Webinar: GenAI Governance Strategies from QFCRA

June 11, 2024

Agenda

Speaker introduction

GenAI and KNIME

Governing GenAI usage at QFCRA

Practical GenAI applications

Q&A

KNIME
Open for Innovation

Speakers

Perttu Korhonen
Head, Financial Analysis and
Innovation at QFCRA

Tosin Adekanye
Data Scientist
at QFCRA

Corey Weisinger
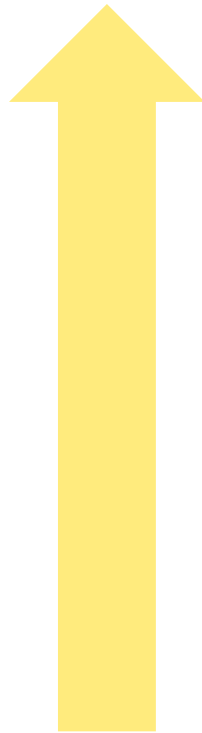Data Scientist
at KNIME

Agenda

Speaker introduction

GenAI and KNIME

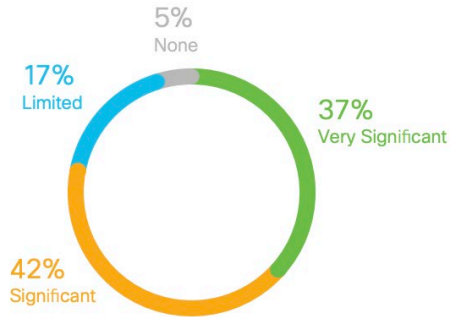Governing GenAI usage at QFCRA

Practical GenAI applications

Q&A

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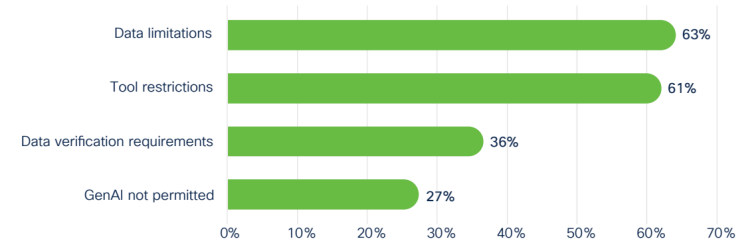# Desire to Apply GenAI … battles Pressure to Govern It

Drive up GenAI adoption

79% **perceive significant value from GenAI adoption[1]**

5%
None

17%
Limited

37%
Very Significant

42%
Significant

Drive down GenAI risk

27% **of organizations have an outright ban on GenAI usage[1]**

Data limitations	63%
Tool restrictions	61%
Data verification requirements	36%
GenAI not permitted	27%

0%   10%   20%   30%   40%   50%   60%   70%

source: Cisco 2024 Data Privacy Study

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GenAI – Opportunities and Risks

+ Massive impact on "mundane" tasks
  + Creating new content
  + Optimizing existing content
  + Gathering & summarizing information

+ Broad userbase & applicability
  + Experimenting with different models
  + Exploring data & information
  + Appling large scale models easily
  + Integrated into daily work everywhere

⊖ Need for (quality) checking
  ⊖ Copyright
  ⊖ Sloppy/faulty quality
  ⊖ Unethical outcomes
  ⊖ Fake outcomes

⊖ Governance requirements
  ⊖ Which AI?
  ⊖ Privacy / confidential data leakage
  ⊖ Skyrocketing consumption
  ⊖ Regulation & risk management

Positive impact is blocked…   …by fear

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If GenAI can't be trusted…
…what can we do?

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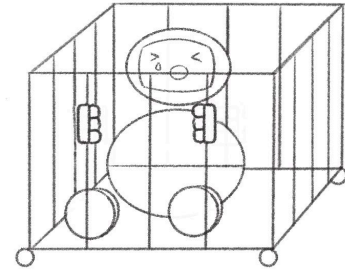
GenAI and Data Science

