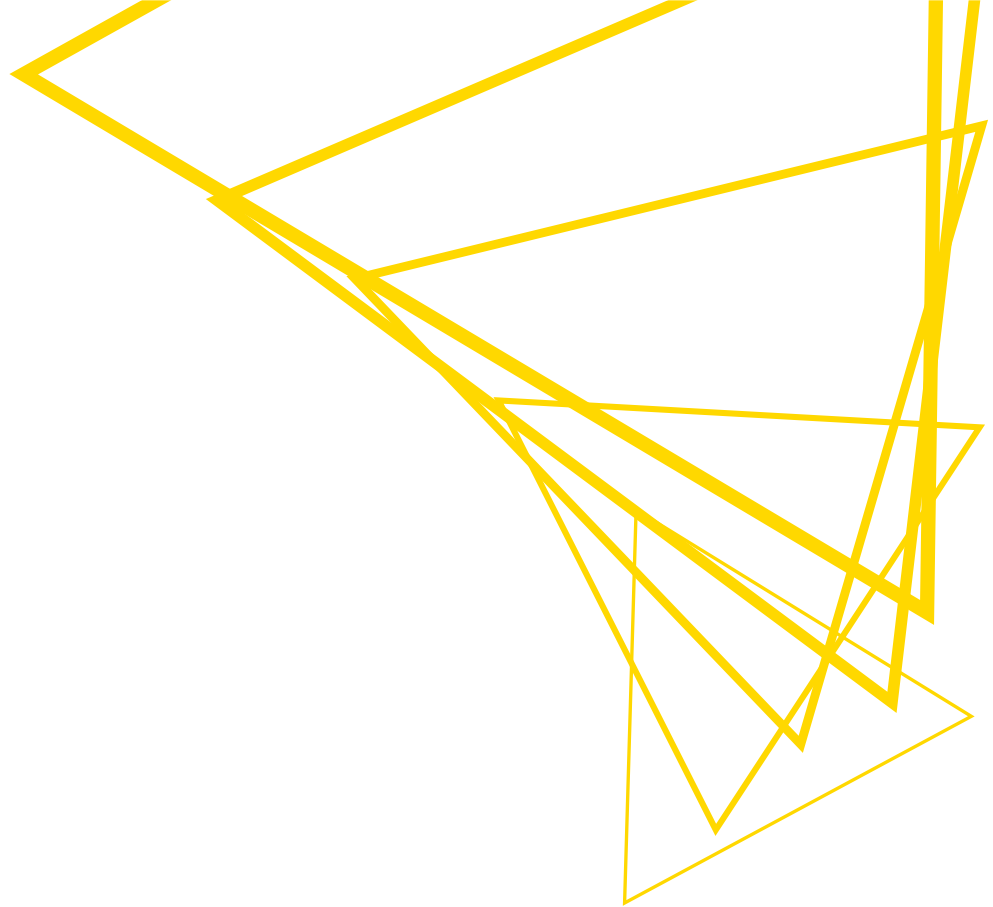


# KNIME, GenAI, and Visual Programming

Michael Berthold

DataHop London. September 10, 2024

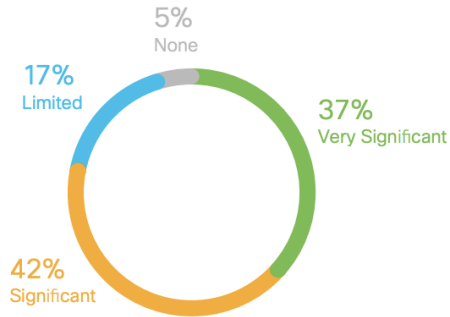


# Desire to Apply GenAI ... Battles the Pressure to Govern It



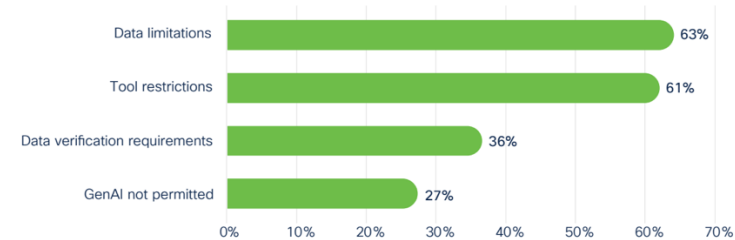
Drive up GenAI adoption

**79%** perceive significant value from GenAI adoption<sup>1</sup>



Drive down GenAI risk

**27%** of organization have an outright ban on GenAI usage<sup>1</sup>



source: [Cisco 2024 Data Privacy Study](#)

# 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
  - + Applying large scale models easily
  - + Integrated into daily work everywhere

Positive impact is blocked...

