

Open for Innovation

KNIME

Welcome to KNIME Edge and Data Apps

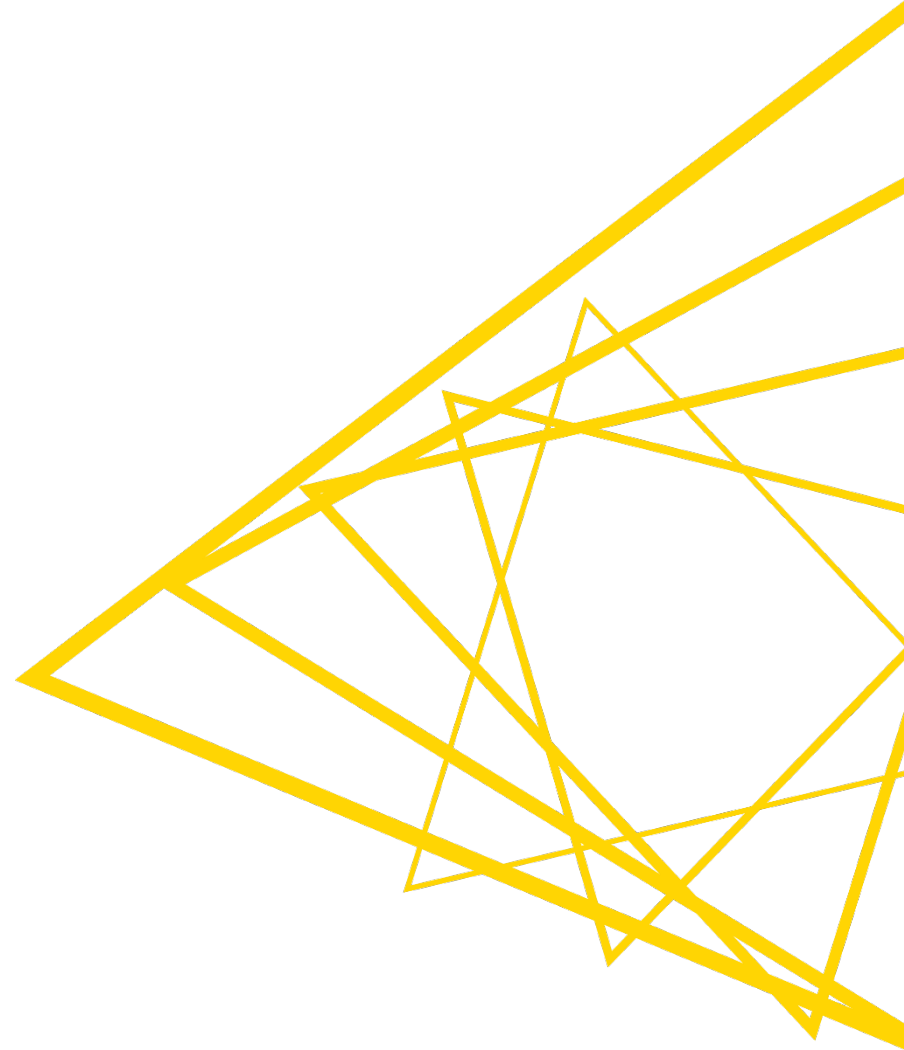
Going live at:

Austin 10:00 AM

Berlin 5:00 PM



1. Kick-off/Introductions
2. KNIME Data Apps (15 min)
 - The **Refresh Button Widget**
 - Embedded Data Apps
3. KNIME Edge (30 min)
4. Product Roadmap + Q&A (15)



Updates to KNIME Data Apps



KNIME Data Apps

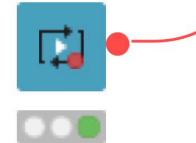
With the release of KNIME Server 4.13.x, there exists additional functionality to Data Apps on the KNIME WebPortal:

- The **Refresh Button Widget** node allows the ability to build dynamic Single-Page Applications in KNIME
- The ability to extend your Data Apps to a public audience – with Embedded Data Apps

Data Apps are Now Dynamic – the Refresh Widget

- New Feature: Data apps are now dynamic
- You can now create dynamic Data Apps which consist only of a single “Composite View”
- You can dynamically update parts of a page, without having to leave the page.
- To build data apps, you must use the “Refresh Button Widget”-node

**Refresh
Button Widget**



Refresh Widget – Technical Details

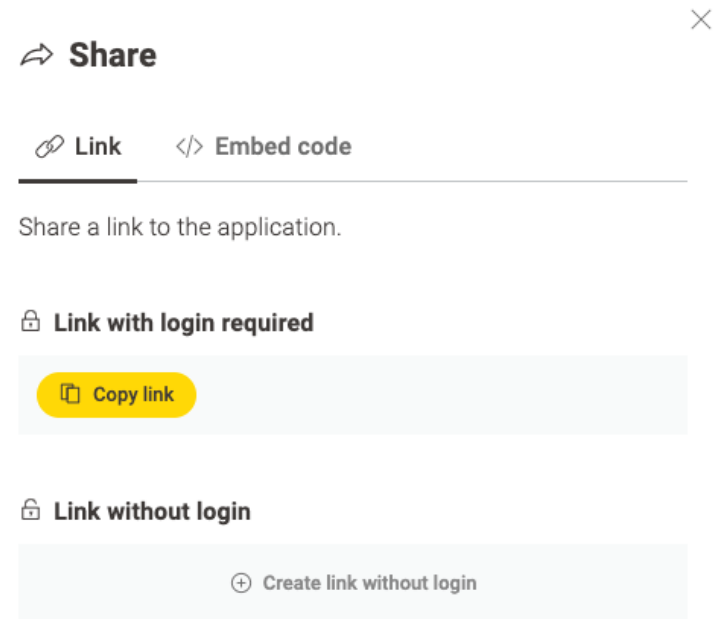
- The new “Refresh Button widget” node needs to be connected via a flow variable connection inside a component.
- Affected downstream nodes are re-executed
 - All downstream nodes for all affected branch(es) starting from the first flow variable connection are re-executed after hitting the Refresh button.
- Multiple Refresh button widgets work independently of each other.
 - Possible to use more than one refresh button widget.
- Combination of dynamic data apps in a single page with wizard application.
 - Therefore, multiple components have to be connected one after another, and the new re-execute button widget has to be inside the desired components.