Assist & Explain

- Help workflow builders
- Teach data science skills

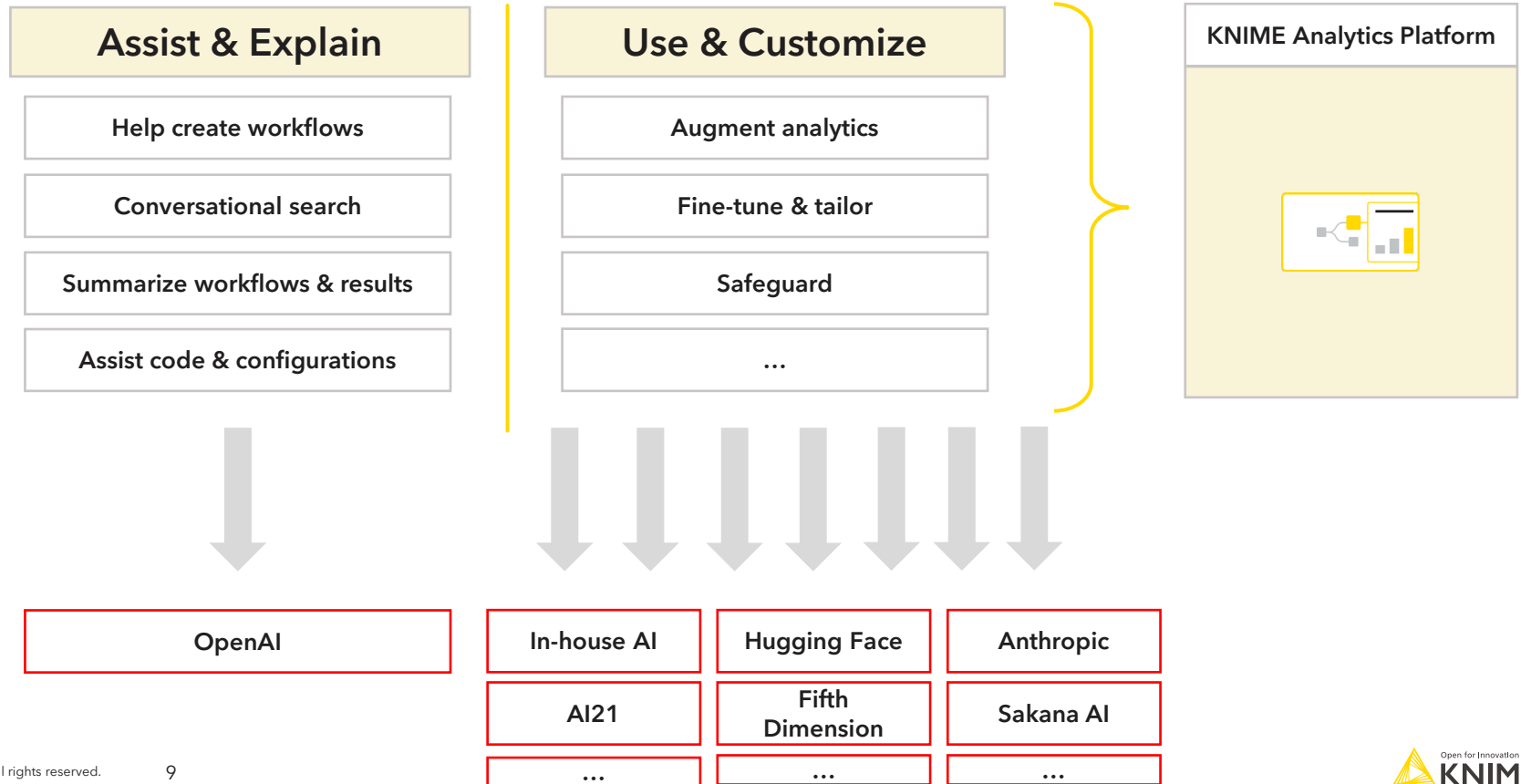## Use & Customize

- Augment analytics with GenAI
- Augment GenAI with analytics

Manage & Govern
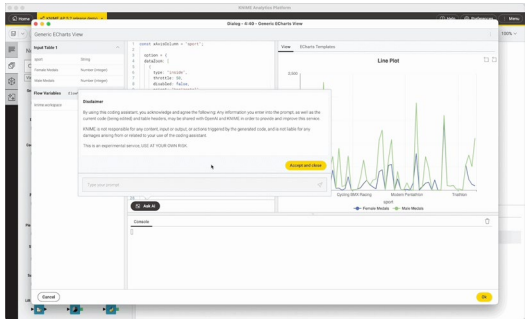
- Safeguard GenAI
- Govern usage

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GenAI for everybody: Flexibility

Assist & Explain	Use & Customize
Help create workflows	Augment analytics
Conversational search	Fine-tune & tailor
Summarize workflows & results	Safeguard
Assist code & configurations	…

KNIME Analytics Platform

OpenAI	In-house AI	Hugging Face	Anthropic
	AI21	Fifth Dimension	Sakana AI
	…	…	…

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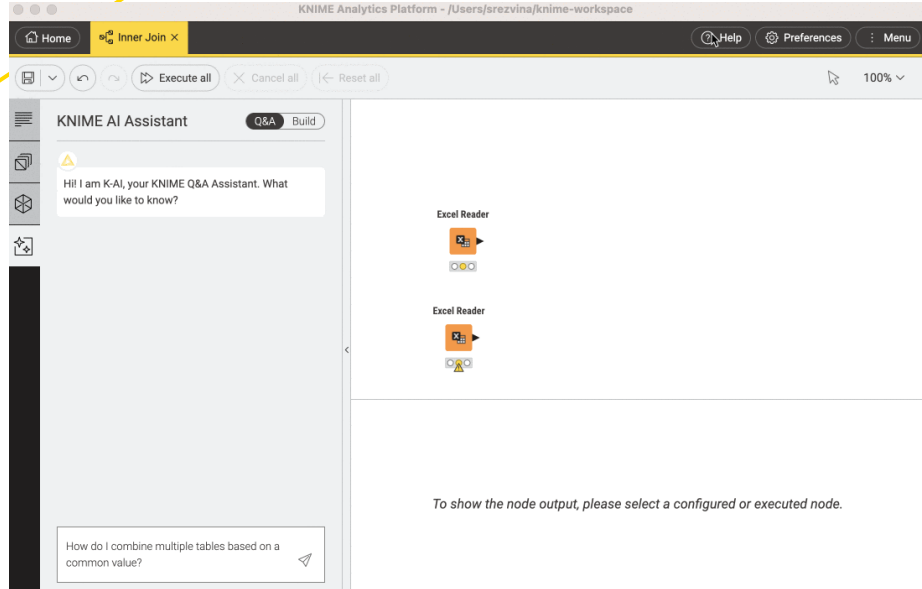KNIME

Assisting and Explaining

K-AI: Q&A and Build mode

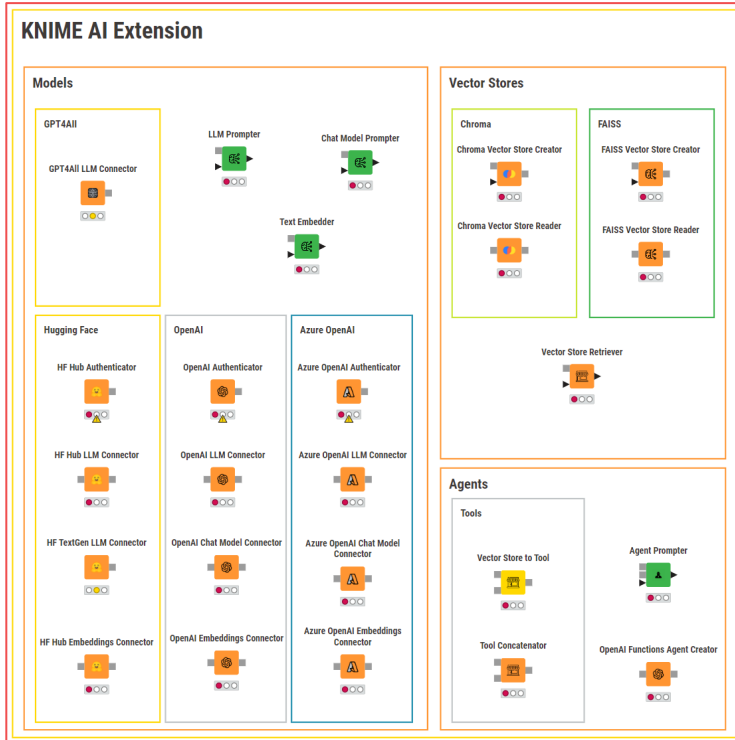## Assist & Explain

Help create workflows

Conversational search

Summarize workflows & results

Assist code & configurations

Copilots for Python, eCharts
[tbdev: R, SQL, …]

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Using and Customizing

GenAI Extensions

KNIME AI Extension

Models

GPT4All
GPT4All LLM Connector

LLM Prompter

Chat Model Prompter

Text Embedder

Hugging Face
HF Hub Authenticator
HF Hub LLM Connector
HF TextGen LLM Connector
HF Hub Embeddings Connector

OpenAI
OpenAI Authenticator
OpenAI LLM Connector
OpenAI Chat Model Connector
OpenAI Embeddings Connector

Azure OpenAI
Azure OpenAI Authenticator
Azure OpenAI LLM Connector
Azure OpenAI Chat Model Connector
Azure OpenAI Embeddings Connector

Vector Stores

Chroma
Chroma Vector Store Creator
Chroma Vector Store Reader

FAISS
FAISS Vector Store Creator
FAISS Vector Store Reader

Vector Store Retriever

Agents

Tools
Vector Store to Tool
Tool Concatenator

Agent Prompter
OpenAI Functions Agent Creator

Use & Customize

Augment Analytics

Fine-tune & Tailor

Safeguard

...