- 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

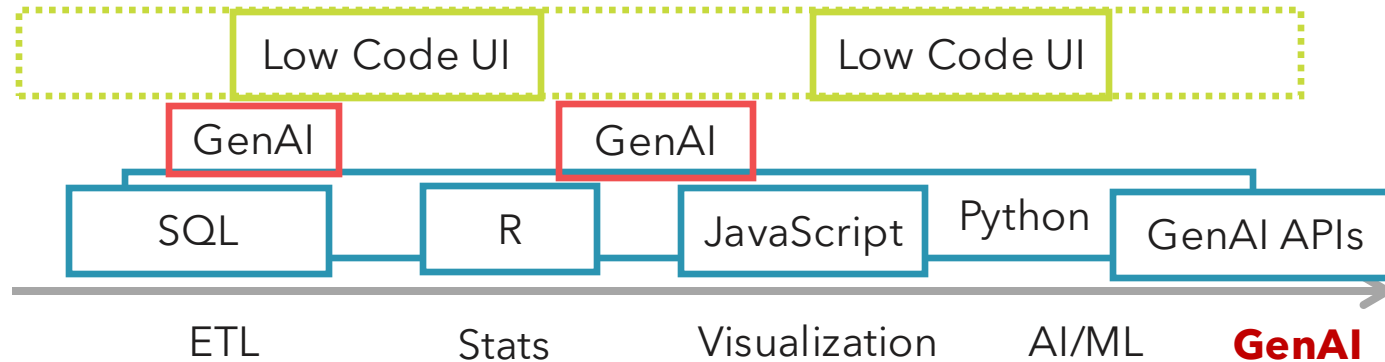
...by fear.

Abstract geometric lines in the top right corner, consisting of several overlapping, thin white lines forming various triangular and quadrilateral shapes against a yellow background.

**Workflows are the most Intuitive  
& Safest Way to work with Data and AI**

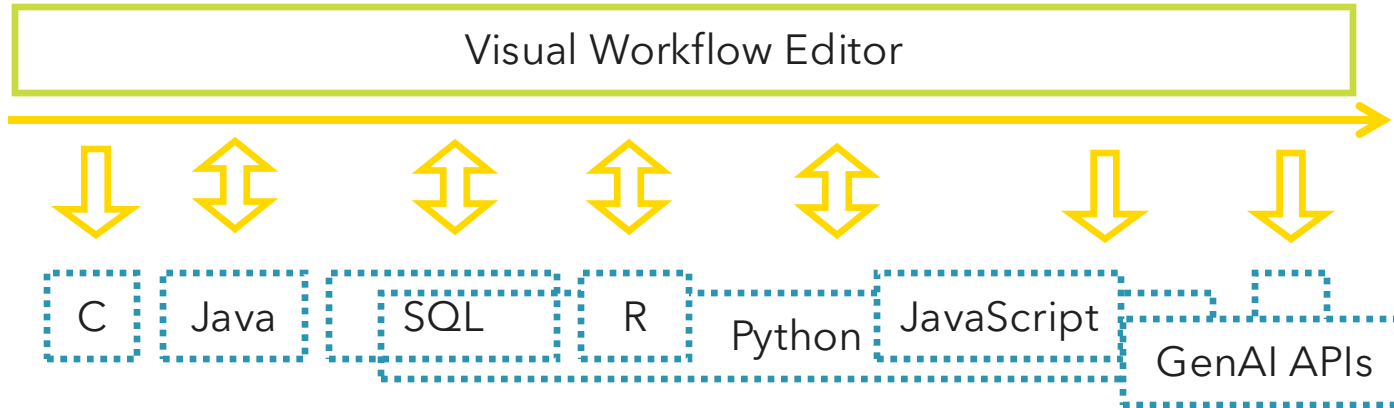
# (Low) Code for Data Science: Variety = Lack of Control

(Partial) No-Code on top of code-based programming languages



- Low Code UI creates code underneath the hood
- More complex functionality requires adding/editing code
- Complex management&governance of code and dependencies
- New: GenAI adds uncontrolled access to inhouse/cloud resources

# Workflows for Data Science: One consistent Environment



- Visual Workflows **are** the programming language
- abstracts implementations in various technologies
- allows to embed code snippets
- Controlled access to GenAI Integrations

Abstract geometric lines in the top right corner, consisting of several overlapping, thin white lines forming a complex, angular shape against the yellow background.