Embedded Data Apps

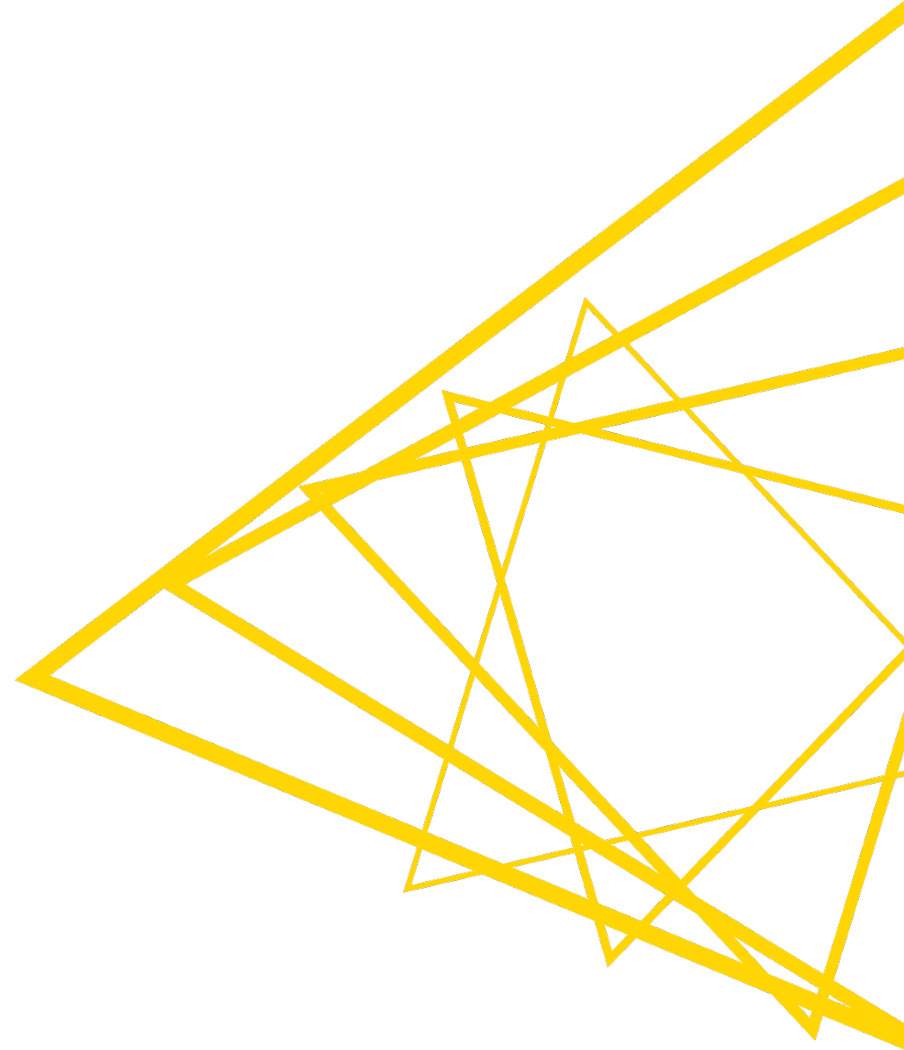
- New feature: Allow access to Data Apps without (explicit) login
 - Give access to Data App to anyone who has the link
 - Fully embed Data Apps into existing website
 - Run multiple Data Apps on the same page in individual iframes
- Who is this for?
 - Server Large customers -> consumers not limited
 - For anyone who wants to share Data Apps with a large, hard to define user base -> no need to create a new user for everyone
 - Allows customers to easily scale to massive user base
- Use Cases
 - Broad corporate access on internal websites
 - Show off interesting findings and visualizations on blog posts, websites, ...

Embedded Data Apps – Technical Details

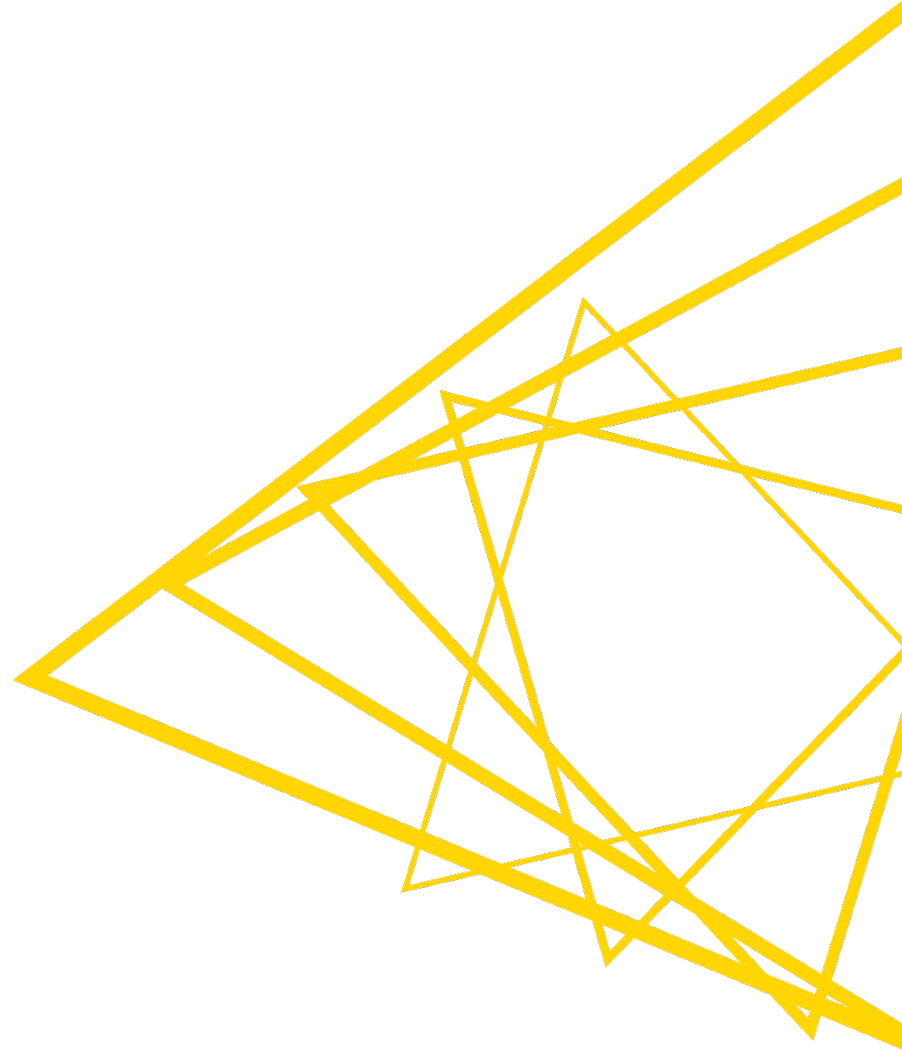
- When a user is added to **workflow_authentication_users**, they are able to create non-login links to access workflows
- Creating a **Link without login** allows anyone available to hit that site access to run the Data App
- Unlike a job started directly in the WebPortal, an Embedded Data App will only show the page's main content
- Maintenance of Access Tokens is allowed in the Monitoring tab



