



Good Data Makes Good Agents

The Building Blocks of Custom Agent Creation

Michael Berthold

Optimized AI Conference, April 2025

Agenda

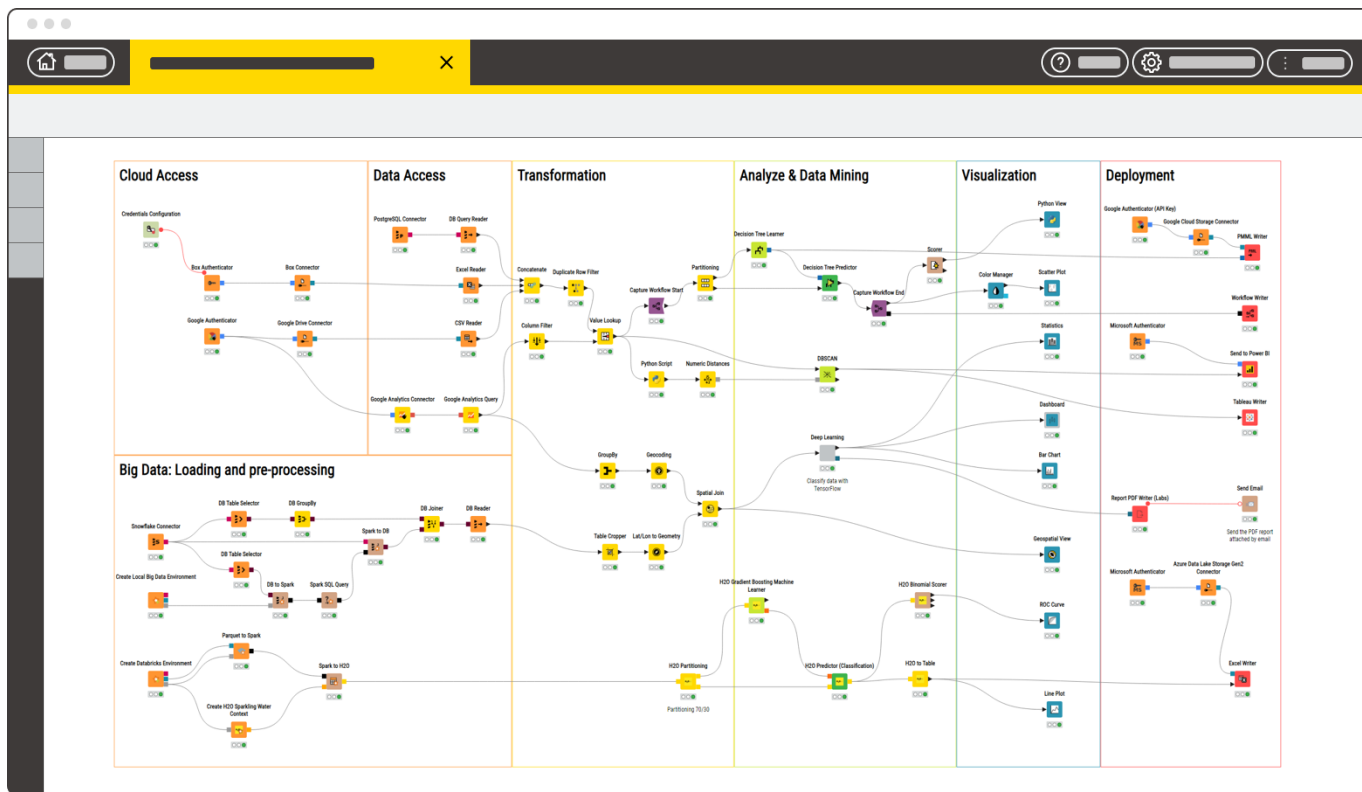
- Visual Workflows for Data+AI
- Building Blocks for Agentic AI
- Let's make it real: Two Examples

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Visual Workflows for Data+AI