# Adding AI Governance to KNIME

# Take (& expand) governance tools proven with leading orgs

Govern data sent to models	Govern access to technology	Govern output & quality of models	Govern regulatory compliance
<ul style="list-style-type: none"><li>• KNIME workflows</li><li>• KNIME components</li><li>• KNIME Hub</li><li>• Permissioning</li><li>• Anonymization</li><li>• Components</li><li>• KNIME Hub</li><li>• GenAI Gateway</li><li>• Presidio integration</li></ul>	<ul style="list-style-type: none"><li>• KNIME workflows</li><li>• KNIME components</li><li>• Trusted Extensions</li><li>• Customization of KNIME Analytics Platform</li><li>• KNIME Scripting Nodes</li><li>• LLM integrations (Hugging face, etc)</li></ul>	<ul style="list-style-type: none"><li>• KNIME workflows</li><li>• Explainable AI</li><li>• Components</li><li>• Model Factory</li><li>• Framework</li><li>• Continuous Deployment for Data Science (CDDS) extension</li><li>• Giskard integration</li></ul>	<ul style="list-style-type: none"><li>• KNIME workflows</li><li>• KNIME components</li><li>• KNIME Hub Versioning</li><li>• Continuous Deployment for Data Science (CDDS) extension</li><li>• Metadata mapping</li><li>• AI Workflow Explainer</li></ul>



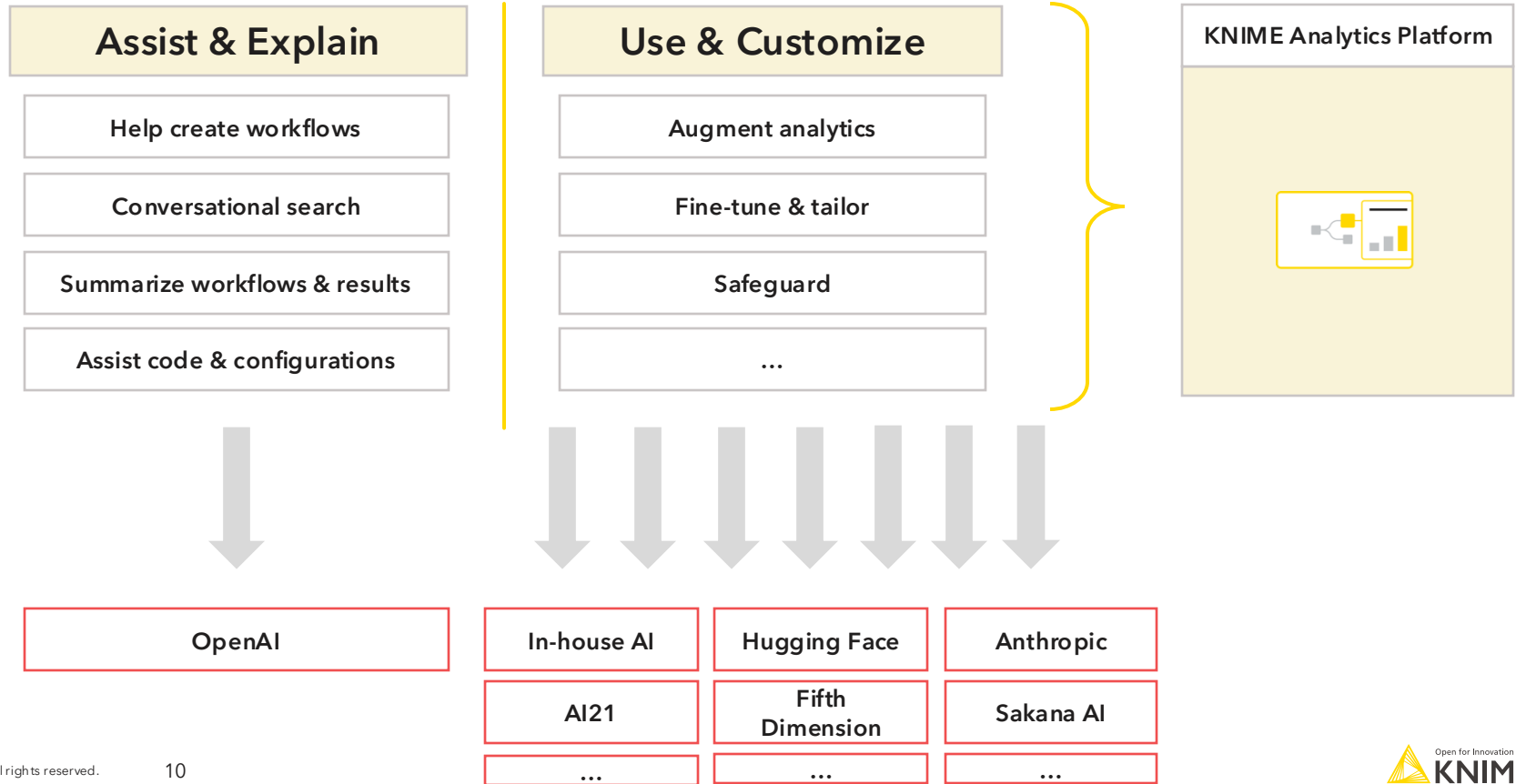
Controlling models we don't understand isn't new.  
It's just now top of everybody's mind.



