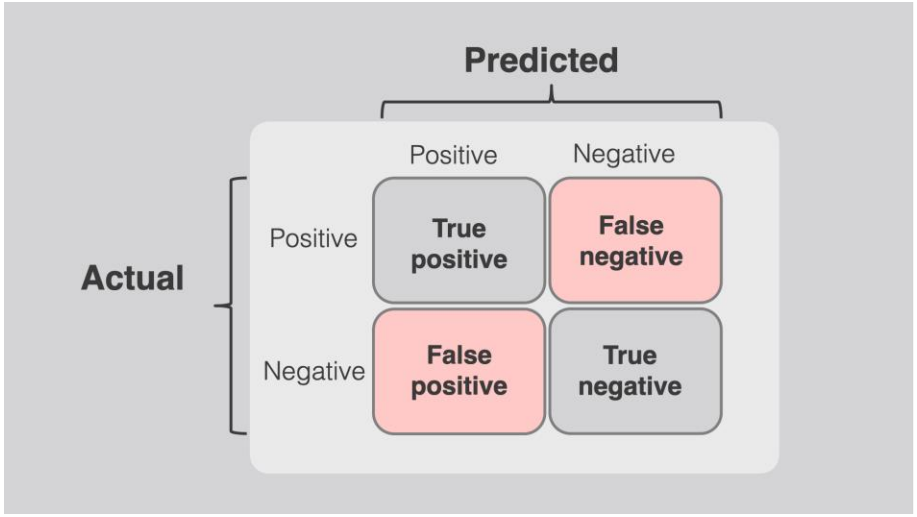
- How to trust and test the model?
- Key part of implementation
- Benchmark AI result vs human effectiveness (humans are not 100%)
- Accuracy vs efficiency – how accurate does it need to be?
  - Depends on focus area and associated risk vs efficiencies gained
- Confusion matrix approach
- Subject Matter Experts to develop answer keys for scoring



Accuracy Testing

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1. Define accuracy requirements.
2. Assess the relevance of items missed by AI and humans.
3. Evaluate time lost due to inaccuracies.

Overall Recommendations

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- Working Group should remain intact through testing, implementation, continuous improvement, etc. and meet regularly
- Initial steps (testing, implementation, refinement) will take employee's time; the Company needs to allow for this, plan appropriately and allocate resources
- Select initial focus area(s)
- Poe app should be rolled out in lieu of individual databases
- Focus areas need a group representative to drive actions and identify sub-tasks

General Plan

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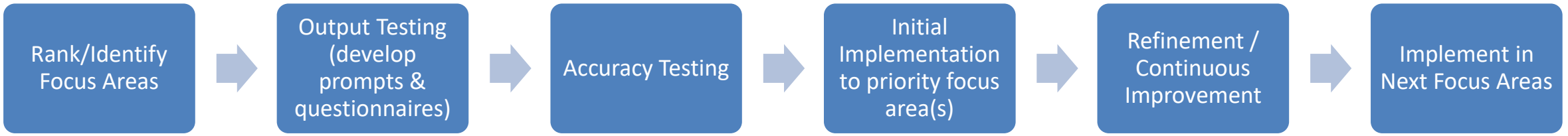
SME Involvement is key

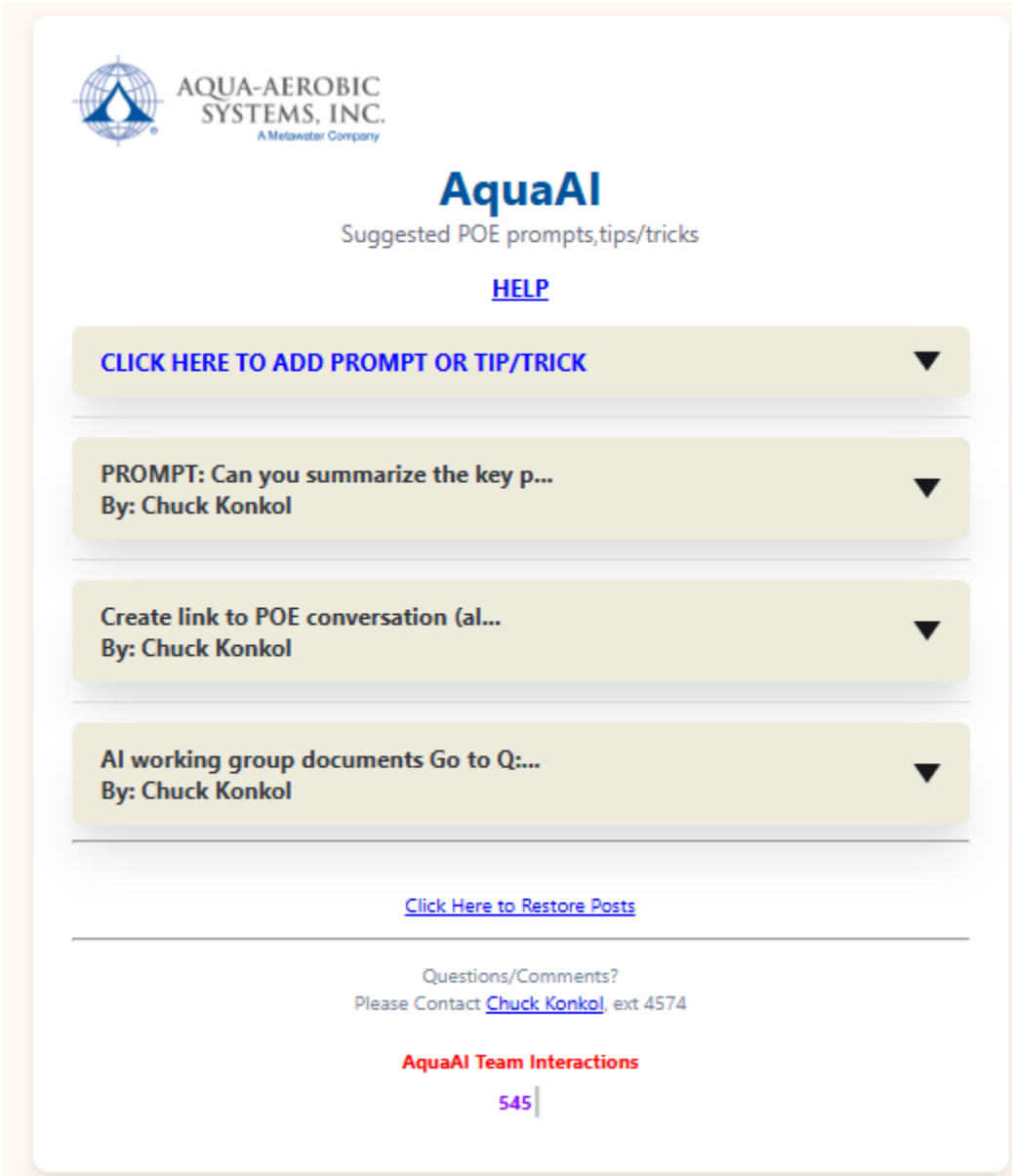


Working Group to identify sub-tasks

2-4 weeks	2-4 weeks	4-6 weeks	1-2 weeks	ongoing	After 3 months of use

AquaAI Web App

https://aquaai.app/



Open Questions

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- Determine focus area selection methodology
- Determine accuracy testing methodology