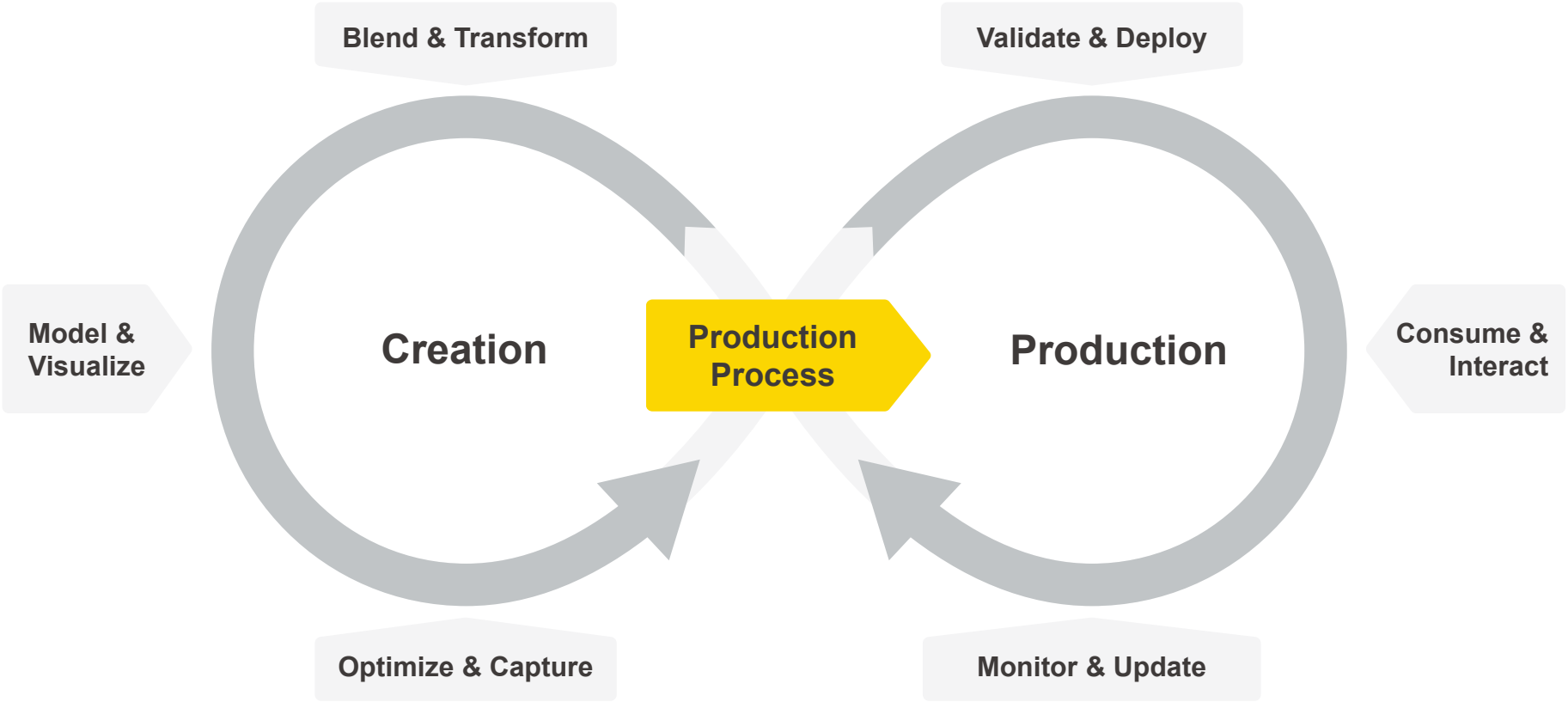
KNIME Data Apps - Demo



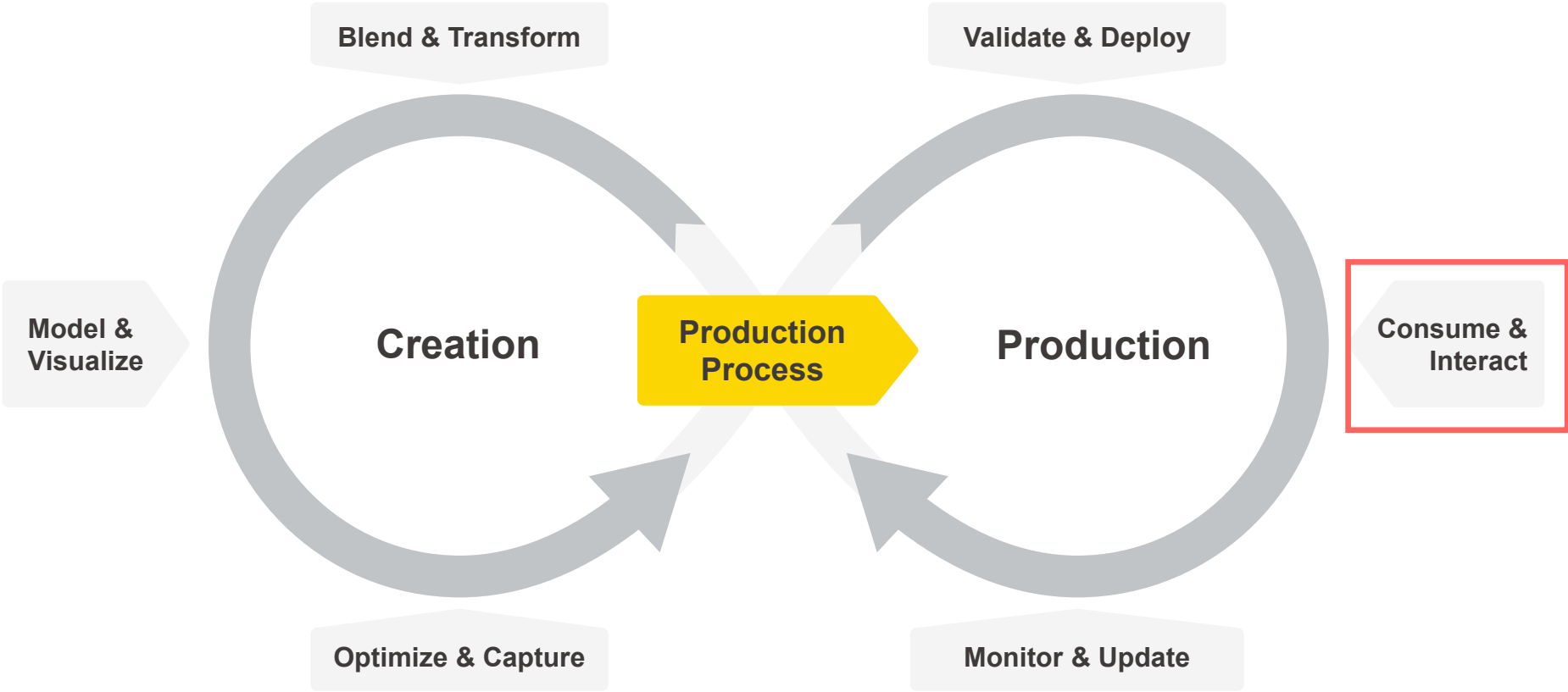
KNIME Edge



The KNIME Data Science Life Cycle

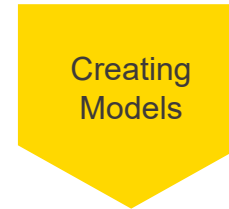


The KNIME Data Science Life Cycle

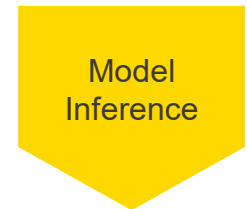


Inference on Demand

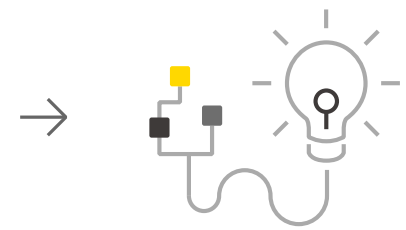
- Inference Deployments
 - Inference -> Application of a model
 - A workflow that accepts data, applies a model and returns an answer
 - Deployed as a service – API endpoint
- Deployed to many, concurrent end users