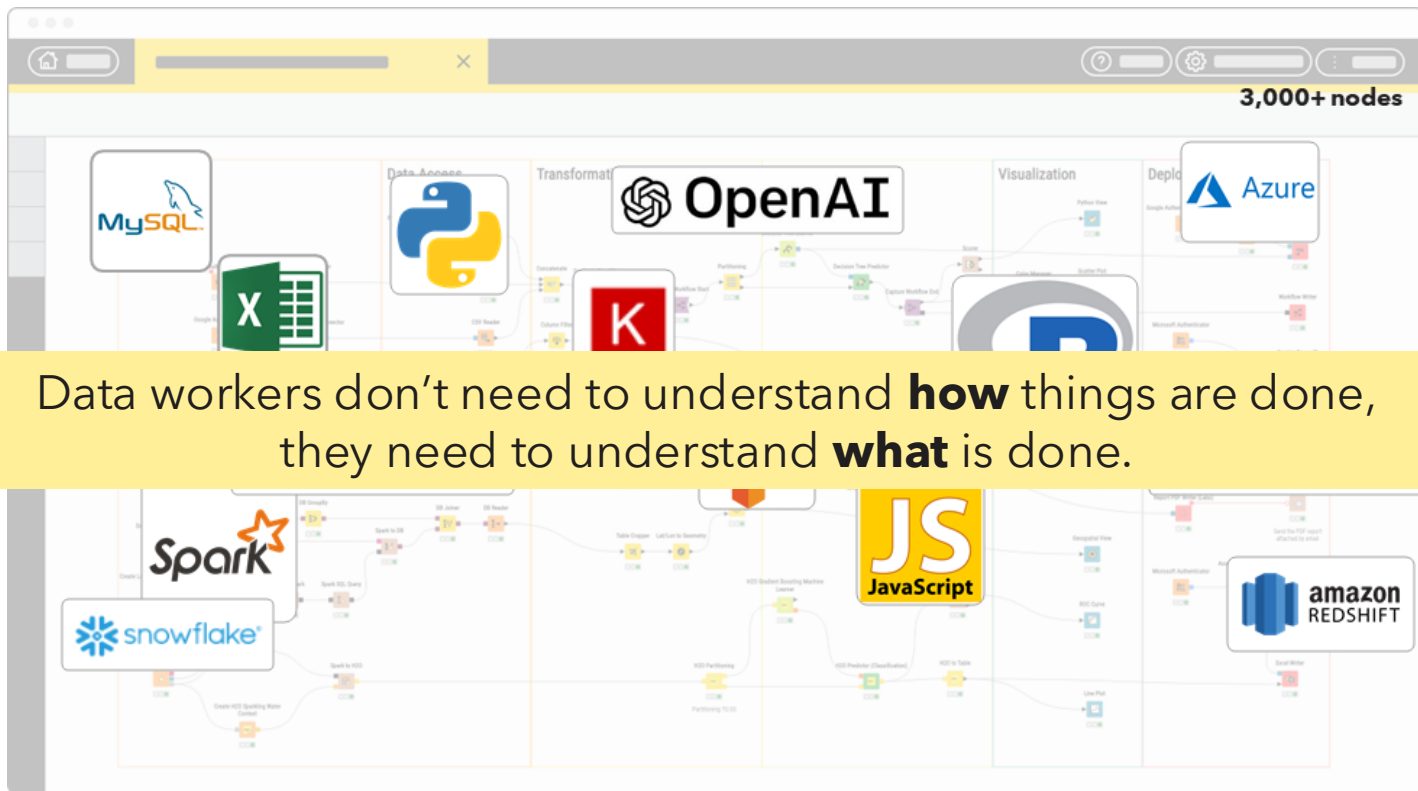
Visual Workflows

The most intuitive and reliable way to work with data and AI



Visual Workflows for Data Science & AI

Abstract away unnecessary complexity and implementation details



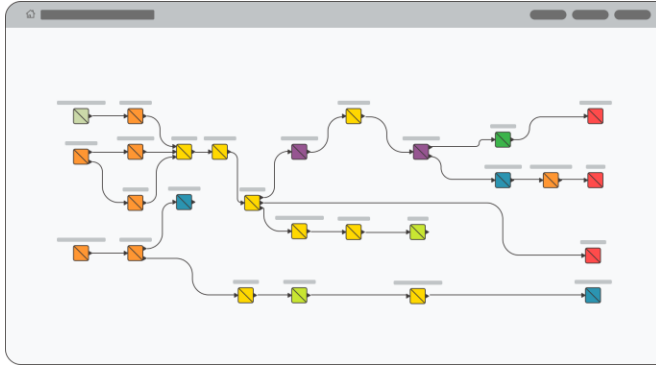
KNIME Software

Balance Innovation & Control

Increase Innovation

KNIME Analytics Platform

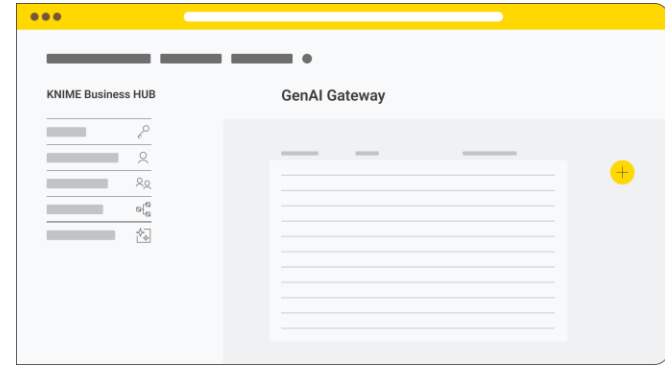
Bring the power of intuitive workflows to your entire organization



- Build & execute workflows of any complexity
- 1000s of blueprints & workflows for a fast start
- AI assistant (K-AI) for onboarding & high efficiency

KNIME Business Hub

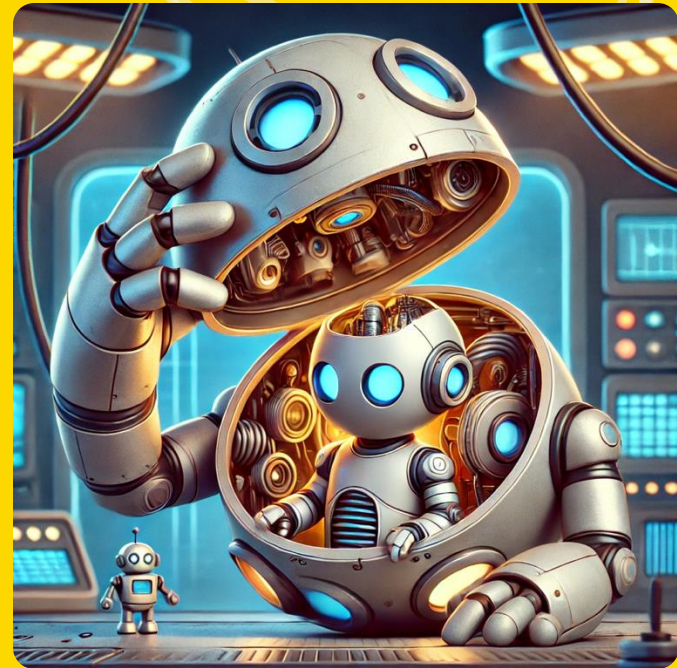
Safeguard data work at scale to accelerate innovation



- Govern centrally, workflows & AI models
- Ensure safe automation & deployment
- Roll out best practices, globally