Public space

AI Extension Example Workflows

Home

📁	1) Large Language Models
📁	2) Chat Model
📁	3) Vector Stores
📁	4) Agents

Using the AI Extension: Mix & Match Analytics and GenAI
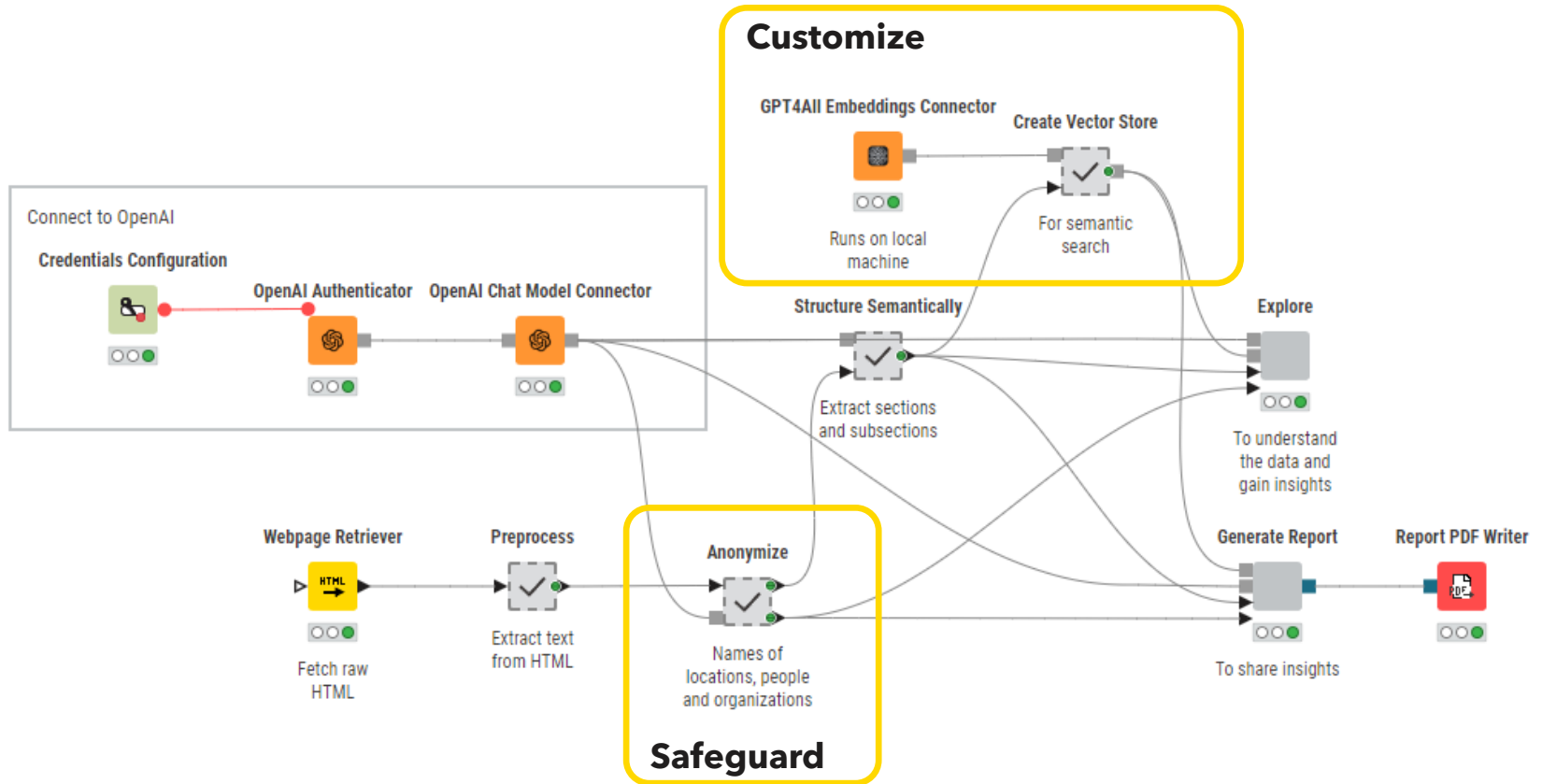
GenAI in the Enterprise: Flexibility & Governance

Assist & Explain

- Help create workflows
- Conversational Search
- Summarize workflows & results
- Assist code & configurations

Use & Customize

- Augment analytics
- Fine-tune & tailor
- Safeguard
- …

Manage & Govern

Filters & Safeguards

- Inhouse AI 1
- Cloud AI 2
- Inhouse AI 3

KNIME Analytics Platform

KNIME Business Hub

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Managing and Governance

Filters & Safeguards

Hub GenAI "Gateway"
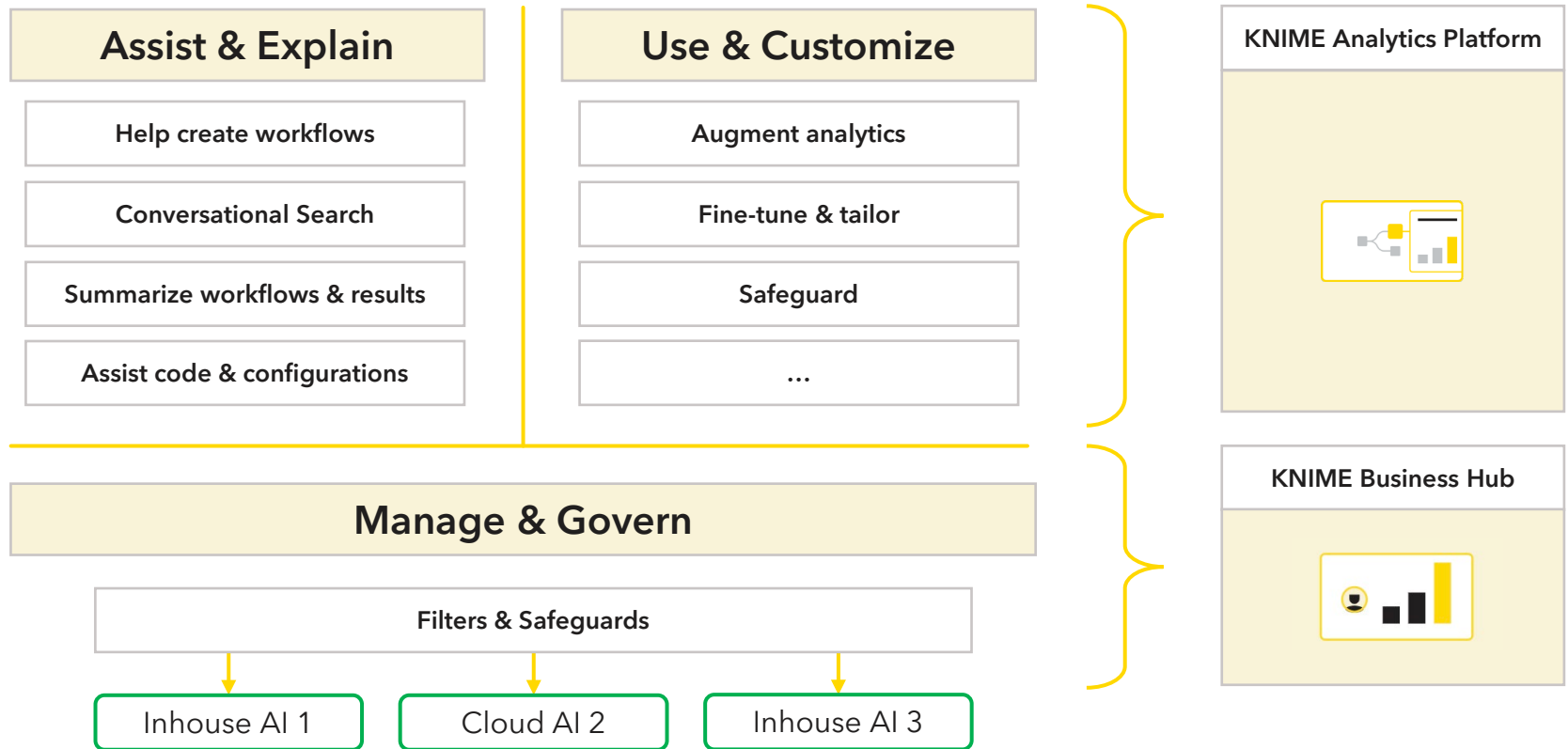
KNIME Business Hub administration