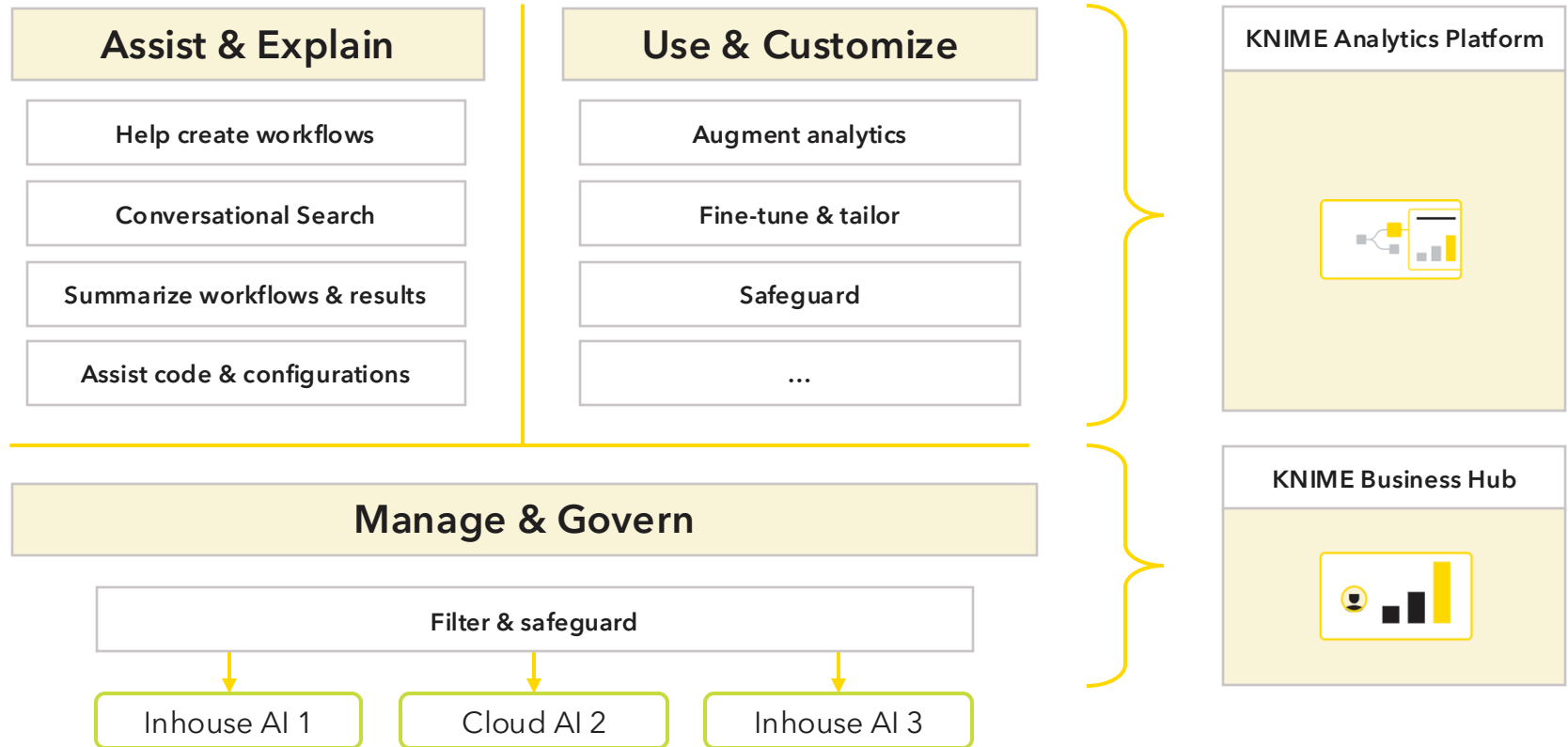
# GenAI in the Enterprise: Flexibility & Governance