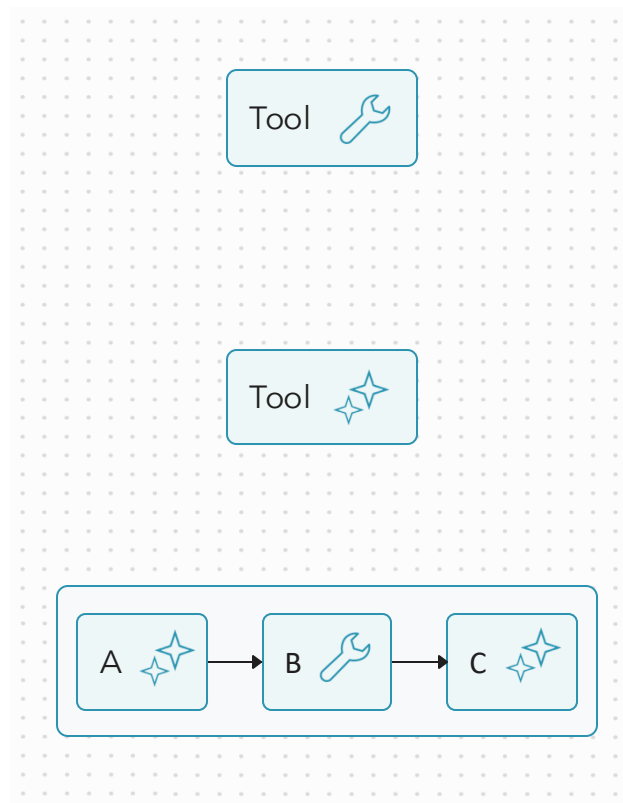
Reduce Risk

Building Blocks for Agentic AI: Tools, Workflows, and Agents



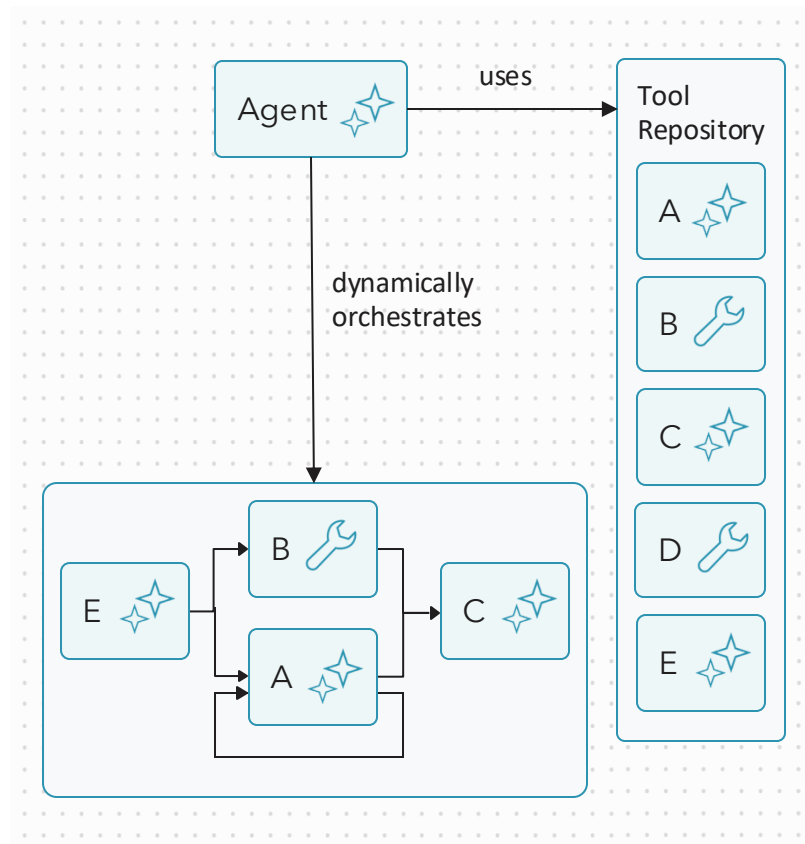
Agentic AI in a nutshell

- **Tools:** get stuff done
 - aggregate these data sources
 - classify this image / predict next action
- **Intelligent Tools:** make use of clever prompts
 - summarize/translate this text
 - return sentiment
- **AI workflows:** make use of a series of tools
 - get data on customer X, retrieve tickets, send summary via email
 - automatically monitor for tonality mishaps
- **Memory:** tools / workflows can store information



Agentic AI in a nutshell

- **Agents:**
orchestrate the use of tools dynamically
 - “Ask me Anything” about KNIME agent
 - monitor and alert about tonality mishaps, provide suggestions, incorporate feedback
- **Agentic Applications:** used by humans
- **Agentic Services:** used by other applications
 - Can be intelligent tools... (“Guardian Agents”?)



Agents & Tools - and KNIME Workflows

Tools:

- check tonality of a document
- translate text
- create image in the style of...



Workflows

Augmented Analytics

- get information about customer
- get user information
- get employee statistics