- With spikes in demand
- Needing low and consistent latency
- Ability to update models (workflows)
- Replicate deployments across geographical regions
- Controlled from a central location



Model & Visualize



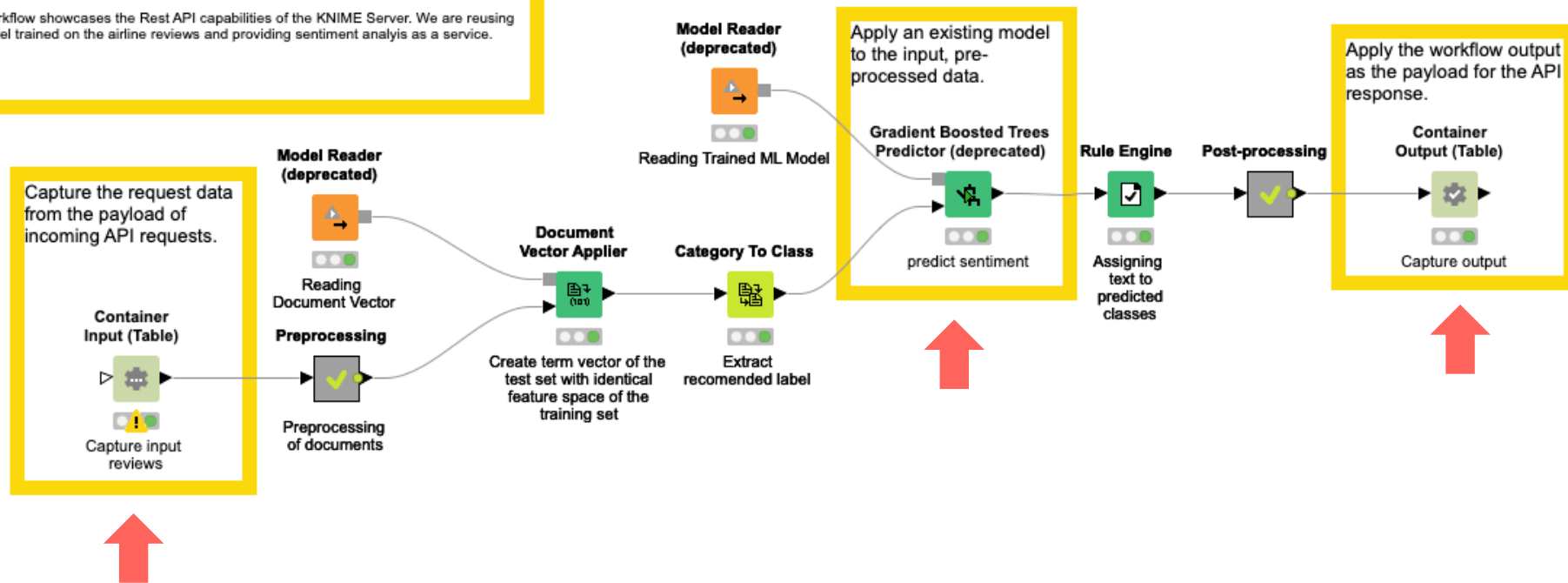
Deploy & Manage



Example Inference Workflow

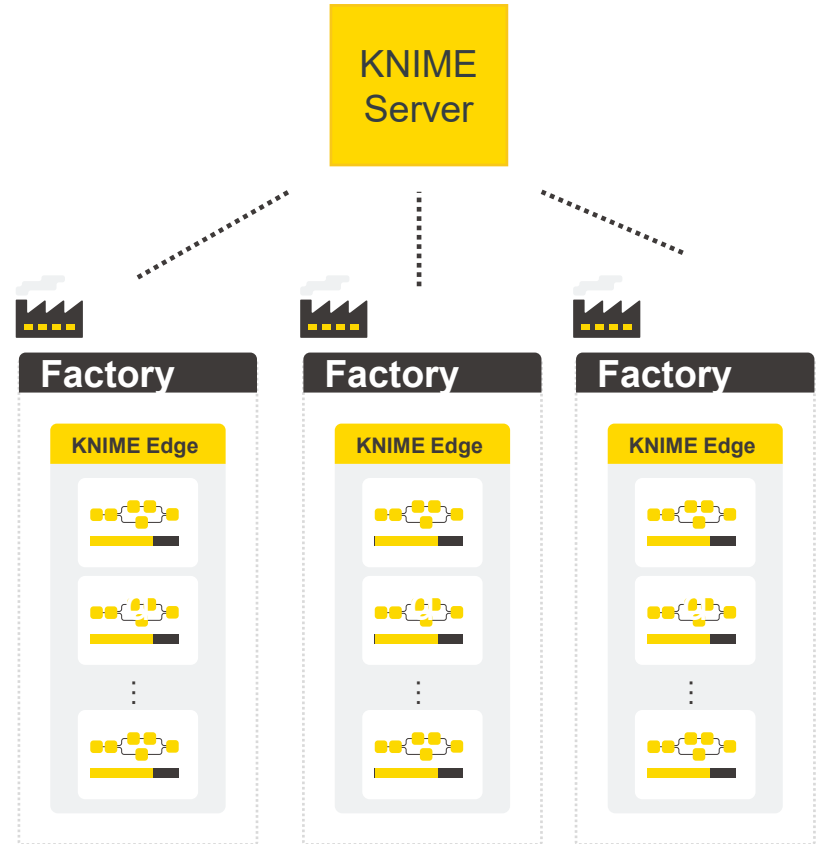
REST API for Sentiment Analysis

This workflow showcases the Rest API capabilities of the KNIME Server. We are reusing the model trained on the airline reviews and providing sentiment analysis as a service.



