

WSO2con2025

**AI-Driven API Design,
Development, and
Consumption with
Enhanced Governance**



Hello!



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Agenda

- Introduction & Lab Overview
- Introduction to WSO2 API Manager
- Use Case Overview
- AI-Driven API Lifecycle
- B2B API Consumption
- AI Service Architecture
- Future AI-Powered Capabilities
- APIs Powering Agentic AI Workflows
- Key Takeaways & Next Steps



Introduction & Lab Overview

Introduction & Lab Overview

- **Why AI in API Management?**

- ⦿ AI is transforming how APIs are built, managed, secured and consumed.
- ⦿ Automates repetitive tasks, improving efficiency.
- ⦿ Enhances compliance and governance.

- **Objective of the Lab**

- ⦿ Demonstrate AI-driven features in WSO2 API Manager.
- ⦿ Show how AI assists in different aspects of API development.
- ⦿ Cover API design, management, security, governance and consumption.

- **Use Case Overview**

- ⦿ Modernizing the online store to overcome legacy system challenges.
- ⦿ Explore AI-driven automation in API lifecycle.
- ⦿ Show how AI simplifies and improves API development and management.



Introduction to WSO2 API Manager

The background is a vibrant space-themed gradient. It transitions from a bright orange-red on the left to a deep blue and purple on the right. Scattered throughout are numerous small, bright white stars and larger, more prominent four-pointed starburst patterns. In the lower-left quadrant, there is a large, semi-transparent teal planet with a thin, dark ring. In the lower-right quadrant, there is a smaller, semi-transparent purple planet with a thin, dark ring.

WSO2 API Manager

- 100% open source
- Full Lifecycle API management
- Secure API Management: Secure APIs, enforce authorization rules and access policies
- API Discovery and Governance: Portals for API Design and Consumption, Approval workflows for API publishing and API subscription
- API Monetization
- Insightful Analytics and Observability
- Customisable Portals, Workflows and Extension points