Workflows

Data Aggregations

- predict monthly growth
- forecast facility usage



Workflows

Predictive AI

- book travel
- schedule ads



Other Agents

Inhouse / as a Service

Agents & Tools - and KNIME Workflows

Data Apps ✨
Intelligent Apps



REST ✨
Intelligent Services



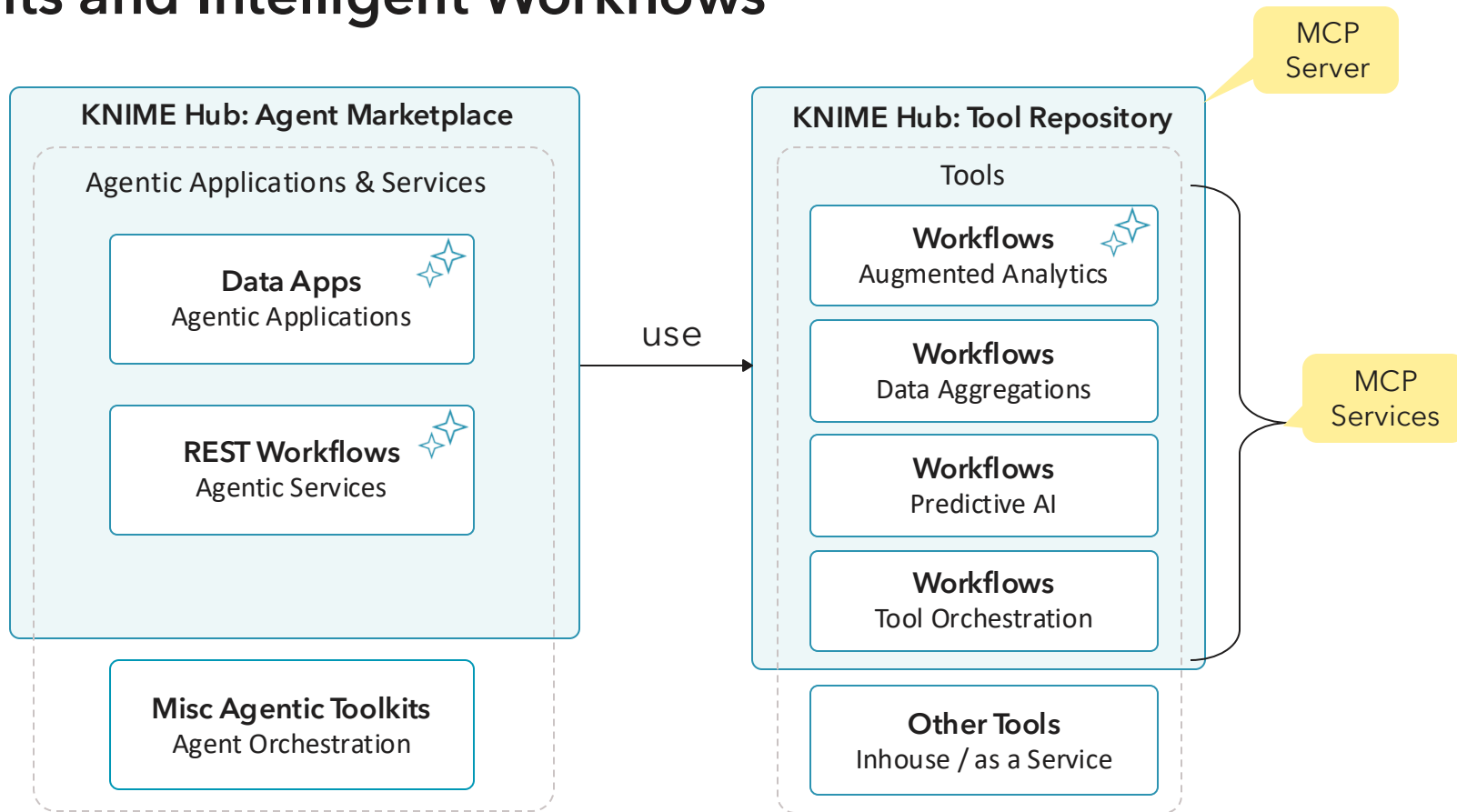
Workflows ✨
Agent Orchestration



Agentic Apps & Services:

- Marketing Tonality Checker
- Article Summarizer
- Image Corrector
- News Aggregator
- Plan, Execute Plan, Revisit
- Do X, Y, Z in order

Agents and Intelligent Workflows



Abstract geometric lines in the top right corner of the slide, consisting of several overlapping triangles and polygons in a light yellow color.

A Real Life Example

The Ask Me Anything (about KNIME) Agent

The “Ask KNIME Anything” Agent



Conversation

What are you? Provide a brief overview of your capabilities.

I am a KNIME internal data agent designed to provide clear and concise responses to inquiries related to KNIME's internal data and tools. My capabilities include:

1. Retrieving company domain information for customer insights.
2. Accessing customer activity data from our CRM system.
3. Generating personalized email drafts based on user bios and usernames.
4. Providing information about KNIME employees, including their roles and locations.
5. Sharing recent topics from the KNIME Forum.
6. Offering detailed user biographies based on KNIME Forum and Community Hub activity.
7. Searching for publicly available information about entities.
8. Identifying top customers based on revenue contributions.

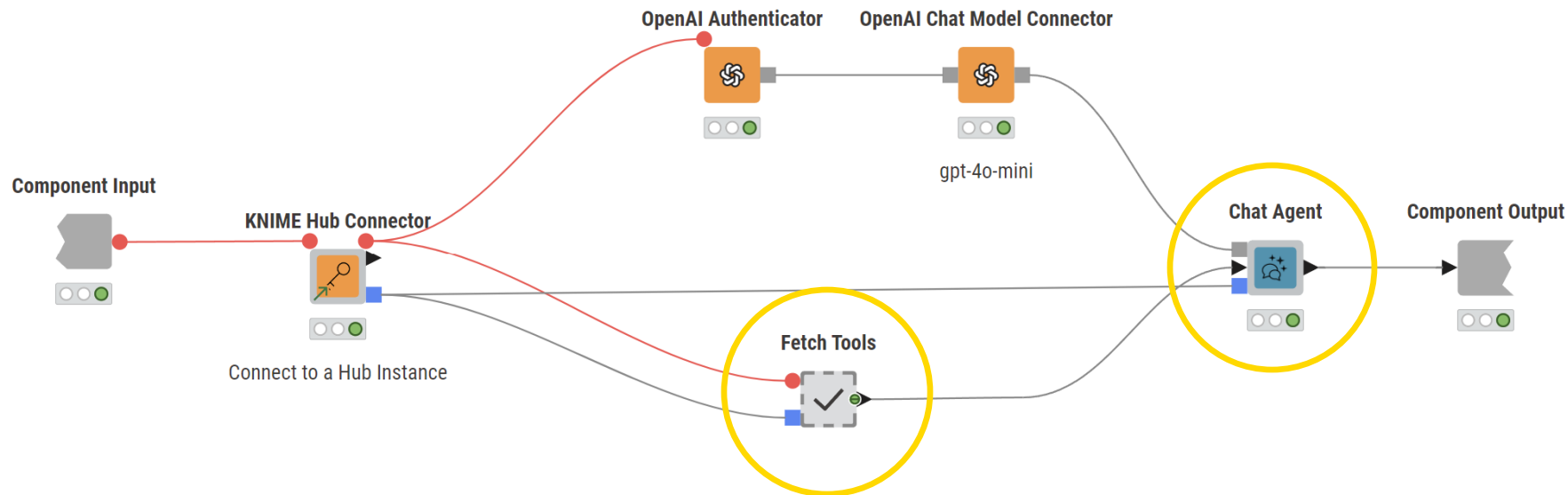
I leverage various internal tools to deliver accurate and relevant information efficiently.



Ask the AI Agent

☐ Advanced Settings

Inside the "Ask KNIME Anything" Agent



Prompt Options for the “Ask KNIME Anything” Agent

Option 1:

“You are a helpful assistant...
...you have access to the CRM System using tool “Salesforce”. You can also retrieve information about support tickets using tool “Zendesk”. You may also want to use the tool “Forum” to find additional information and maybe in using tool “Hubspot” you can also find valuable information around marketing automation. But if someone asks about users, you can...

Technology Centric

Lots of unnecessary detail
What happens if you switch?