License

Users

Teams

Execution resources

AI models

AI models

Name	Model
rf_model2	huggingface/knime_workflow

Register AI model

Name

Open for Innovation KNIME | Hub

Search workflows, nodes and more...

KNIME Dev Business Hub > Hub administration > AI models

KNIME Analytics Platform

K-AI Dashboard

Conversations | Slice and dice by conversation attributes

K-AI is an AI assistant for KNIME that supports KNIME-related questions, workflow building, and scripting nodes such as Python and Echarts. This dashboard provides four views to help you gain insights into K-AI usage.

K-AI view selection

Users Conversations Cost All Dimensions

Start Date   End Date   Granularity

                                                  Daily

                                                  Apply time range

Apply slice and dice

Metrics split by K-AI mode

4   **15507**   **4011**
Prompts per conversation   #Prompts   #Unique conversations

Total Users Prompts

▶ User Prompts

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Managing and Governance

Hub GenAI Connector

Connect to chat model configured in Business Hub

KNIME Hub Authenticator   KNIME Hub Chat Model Connector   Chat Model Prompter   Parse

Load Conversation

Use & Customize

Augment Analytics

Fine-tune & Tailor

Safeguard

Summarize Workflows & Results

Assist Code & Configurations

KNIME Analytics Platform

Manage & Govern

Filters & Safeguards

Connect to OpenAI

Credentials Configuration   OpenAI Authenticator   OpenAI Chat Model Connector   LLM Prompter

Send anonymized text to OpenAI for processing

Sensitive Data

Control what kind of information the GenAI provider can see

Anonymize

E.g. names of organizations, locations and people

De-Anonymize

Restore original names for display to the user

Hub GenAI "Gateway"
Safeguarding Workflows

Managing and Governance

- Hub AP Customizations
- Shared Components

Assist & Explain

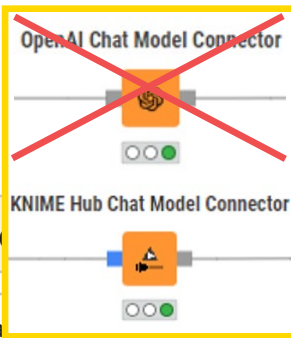| Help create Workflows |
| Conversational Search |
| Summarize Workflows & Results |
| Assist Code & Configurations |

Use & Cust...

| Augment Ana... |
| Fine-tune & Tailor |
| Safeguard |
| … |

Manage & Govern

| Filters & Safeguards |

KNIME Business Hub

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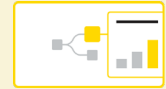
One Environment to Balance Innovation & Control

KNIME Analytics Platform

Drive up GenAI adoption

Increase number of expert developing GenAI apps & services

- Low-code lowers barrier to entry
- Low-code increases efficiency
- Open source to integrate new tech

Increase numer of end users leveraging GenAI

- Deploy to 1000s of end users
- GenAI support upskills into data science

KNIME Business Hub

Drive down GenAI risk

Create a transparent GenAI governance framework

- Restrict to approved LLM models
- Guardrail how & which data is shared
- Protect against bias, hallucinations, fake outputs

Validate & Deploy GenAI solutions at scale

- CDDS to test, validate & deploy models
- Monitor consumption & audit logs
- Document workflows for compliance

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Let's stay in touch

Reception

Stage

Networking

Expo

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Generative AI in Financial Supervision