# GenAI for everybody: Flexibility



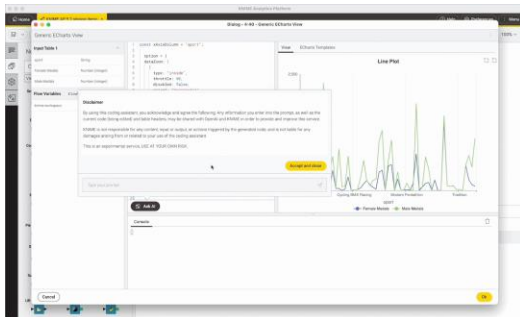
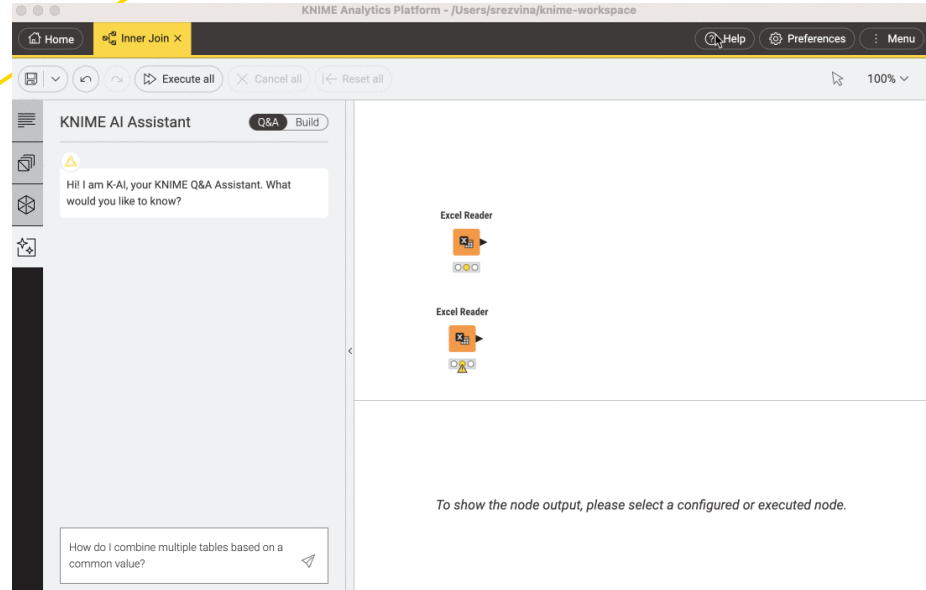
# GenAI in the Enterprise: Flexibility & Governance