Option 2:

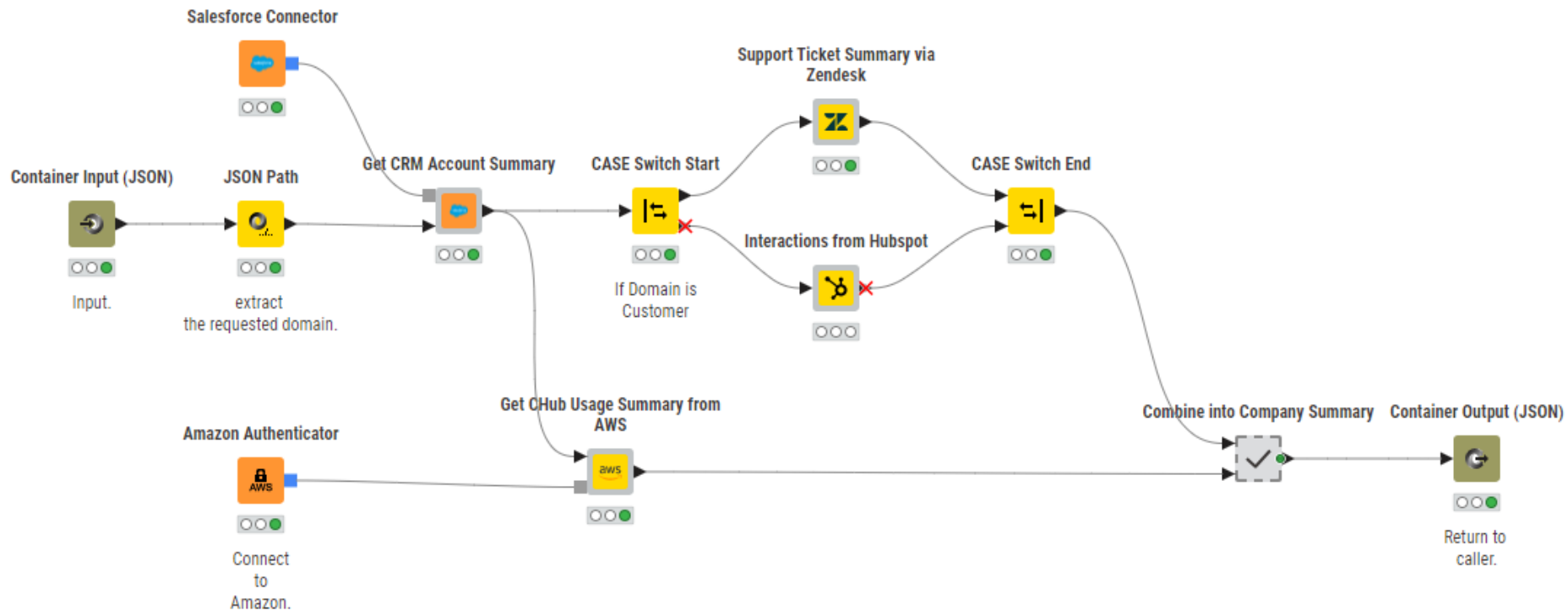
“You are a helpful assistant...
...you have access to information about customers using the tool “customers”.
You can also find information about individual users using tool “users”.

If you need information about KNIMERs,
use tool “employees”.
...

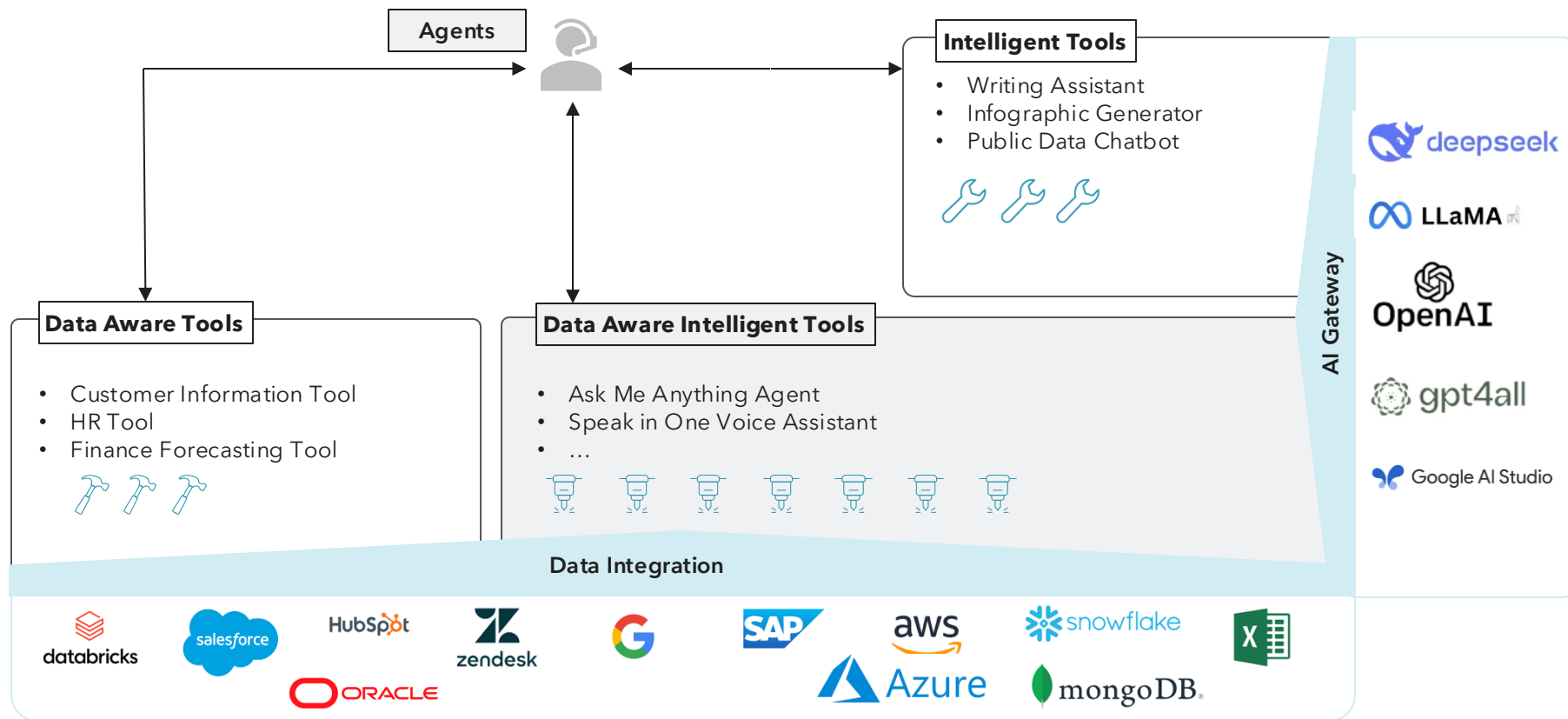
Information Centric

Focusses on relevant details
Easy to switch Technology.