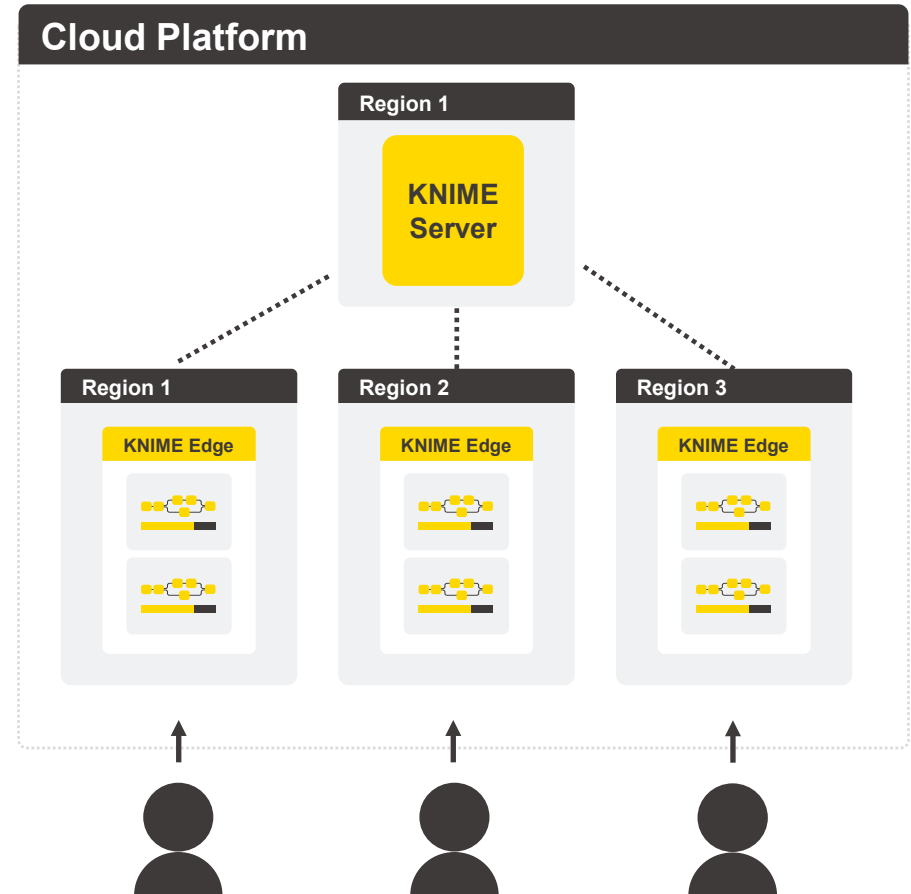
KNIME Edge Deployment - Manufacturing

- Bring ML/AI to the factory floor
 - Real time defect detection using image analysis
 - Optimize production based on current conditions
 - Apply models built specific to factories or across all factories
- Deployment
 - Centralized KNIME Server
 - Automate and manage workflow deployments to Edge instances
 - Remotely monitor Edge instances
 - Edge installations in factory close to production
 - Integrate with factory operations
 - Locally monitor model performance
 - Minimize network traffic to central Server
 - Continues working if connection lost to central Server



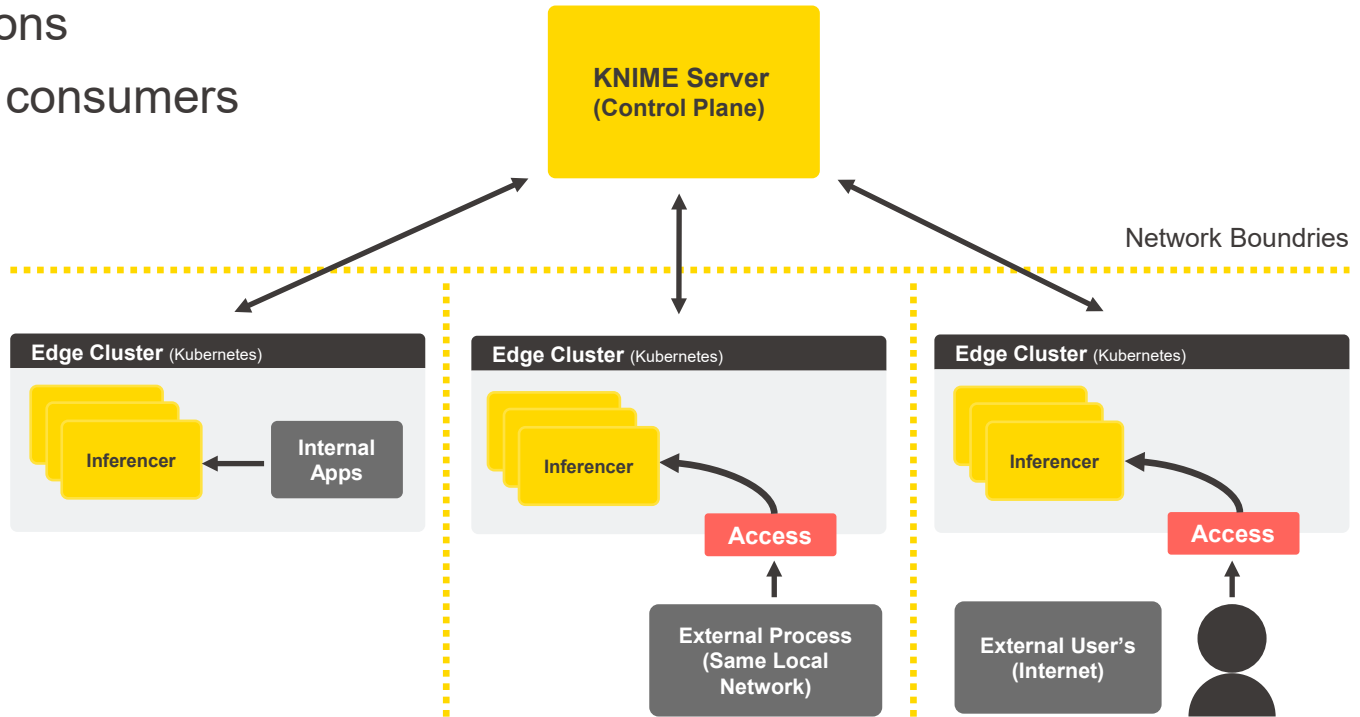
KNIME Edge Deployment – Application Services

- Provide ML services at scale
 - Consumer or business targeted
 - Scale to meet demand
 - Consumer market with internet scale customers
 - Businesses with strict SLA's
 - Low latency for interactive applications
- Deployment
 - Utilize cloud geographic regions
 - Push computation to the network edge
 - Elastically scale on demand
 - In-house applications
 - Deploy in own data center(s)
 - Secure, internal access to applications