# Assisting and Explaining

K-AI: Q&A and Build mode

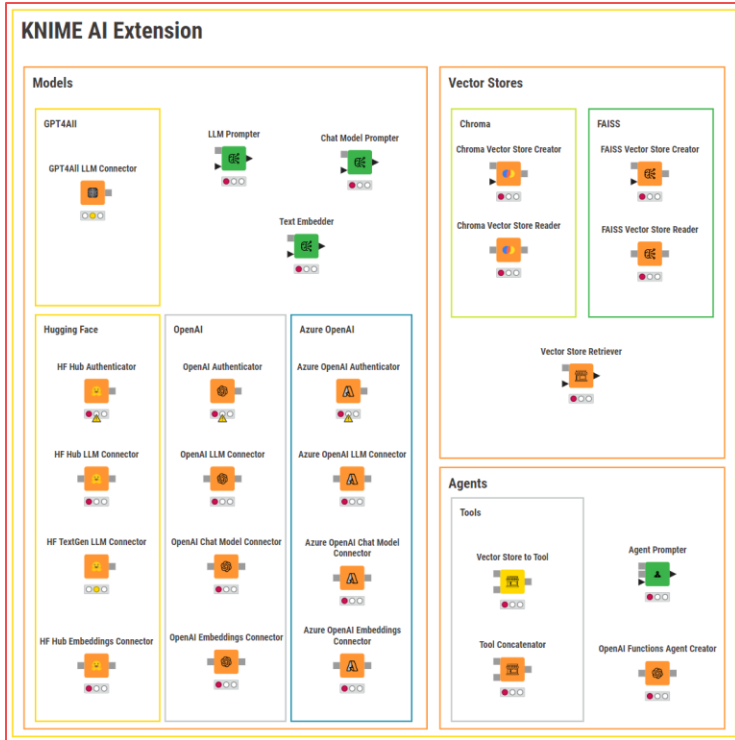
- Assist & Explain
- Help create workflows
- Conversational search
- Summarize workflows & results
- Assist code & configurations



Copilots for Python, eCharts, Expressions  
[ tbdev: R, SQL, ... ]

# Using and Customizing

## GenAI Extensions



## Use & Customize

Augment Analytics

Fine-tune & Tailor

Safeguard

...

## AI Extension Example Workflows

Home

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

# Managing and Governance

KNIME Dev Business Hub > Hub administration > GenAI Gateway

## KNIME Business Hub administration

- License
- Users
- Teams
- Execution resources
- GenAI Gateway**

### GenAI Gateway

Name	Type	Description
hugging face embeddings	embedding	-
bedrock	chat	-
OpenAI GPT-3.5-turbo	chat	The latest version of GPT-3.5-turbo hos...
OpenAI Embeddings	embedding	The small OpenAI embeddings model (...)
Mistral Embedding	embedding	-
Mistral Chat	chat	-
Claude Chat	chat	-
Azure GPT-4	chat	-
Azure Embedding	embedding	-

### KNIME Analytics Platform

building, and scripting nodes such as Python and Echarts.