QFCRA delivering effective and safe digital transformation

Role of financial supervision

- **Maintaining the safety and soundness of financial institutions**

- **Protecting customers**

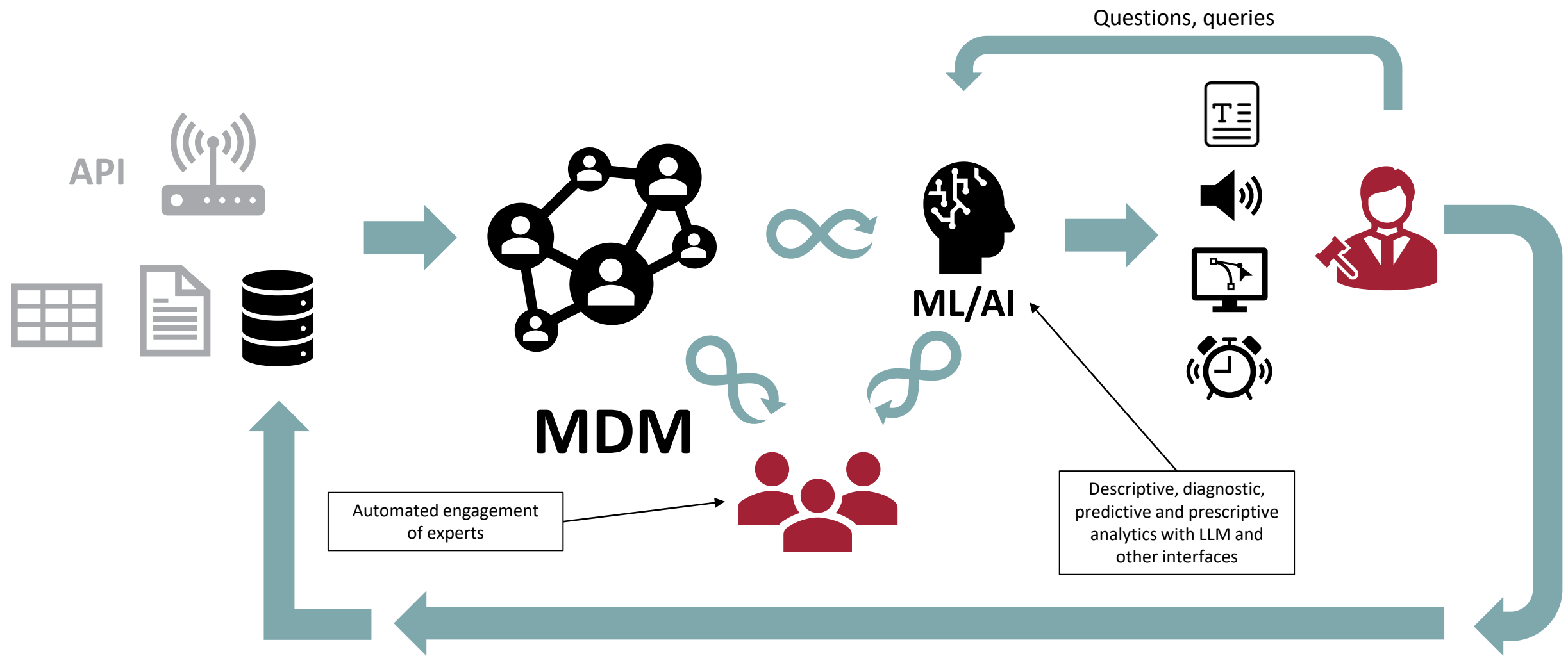- **Sustaining financial stability**

- **Promoting competition(?)**

Risk-based supervisory approach

Off-site monitoring

Regular reporting
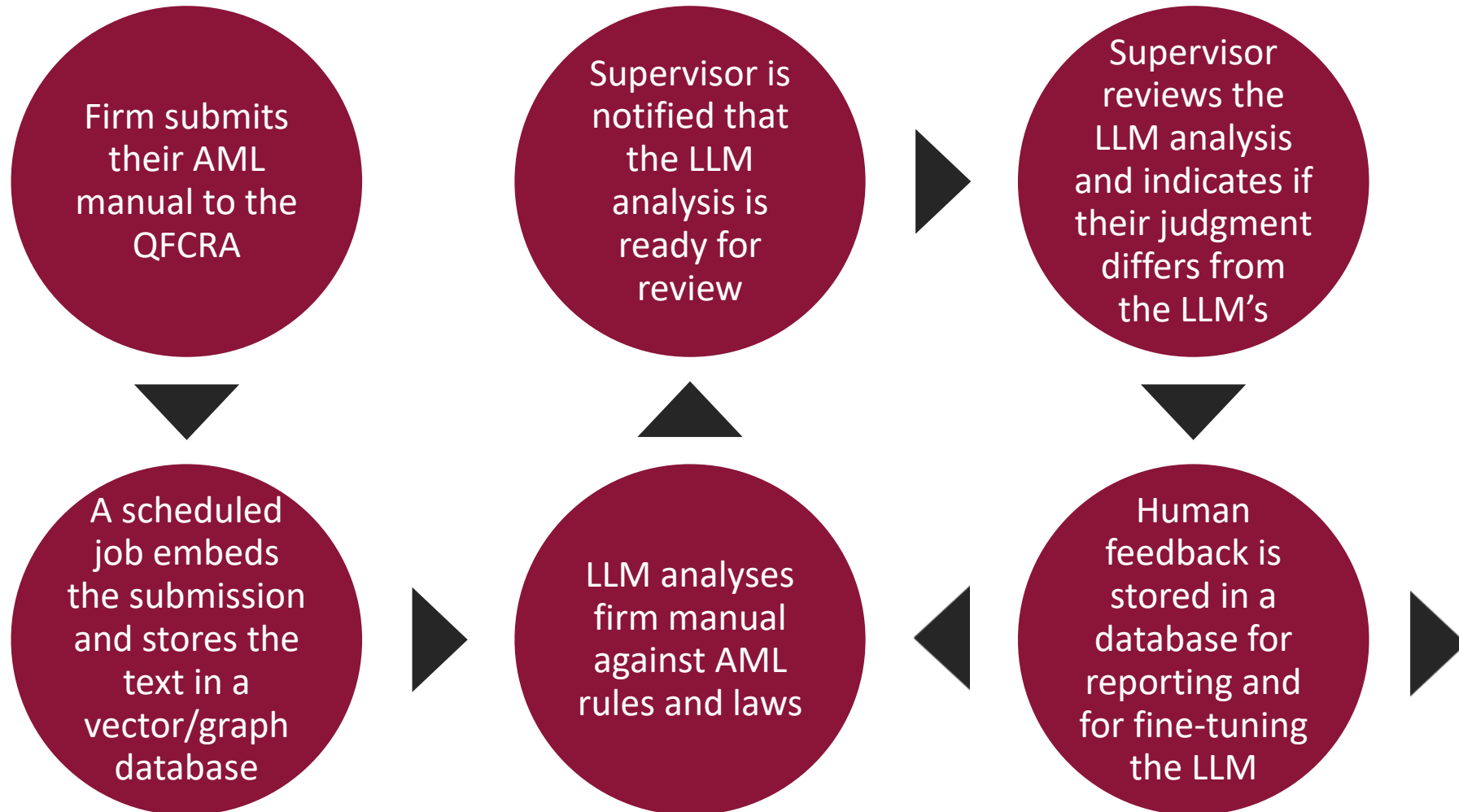
On-site meetings

Risk assessments
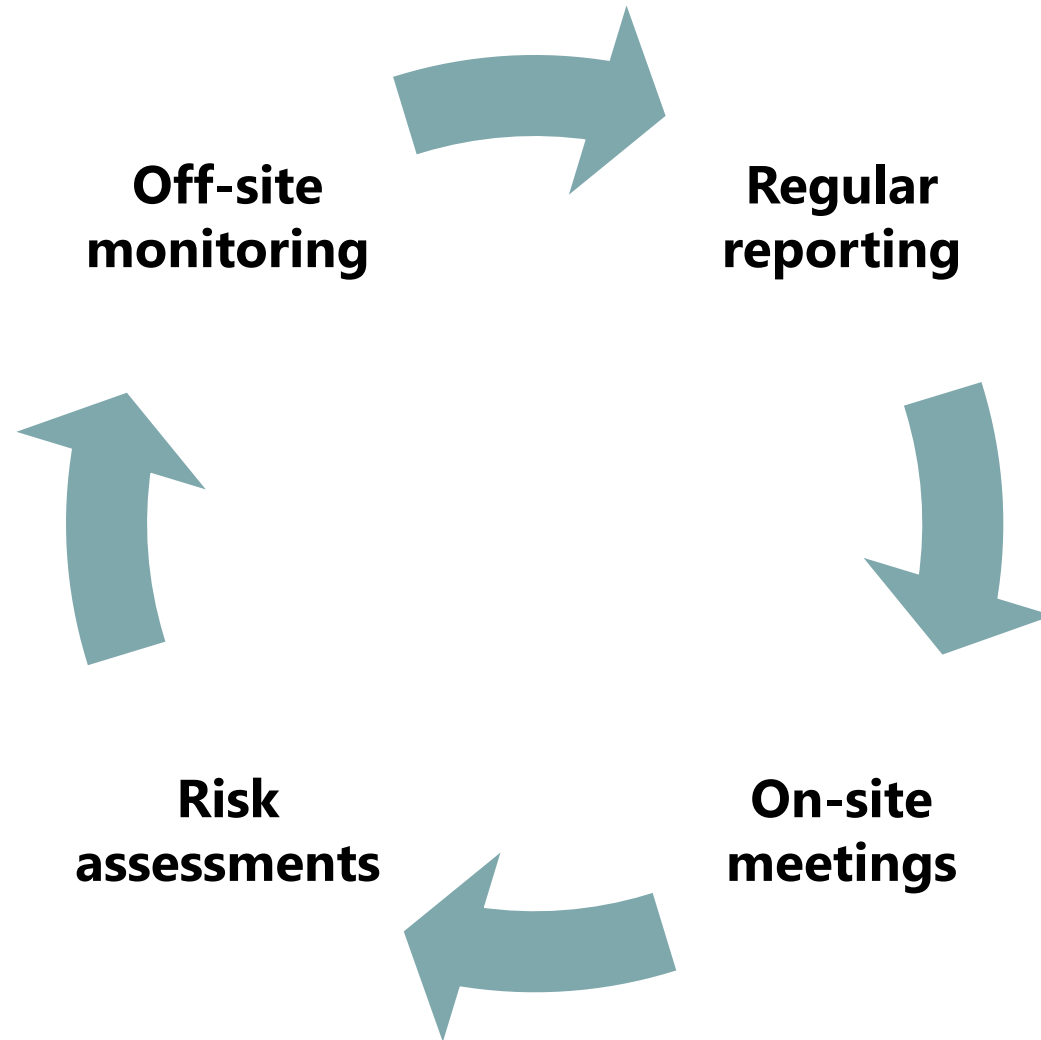
Supervisory technology – suptech