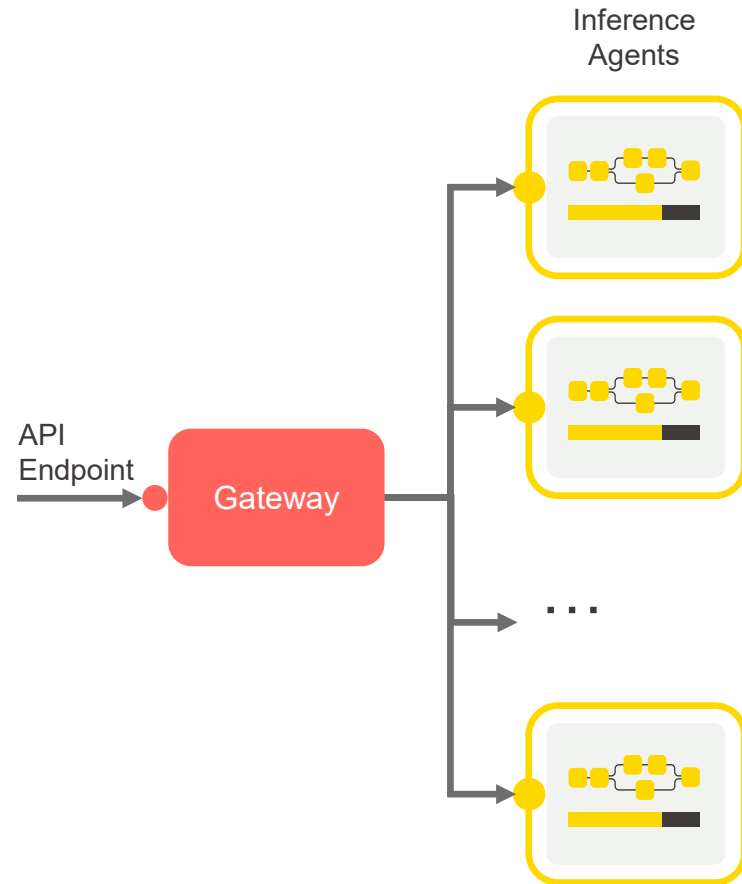
Consuming API Endpoints

- Supporting internal applications
- Integrated with enterprise applications
- External consumers