The "Customer Information" Tool



Good data makes good tools ... and better agents



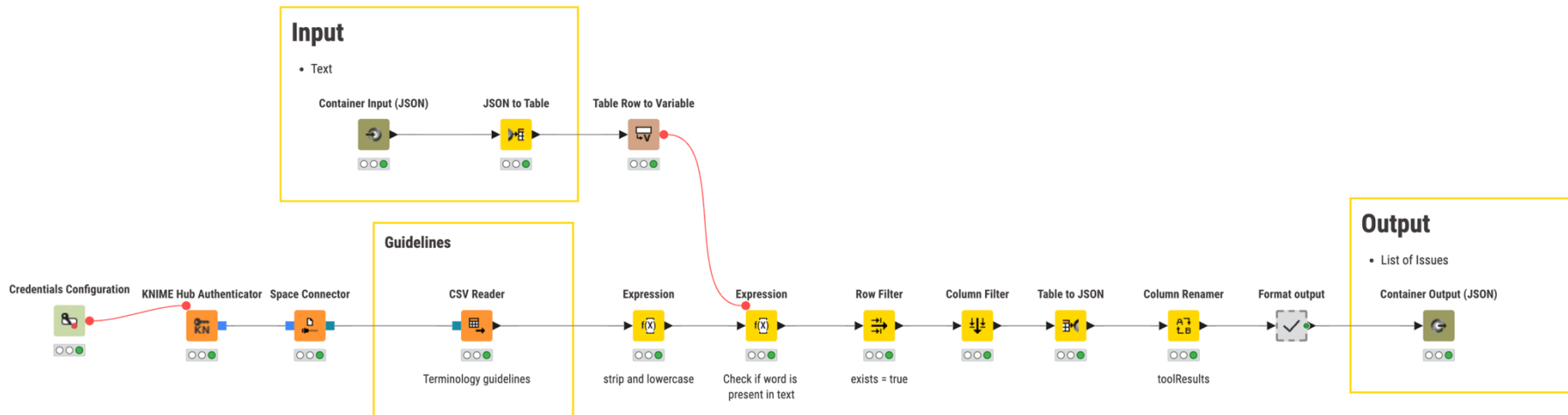
Abstract geometric lines in the top right corner, consisting of several overlapping triangles and polygons in a light yellow color.

Another Example (this time: bottom up)

Make KNIME speak in one voice

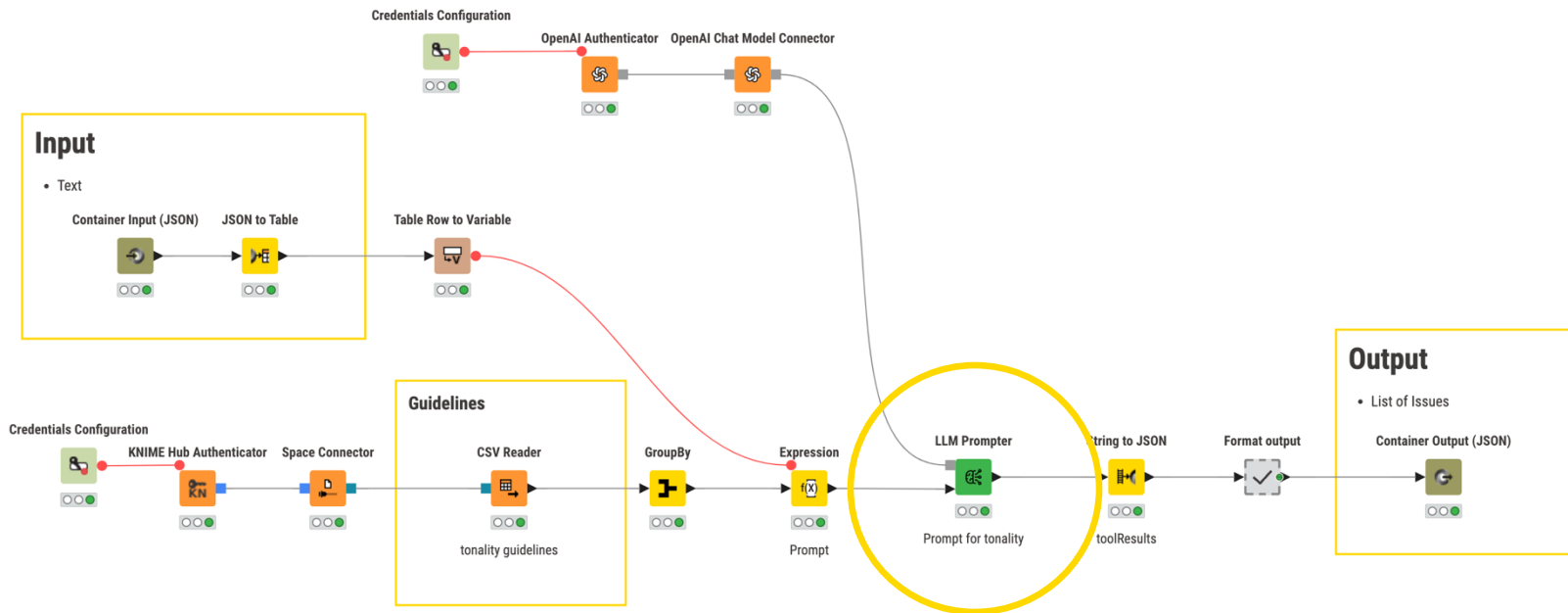
An (unintelligent) Tool: Check Text for Terminology Compliance

- Takes text as an input
- Uses internal terminology white & black lists
- Returns list of violations



An (intelligent) Tool: Check Text for Tonality Violations

- Takes text as an input
- Uses internal tonality guidelines
- Returns list of violations



Using the tools: Email Complainier

Writing guidelines check results ➤ Inbox x



KNIME Guidelines

to me ▾

Dear Michael,

I checked your last blogpost [Agentic AI and KNIME](#) | KNIME

It did not pass our strict writing guidelines. Here is a list of instructions to make it compliant.