- **Not a tool, but a platform and an operating model (as is fintech)**

- **End-to-end user experiences, 'data products', that support supervisory workflow**

- **Built of standardised, open, maintainable, modules that communicate via APIs and store interim information in databases**

- **Large Language Models (LLMs) in the role of intermediaries, bringing together supervisors, software, and data**

- **Information management and analysis processes growingly coordinated and initiated by the platform, with humans in the loop**

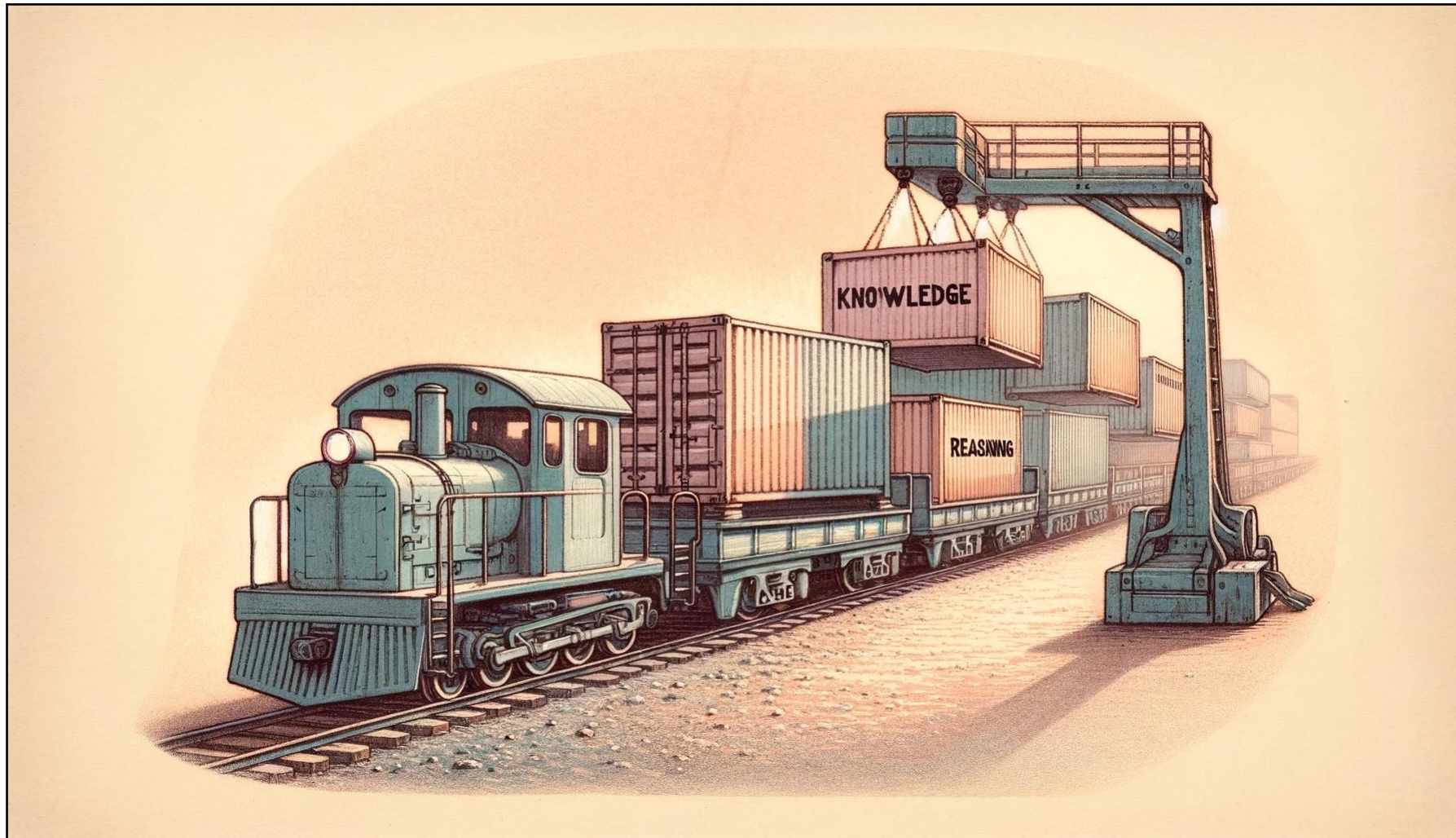- **Facilitates knowledge sharing and accumulation over time**

Target model: A unified process for supervisory intelligence

API

Questions, queries

MDM

ML/AI

Automated engagement of experts

Descriptive, diagnostic, predictive and prescriptive analytics with LLM and other interfaces

The emerging platform – AML/CFT compliance system

Firm submits their AML manual to the QFCRA

A scheduled job embeds the submission and stores the text in a vector/graph database

LLM analyses firm manual against AML rules and laws

Supervisor is notified that the LLM analysis is ready for review

Supervisor reviews the LLM analysis and indicates if their judgment differs from the LLM's

Human feedback is stored in a database for reporting and for fine-tuning the LLM

LLMs must be seen (mostly) as vehicles, not sources, for knowledge and reasoning

Roles for LLM-based AI-aides

- **Translator**

- **Summariser**

- **Meeting transcript writer**

- **Coder**

- **Source of common-sense knowledge**

- **Information extractor**

- **Drafting aide**

- **Automated analyst**

- **Planner**

Current issues in LLMs for decision quality

- **Leading LLMs are closed-source**

- **Mixture-of-experts architecture**

- **The role of RLHF**

- **The cultural nature of bias**

- **Out-of-sample/edge cases, hallucination**

► Responses can be of changeable robustness and reliability and sensitive to small changes in the input context

Risks in AI systems

- **Model risks**

- **Data risks**

- **System and infrastructure risk**

- **Use risk**

- **Legal and compliance risk**

- **Process impact risk**

AI governance

- **Proportional to risk**

- **Requires enhanced management of operational risks**
  - procurement risk
  - third-party risk
  - data risks
  - security risk

- **Defines roles and responsibilities**

- **Ensures appropriate AI training**
  - how AI-tools work
  - how risks manifest
  - user responsibilities

Specific considerations

Pre-trained models

- Execution location
- Choice of model(s)
- Explanations and simulation
- Communicating uncertainty
- Human-in-the-loop
- Continuous evaluation

RAG and agentic solutions

- Human-in-the-loop
- Explanations and simulation
- Communicating uncertainty
- Continuous evaluation

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هيــــئة تنـــظيم
مــركــز قطر للـمال

QATAR FINANCIAL CENTRE
REGULATORY AUTHORITY

KNIME LLM Nodes Demo
An Efficient Solution to Tedious Data Cleaning

The challenge:

- Huge data reporting project routinely requires country names be reported.