API Management Offerings

WSO2 API Manager

WSO2 API Control Plane

WSO2 Kubernetes Gateway

K8s native design,
Lightweight, Envoy
based

WSO2 Immutable Gateway

Offline mode,
Immutability, Edge
Gateway

WSO2 Universal Gateway

Inbuilt mediation, Range
of protocols

Federated Gateways

AWS API Gateway
solace



Run it anywhere



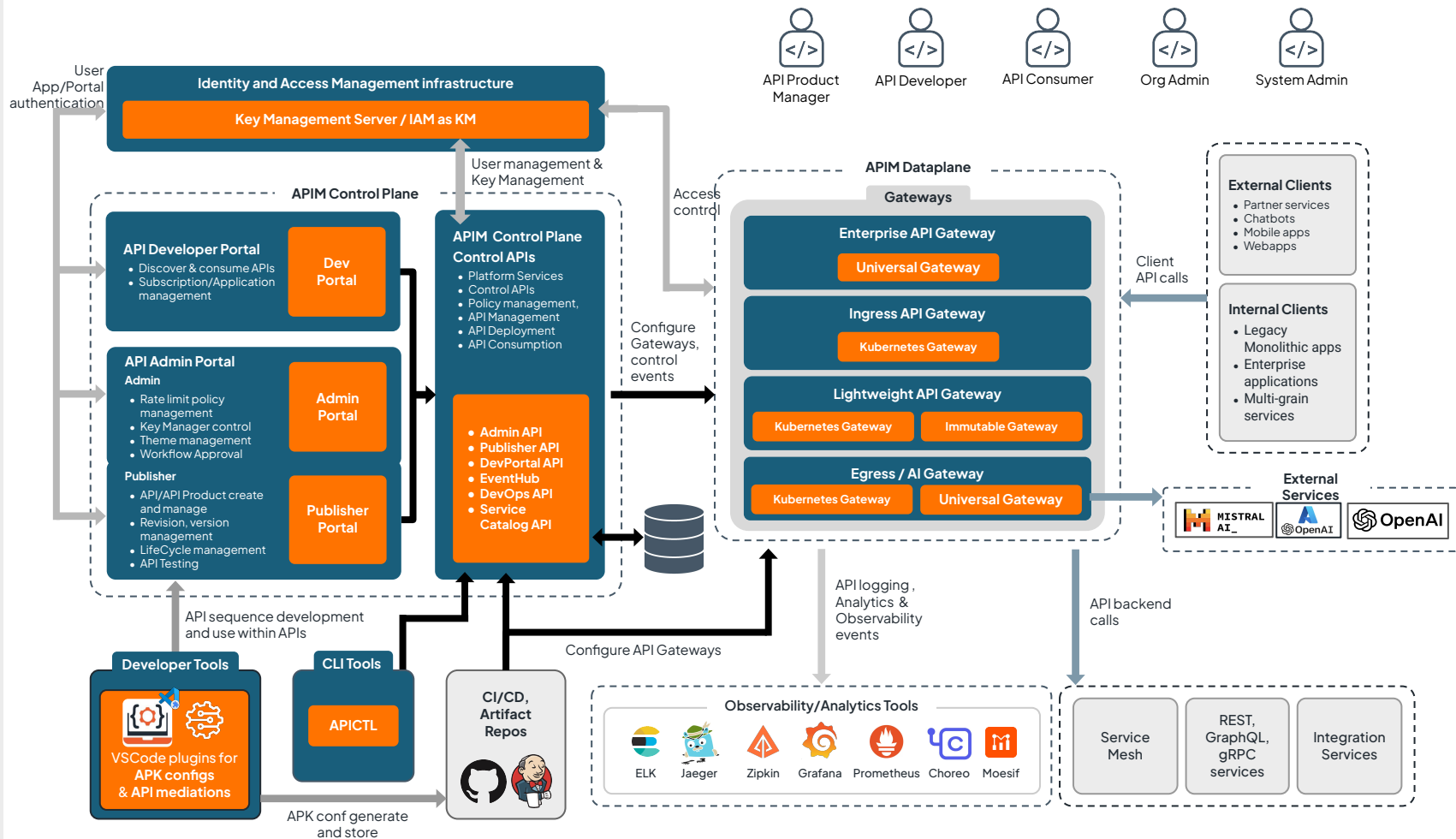
AI-Native, Scalable SaaS
API Management
(Powered by WSO2 API
Manager)

SaaS



Gateway Type	When to Use	Key Differences
Universal Gateway	- For centralized API management with advanced mediation. - Best for complex API transformations, security, and governance.	- Advanced mediation – Routing, transformation, and enrichment. - Centralized security & access control – OAuth, OIDC, SAML.
Kubernetes Gateway (K8s-Native, Envoy-Based) 	- For K8s-native API management - Best for Kubernetes-based deployments requiring scalability. - Replacement for Ingress	- Envoy-powered & CNCF Gateway API – Kubernetes-native architecture. - CRD-based configuration – Declarative API definitions. - Dynamic scaling with Kubernetes autoscaling
Immutable Gateway (Lightweight & Decentralized)	- For lightweight, decentralized, and edge-ready API management. - Best for microservices, IoT, and offline deployments with independent gateways.	- Microservice-friendly – Runs alongside services without a central control plane. - Secure & immutable – Optimized for containerized workloads. - Offline support – Disconnected API processing. - Edge-ready – Optimized for edge computing & IoT.

WSO2 API Management Software Components



WSO2 API Manager SaaS – Bijira



- **Enhanced User Experience:**
 - ⦿ Visual mapping UI and interactive policy management
- **Unified Control Plane:**
 - ⦿ Seamlessly manage APIs across cloud & private dataplanes.
- **AI for APIs:**
 - ⦿ AI-driven API design assistance, testing and developer portal theming.
- **APIs for AI:**
 - ⦿ AI Governance for intelligent compliance, traffic control, and automation.
- **Complete Control Over Your API Traffic**
 - ⦿ Efficiently govern ingress, egress, and AI APIs for any use case.
- **Built on Choreo:**
 - ⦿ Delivering a enhanced and focused APIM experience



Use Case Overview

The background is a vibrant space-themed image. It features a gradient from deep red on the left to dark blue and purple on the right. Scattered throughout are numerous stars of varying sizes and colors, some with prominent four-pointed diffraction patterns. In the lower-left corner, there is a large, translucent blue planet with a thin, light blue ring. In the lower-right corner, there is a smaller, translucent purple planet with a thin, light purple ring. A faint, glowing nebula or cloud of gas is visible in the upper-right quadrant.