Granularity: Daily

Apply time range

Metrics split by K-AI mode

**15507** #Prompts

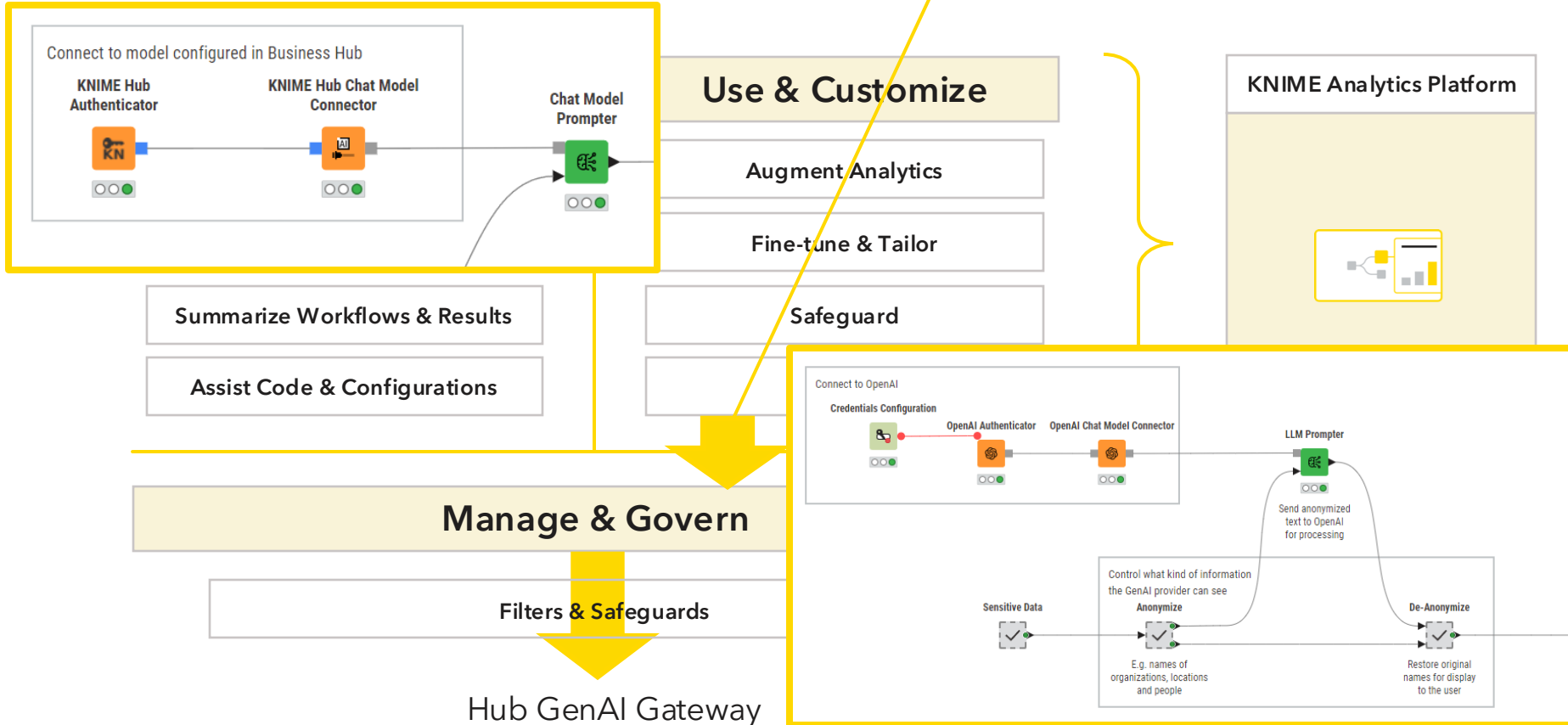
**4011** #Unique conversations

Filters & Safeguards

Hub GenAI Gateway

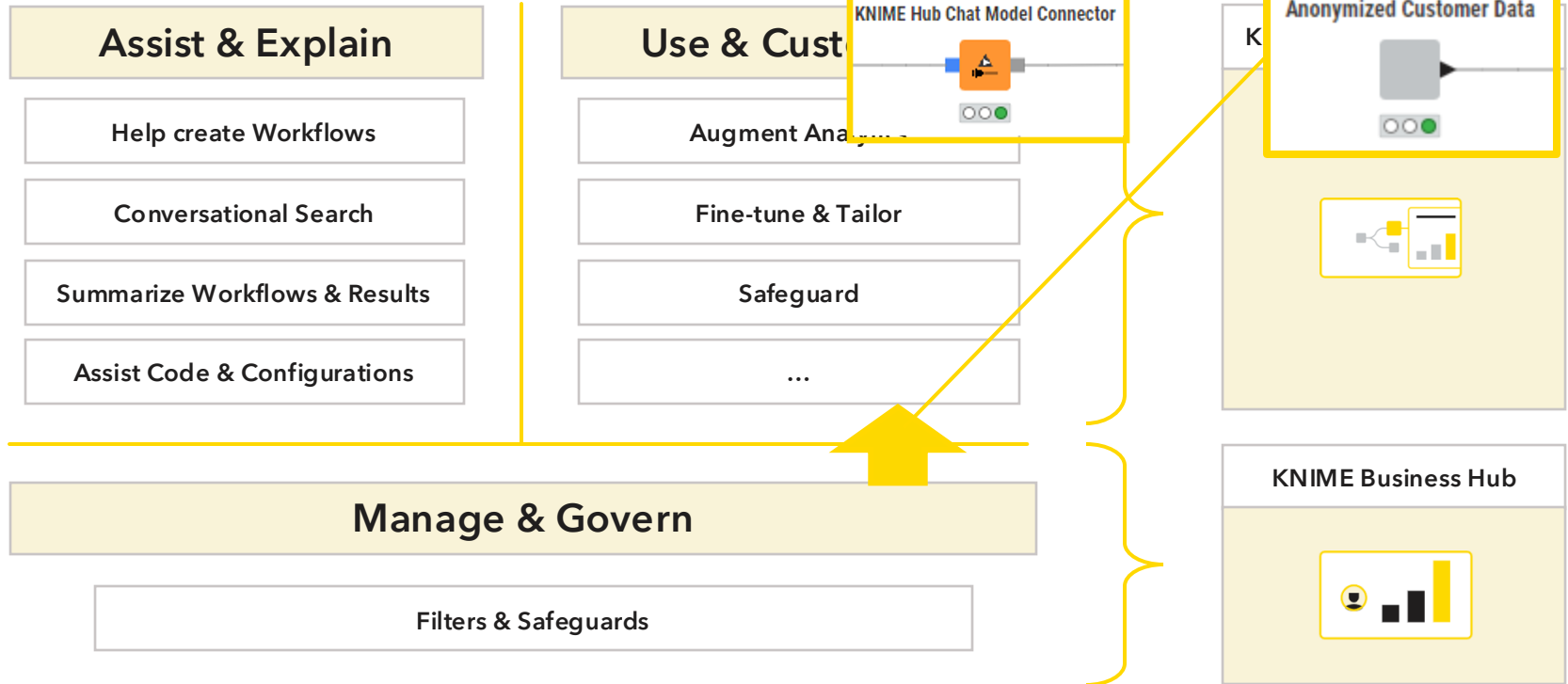
# Managing and Governance

Hub GenAI Connector