- Misalignment between input country list (QFCRA FIRMs list), and allowable value list at submission.

- Submission country list does not provide ISO3 codes; lack of an identifier to reconcile the two lists.

QANNASS allowable list of values

| Sl. No.	List Entry (English)	List Entry (Arabic)
1	None	لا شيء
2	Not Applicable	لايمكن تطبيقه
3	Others	الآخرين
4	Unknown	مجهول
5	Afghanistan	أفغانستان
6	Åland Islands	جزر آلاند
7	Albania	ألبانيا
8	Algeria	الجزائر
9	American Samoa	ساموا الأمريكية
10	Andorra	أندورا
11	Angola	أنغولا
12	Anguilla	أنغيلا
13	Antigua and Barbuda	أنتيغوا وبربودا
14	Argentina	الأرجنتين
15	Armenia	أرمينيا
16	Aruba	أروبا
17	Ashmore and Cartier Islands	جزر أشمور وكارتييه
18	Australia	أستراليا
19	Austria	النمسا

What needs to happen

Both country lists of 253 countries each need to be reconciled to correctly populate 32,000+ data points.

- Where the country names are different (51 occurrences), a replacement needs to be made to switch the QFCRA country name to the QANNASS equivalent

- ISO codes are needed for the QANNASS list of value to facilitate the reconciliation of both lists.

- Address over 100 pages of error messages due to incorrect country values. 😱

How can this happen?

Option 1: Manually create a mapping list by searching for and populating the correct ISO country code in the QANNASS list, then make the data replacements.
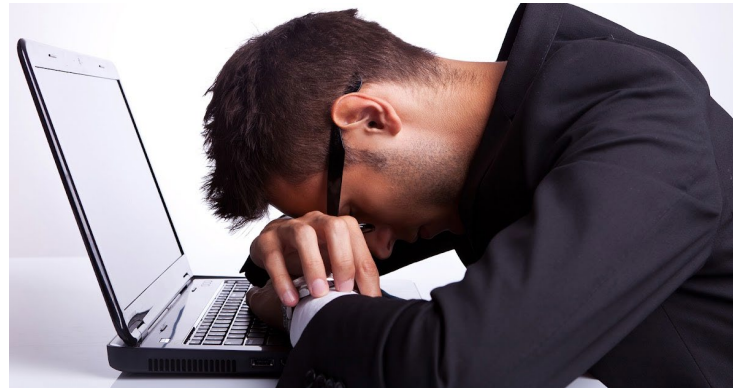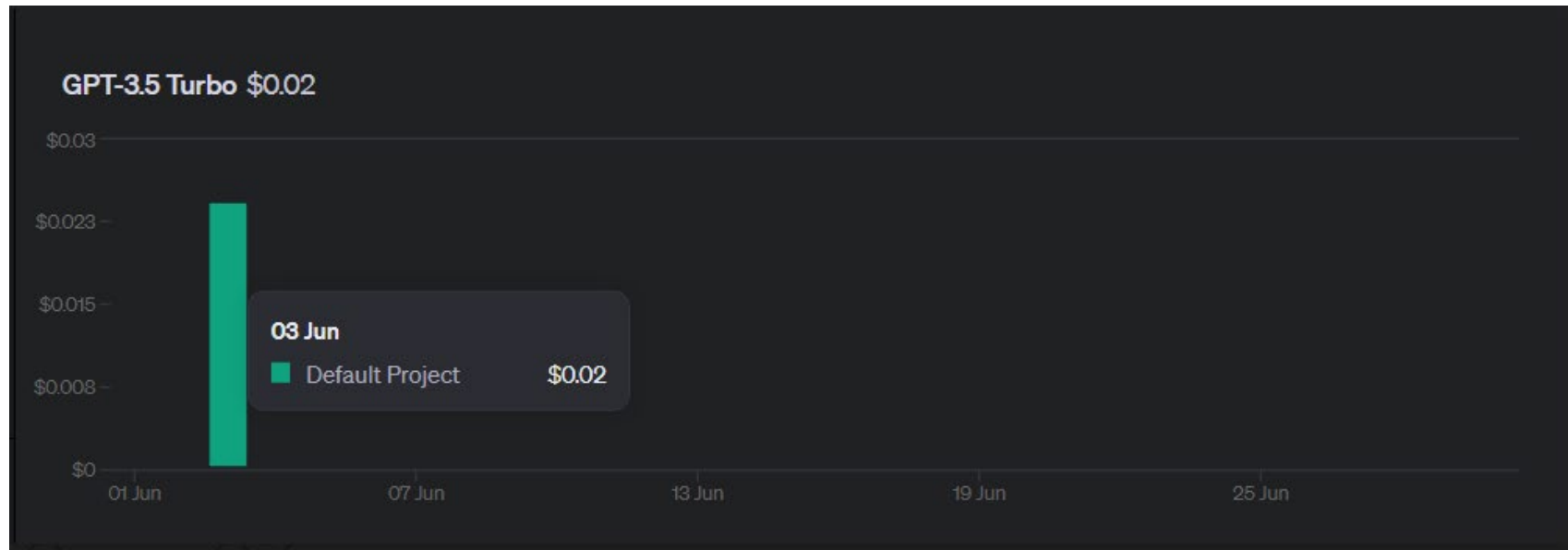

Option 2: Use AI to generate the ISO country codes for the QANNASS list, then make the data replacements.