Business Use Case: E-Commerce Platform Integration

- **Scenario:**

- ⦿ **Viento Mart** is an online store managing a large catalog of products across multiple platforms, including a website and mobile app.
- ⦿ They struggle with data consistency, manual inventory management, and the challenge of updating product details (price, stock, description) across channels in real-time.

- **Solution:**

- ⦿ **Viento Mart** wants to modernize by implementing APIs for real-time synchronization of product details (description, price, stock) across platforms, ensuring seamless inventory management, consistency, and accuracy.





End Users



Partners

Suppliers and Manufacturers/
Warehouse and Fulfillment Centers/
Third-Party Logistics Providers/ Retail
Partners

Viento Mart

Website & Mobile Apps



Shopping Cart



Department

Product Management

Inventory Management

Order Management

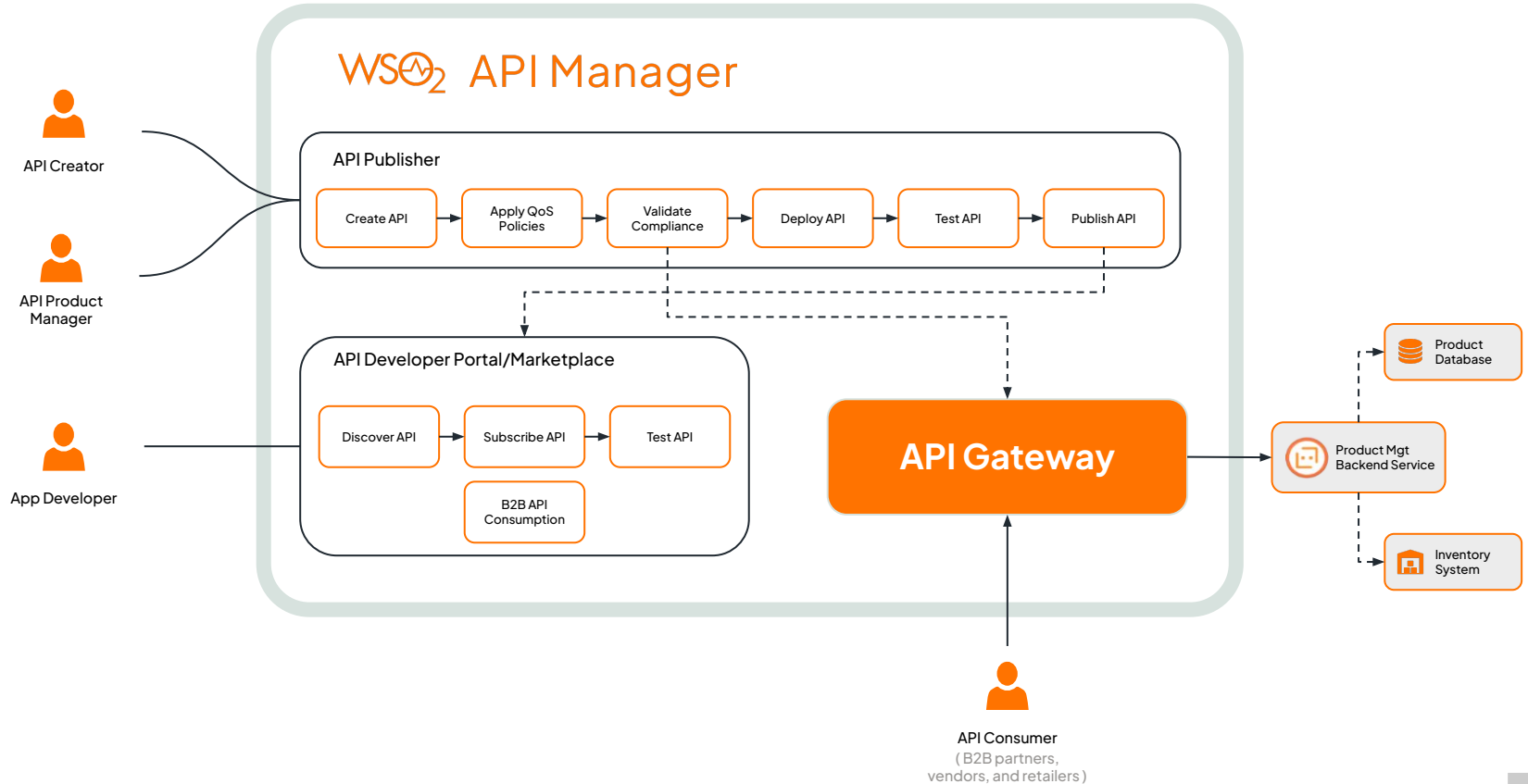
Payment & Billing