1. Remove unnecessary phrases like 'at first glance' and simplify the sentence structure.
2. Avoid overly casual language; replace phrases like 'knows it all and knows all about me' and 'under the hood' with more formal alternatives.
3. Break down long sentences into shorter, clearer ones to enhance readability.
4. Eliminate redundant phrases such as 'already in the past' and 'note that' to streamline the text.
5. Replace vague terms like 'stuff' and 'enough information/material' with more specific language.
6. Rephrase overly complex expressions like 'which includes the set and order of tools to be used' for clarity.
7. Remove casual references like 'remember the old divide and conquer?' to maintain a professional tone.
8. Address the use of prohibited terminology such as 'automate' by finding suitable alternatives.

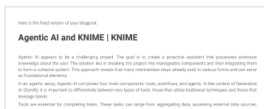
Please find attached the fixed version of the blogpost.

Reply to this email if you wish to update the guidelines.

Cheers,

Your KNIME Guidelines Agent

One attachment • Scanned by Gmail ⓘ



Now it becomes "agentic"...



Michael Berthold

to KNIME ▼

Lieber Agent,

You need to update your guidelines. The word "automate" is allowed. Also, it is ok to use casual phrases from time to time.

Cheers,
Michael



KNIME Guidelines

to me ▼

Dear Michael,

I have performed the following updates on the guidelines:

Tonality

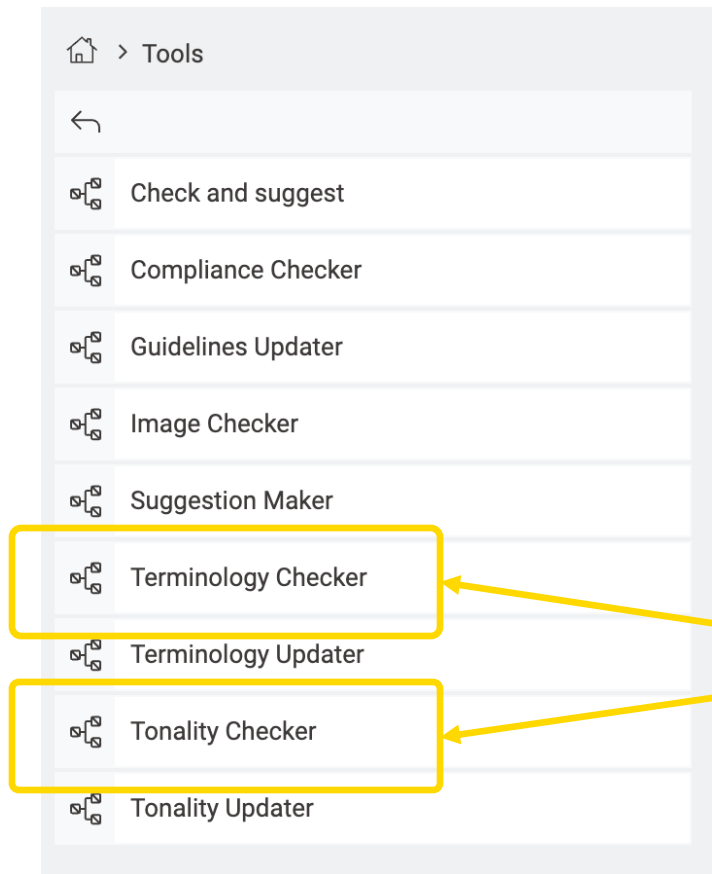
Old guideline: Avoid being overly robotic or too casual.

New guideline: Avoid being overly robotic, but allow casual phrases occasionally, while ensuring they remain appropriate for the context.