Hub GenAI Gateway  
Safeguarding Workflows

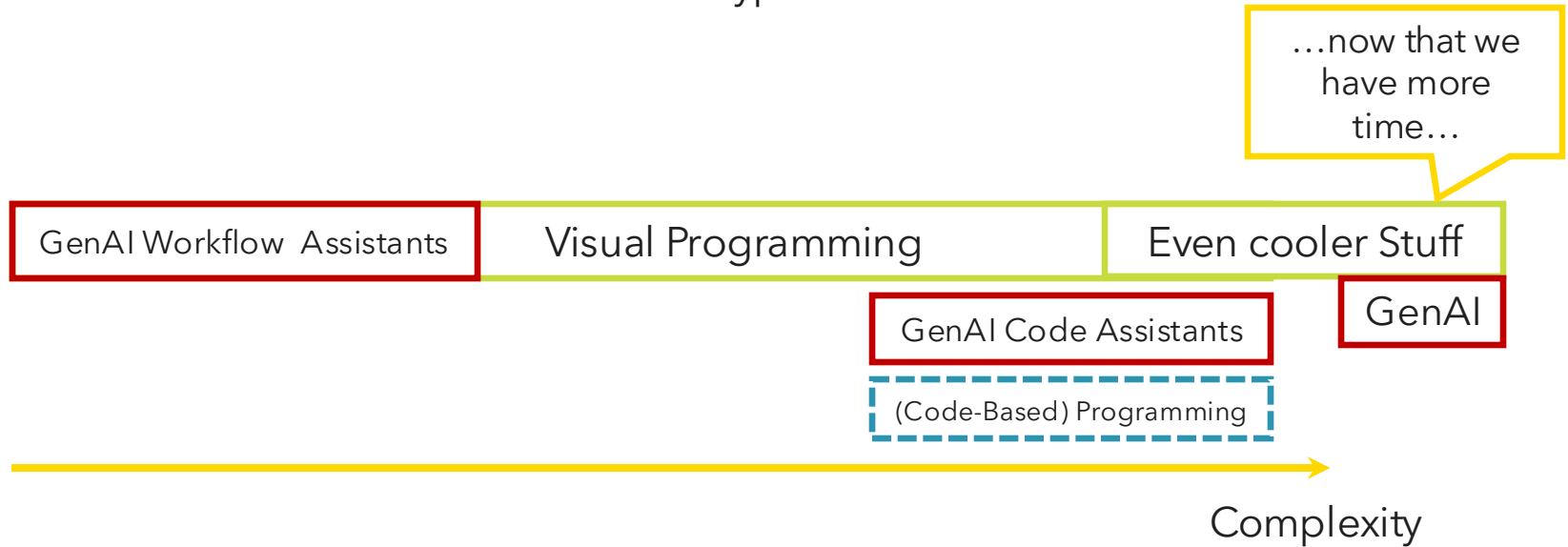
# Managing and Governance





# Quo Vadis? Workflows with GenAI Assistants

GenAI assisted Workflow Creation for all types of Problems:



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**Thank You.**