Advantages of option 2

- Cheap in terms of time and money. Costed $0.02 after over 5 runs!
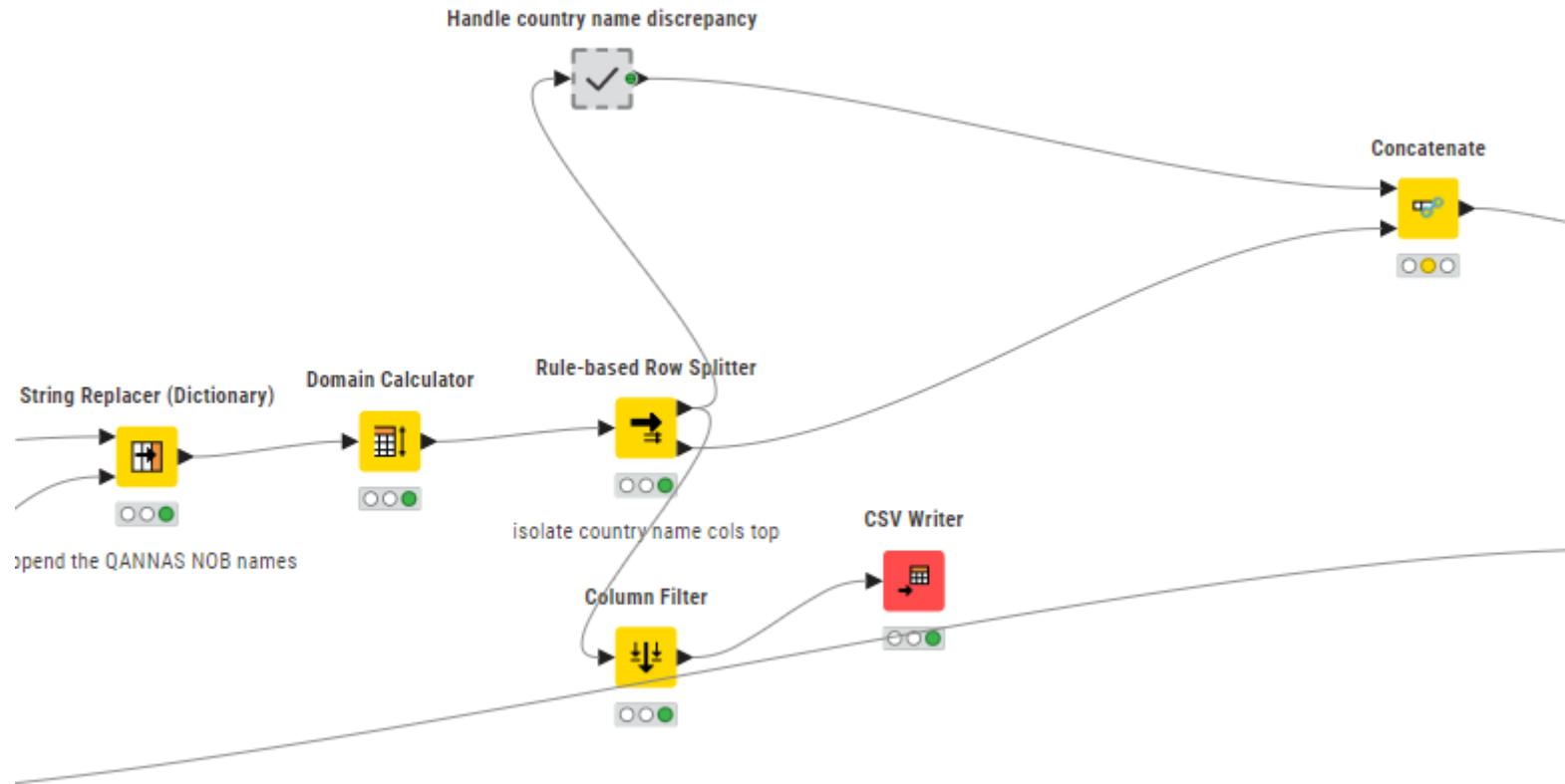

- Potentially more accurate than human entry - no room for human mistyping
- Fully integrated with KNIME Workflow
- A lot more fun!

Workflow reports on over 3000 statistics

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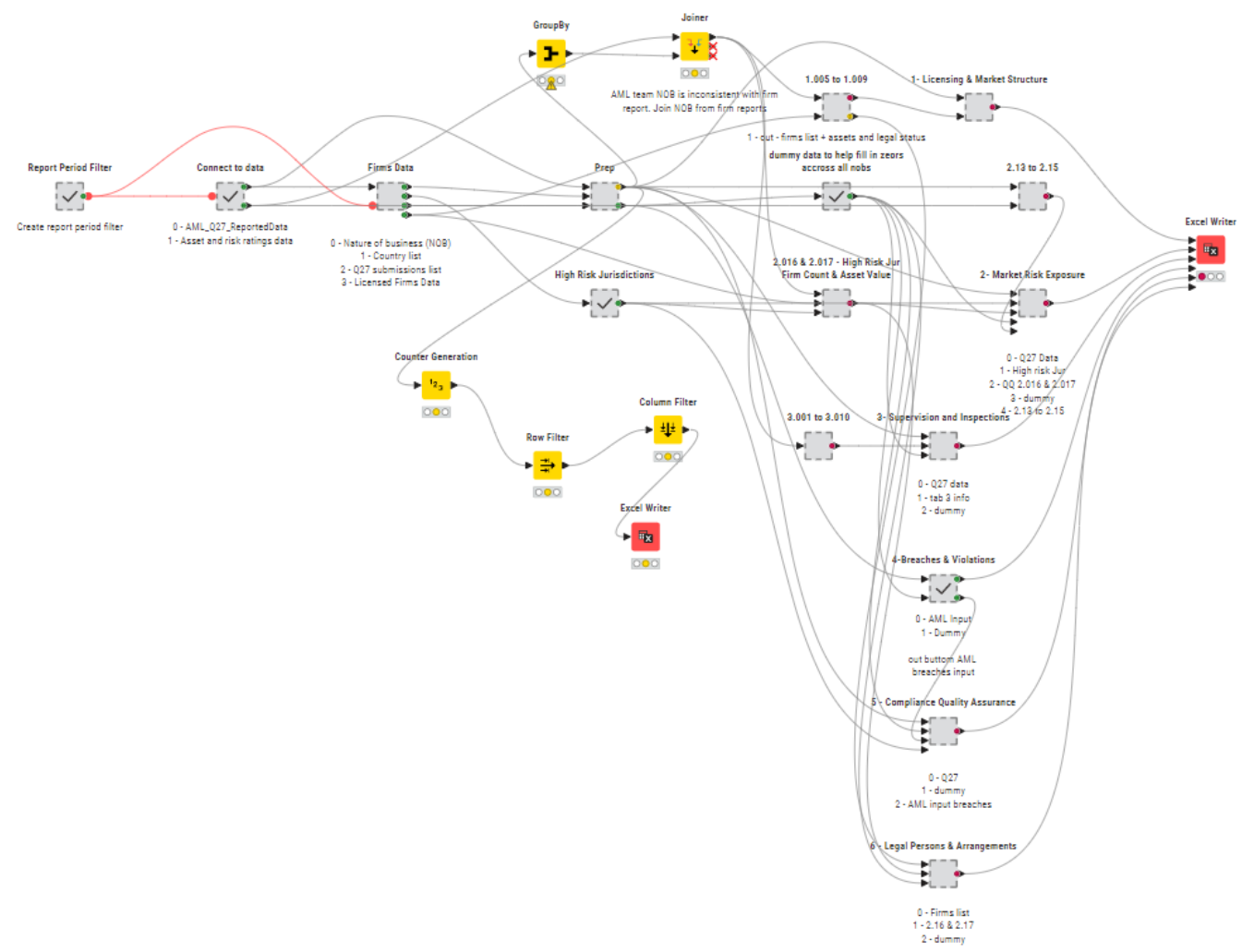
LLM data clean up workflow integration

LLM data clean up workflow integration

Let's KNIME!