Terminology

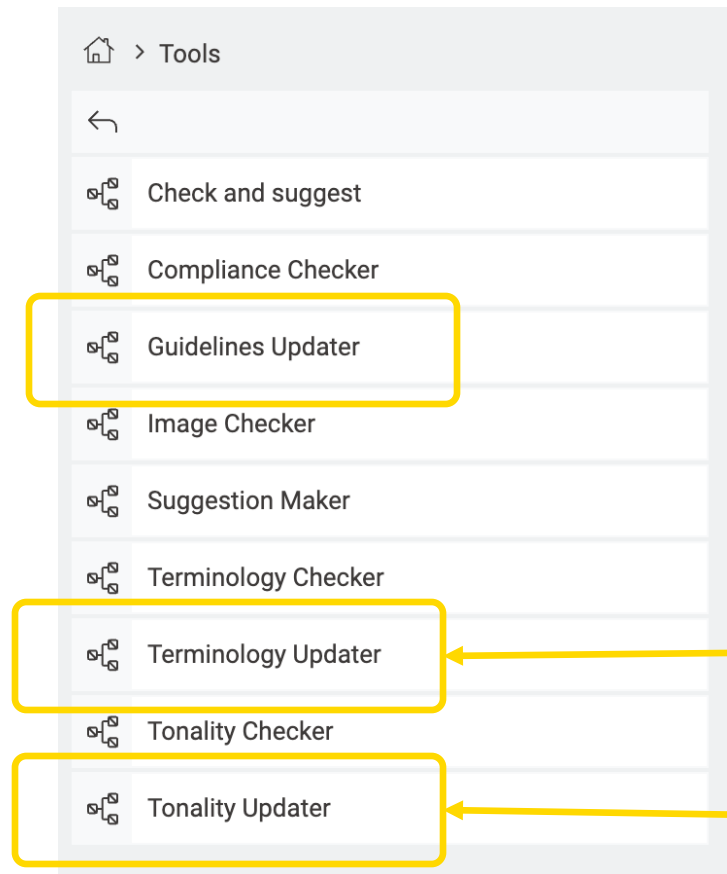
Removed forbidden words: Automate

Under the hood

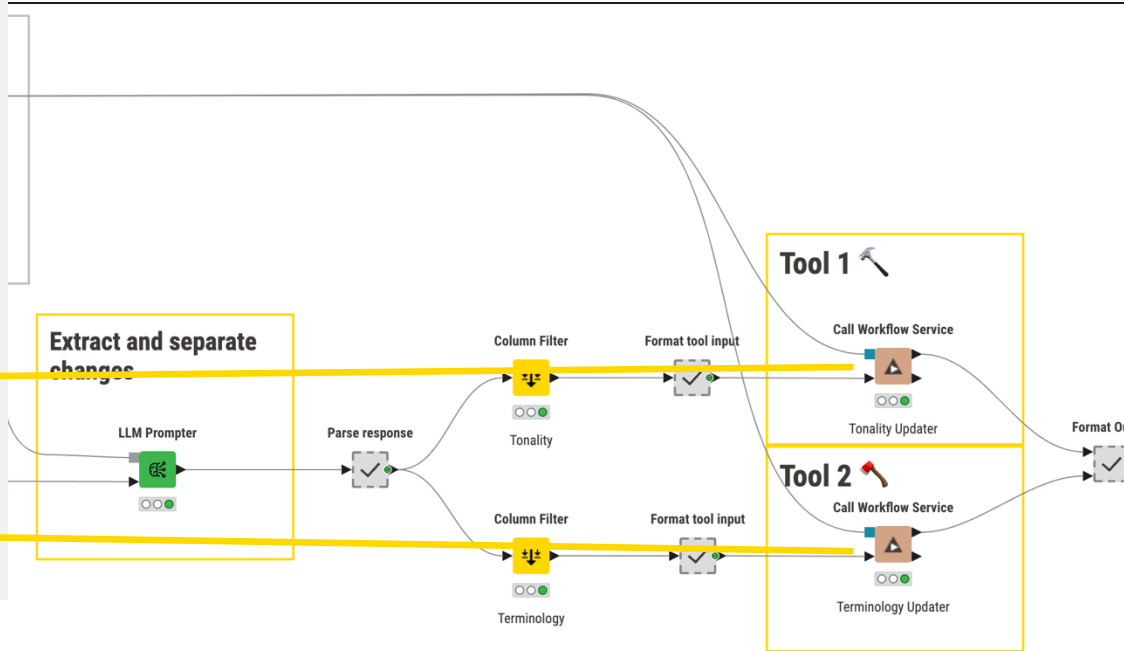


We have seen those two...

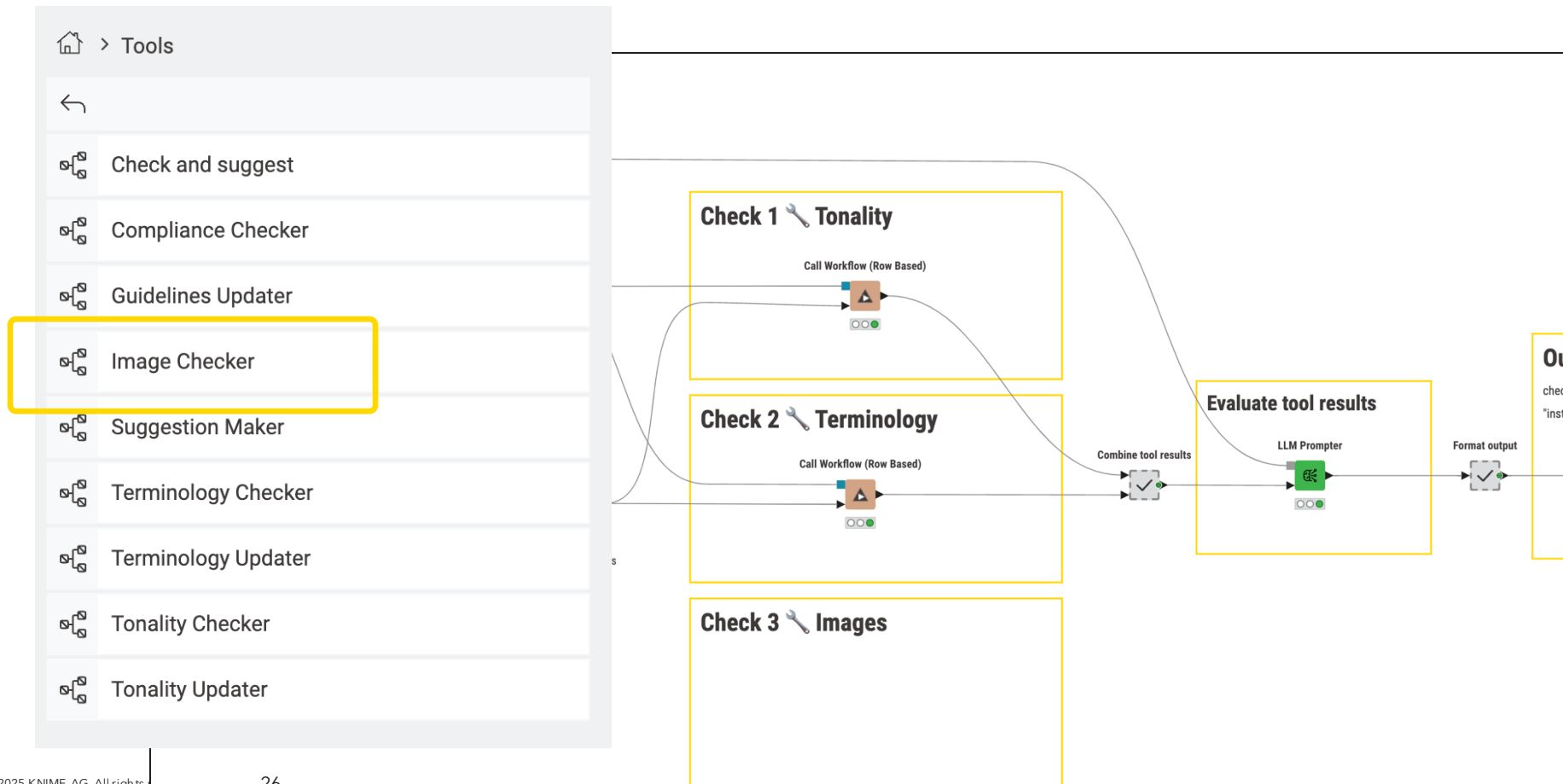
Under the hood



The Memory Updater Agent:



Adding Capabilities



Summary: Constantly Adapting Style Checker Agent

Where is this going?

- observer of all outward facing material
- quiet, reliable, and always-learning

Agentic Insights:

- Broadening scope and capabilities (=other modalities to check):
⇒ just add checker and updater tools
- Agentic System keeps and updates global memory

Summary: Data, Tools, Workflows and Agents

- **Agent Systems are hybrid**

- some tools are data wrangling or predictive AI workflows
- other tools embed GenAI (remember “Augmented Analytics”?)

- **Agents start small**

- start with more focused, less intelligent agents & tools
 - continuously add to the tool set
- ⇒ agents become more versatile and “smarter” over time

- **Remember?**

- Object Oriented Programming
- Micro Service Architectures
- ...