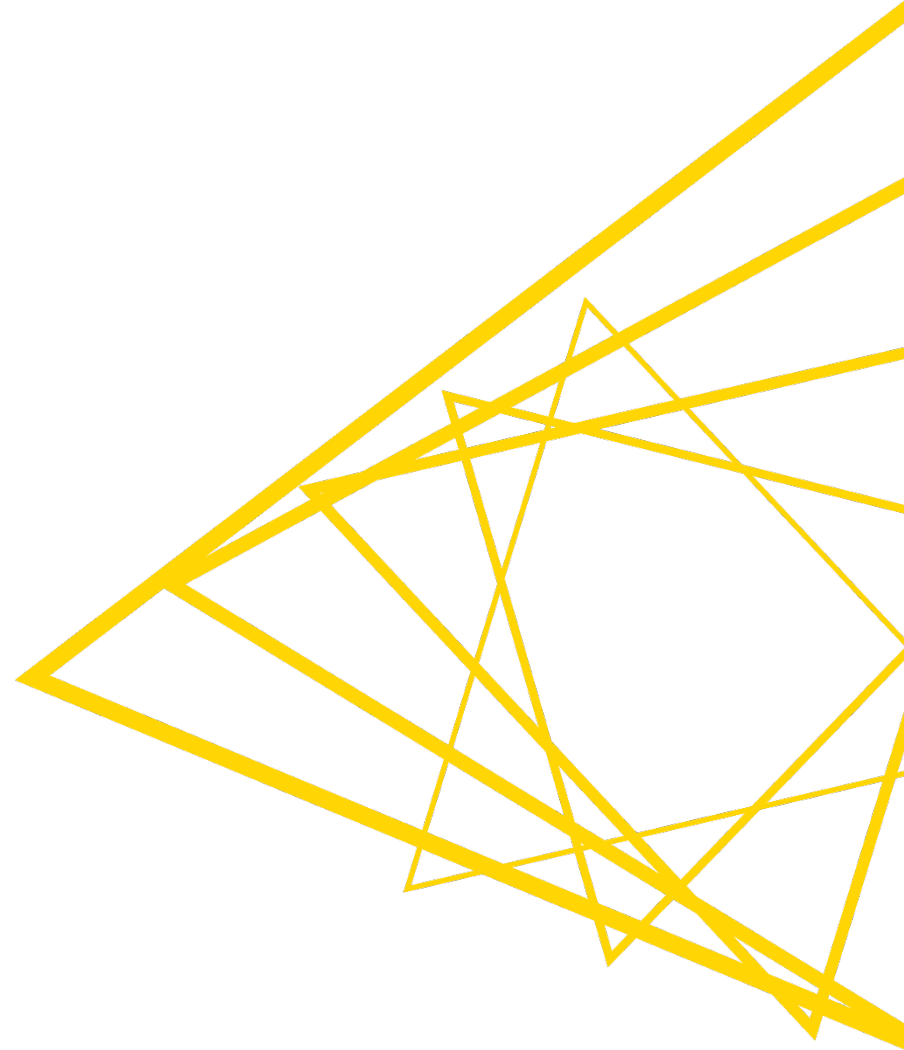


Meeting Inference Demands

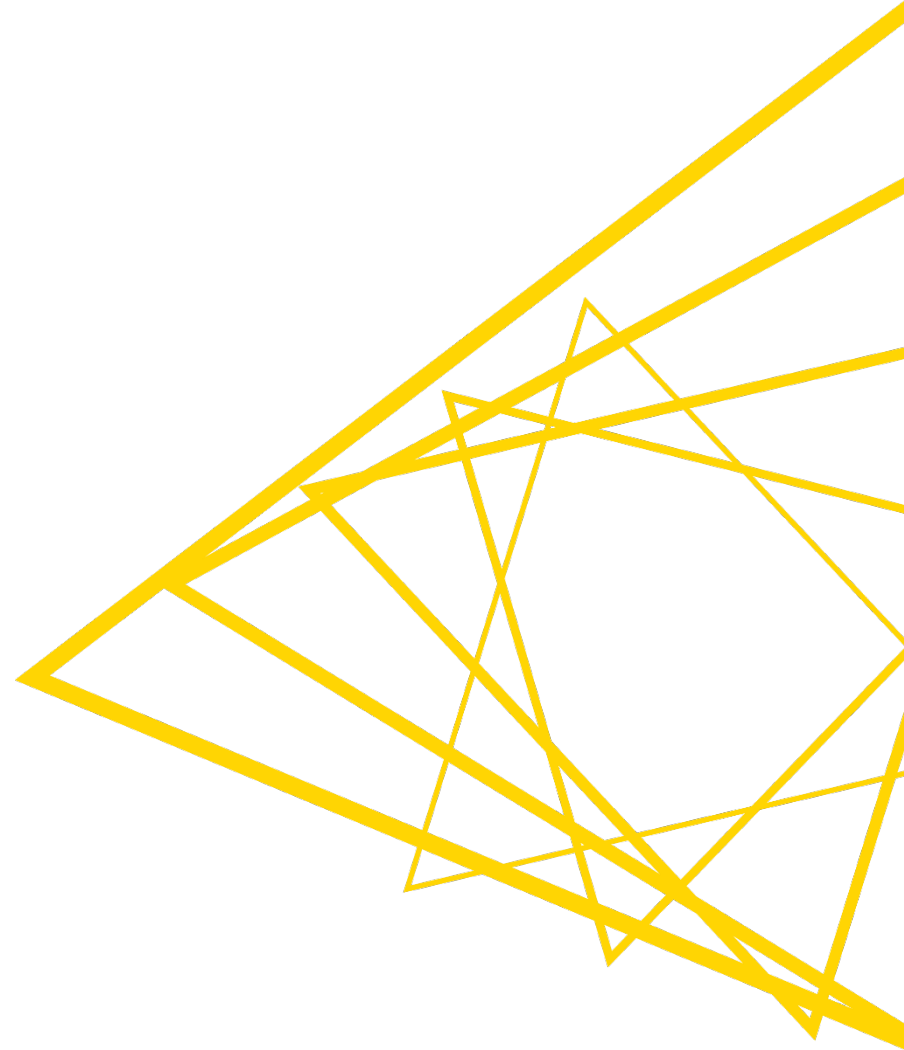
- Inference demands can vary
- Spikes in demand can cause latency to increase
- Maintaining max capacity can waste resources
- Elastic scaling:
 - All Inference Agents for a workflow deployment are aggregated behind a load balancer
 - Dynamically adjusts the number of active Inference Agents for a workflow deployment based on load
 - Scale out as load increases
 - Scale in as load decreases



KNIME Edge - Demo



KNIME Product + Q&A

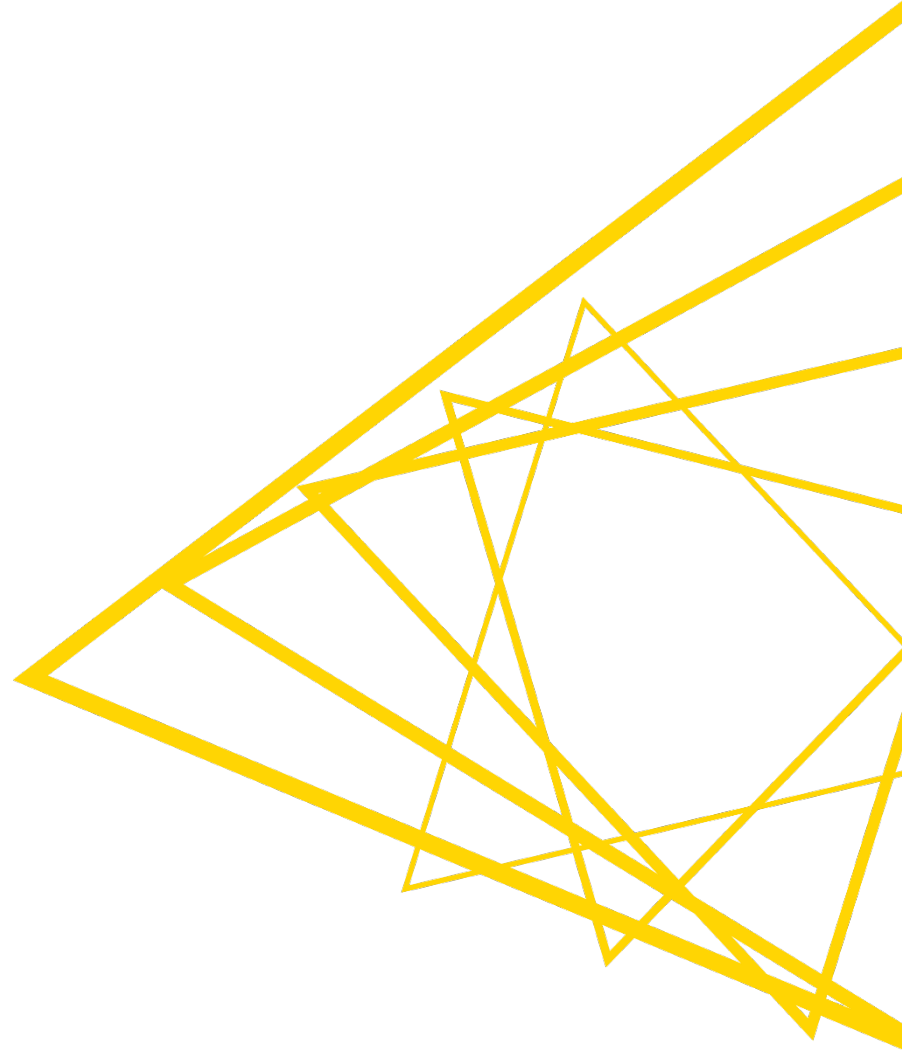


Check out:

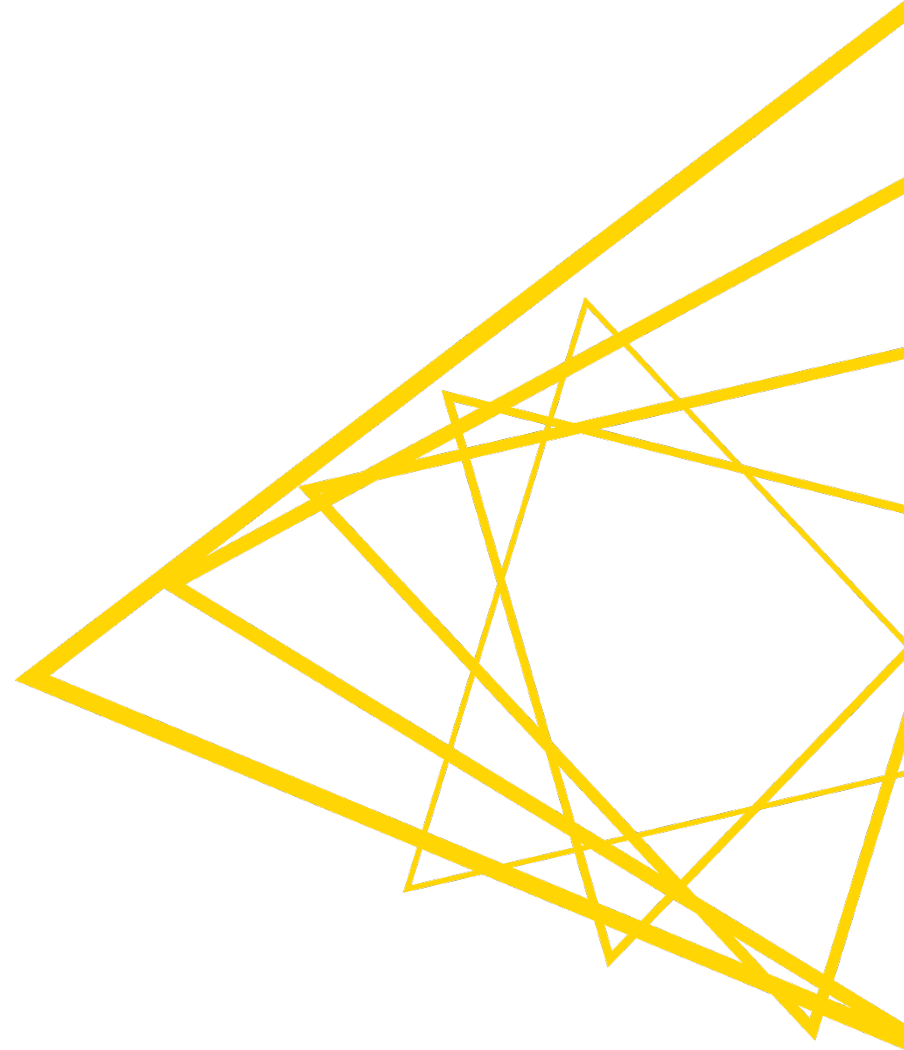
- What's new on [KNIME Partner Portal](#)?
 - KNIME Partner Events Section
 - KNIME Community Building Best Practices
 - Churn Risk Management for Partners
 - What's New at KNIME Summer 2021?

- What's upcoming?
 - [KNIME Course: KNIME Server Administrator \(Sept 21, 23\)](#)
 - [KNIME Fall Data Talks \(Sept 29\)](#)

Thank you!

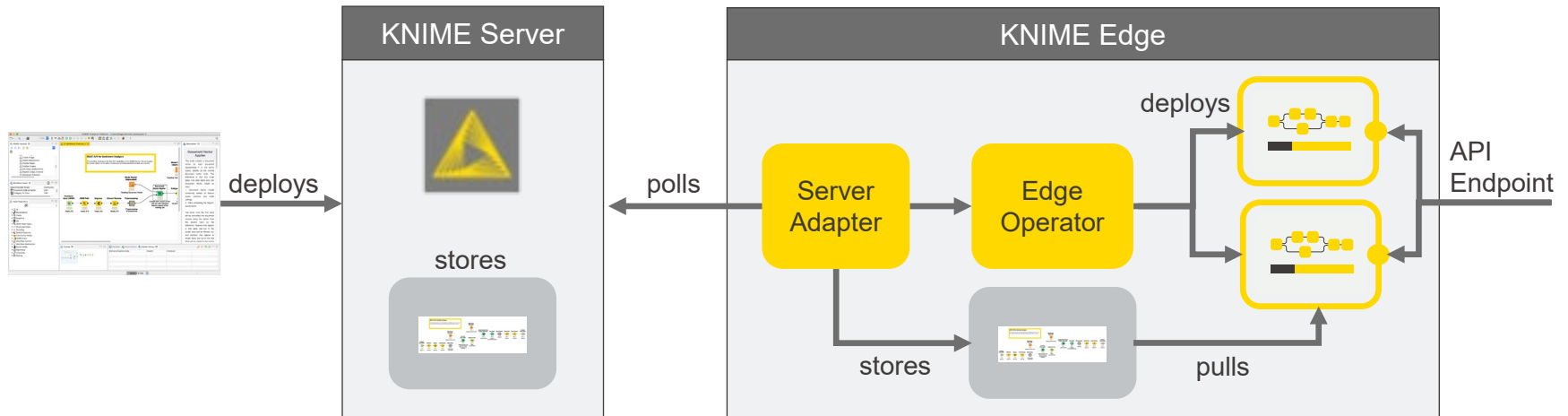


Appendix



Deploying a KNIME Inference Workflow

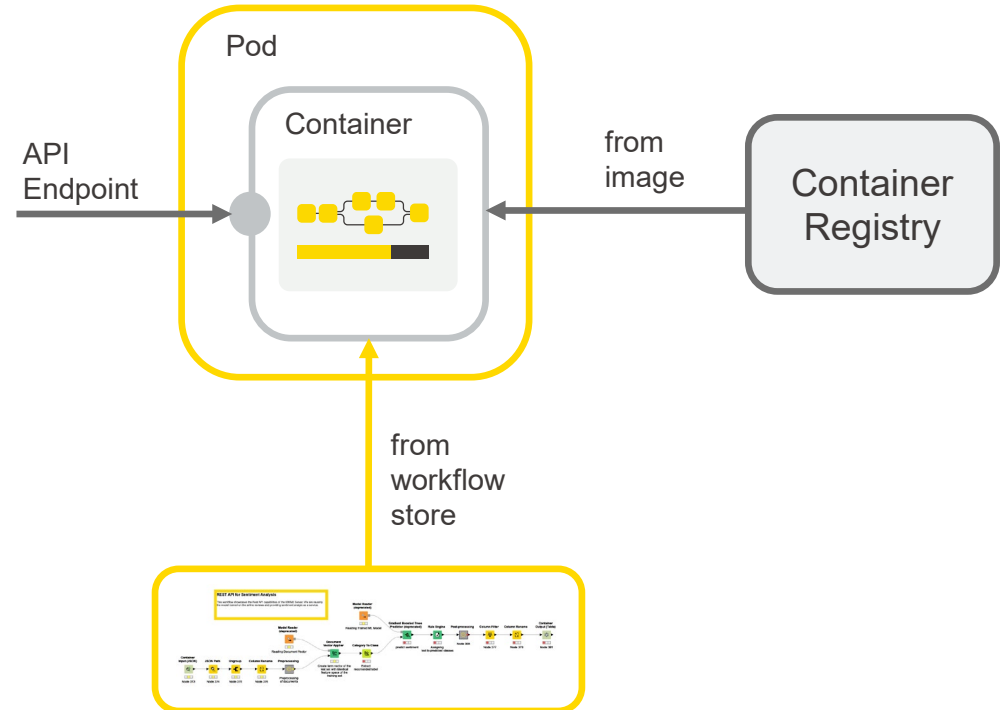
- Create a workflow in KNIME and deploy to Server
- Edge(s) poll Server for inference workflows
- Edge deploys workflows at scale with an API Endpoint
- Applications use endpoint to invoke inference workflows



Containerized Workflows

■ Inference Agent

- Runs KNIME inference workflows
- Provides an API endpoint
- Pulls image from a registry
- Deploys in Kubernetes
- Loads a workflow to execute
- Built to scale



Monitoring - MLOps

- Monitor Inference WF's
 - Request load
 - Request latency
 - Processing time
 - Request/response data sizes
 - Errors and error rates
 - Select granularity
 - All deployments
 - Selected deployment
- And in a future release
 - Statistical analysis of model responses over time
 - Monitor behavioral changes