Personas

Username	Role	Responsibility
Larry	API Owner (Internal/creator)	Designing and Implementing APIs
Emily	API Product Manager (Internal/publisher)	Manage API lifecycle, documentation, and ensuring quality and security standards
David	Partner App Developer/ (Internal/subscriber)	Discover, subscribe and utilize APIs
Admin	System Admin/ (admin)	Manage users and system administration



High-Level Solutions Diagram



AI Powered API Design Assistant

AI Powered API Design Assistant

- **The Challenge**

- ◉ Manual API definition requires technical expertise, slowing down development.
- ◉ Defining resources, schemas, and configurations is time-consuming and inefficient.
- ◉ Non-technical users struggle with complex API design specifications.
- ◉ Refining and adjusting APIs requires extensive manual effort.



AI Powered API Design Assistant

- **How API Design Assistant Solves It**

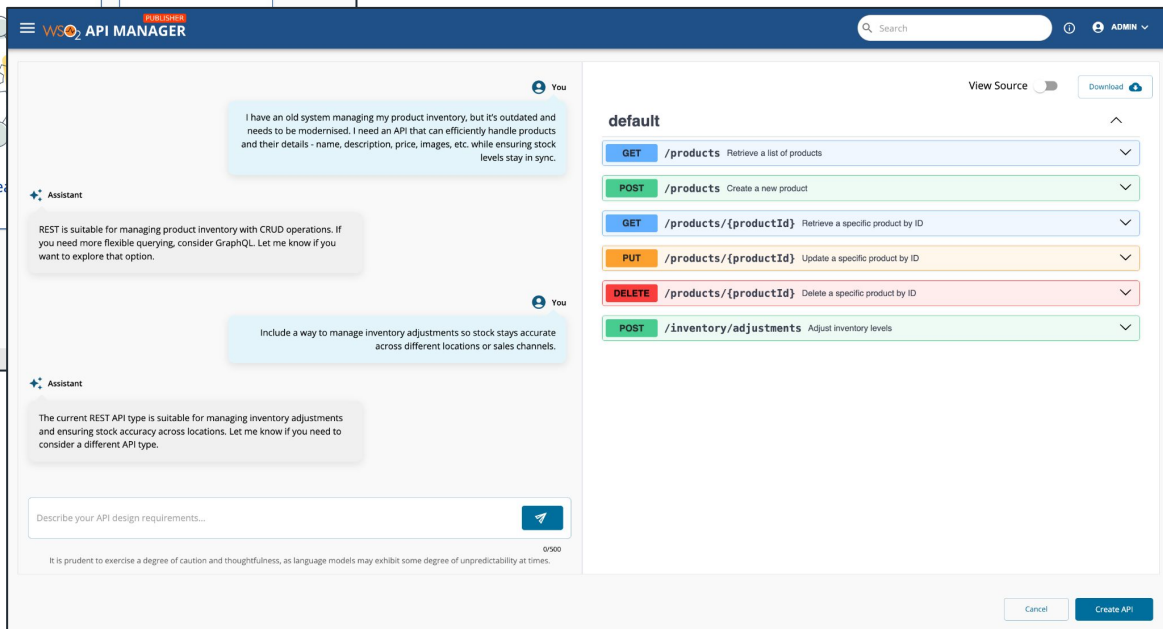
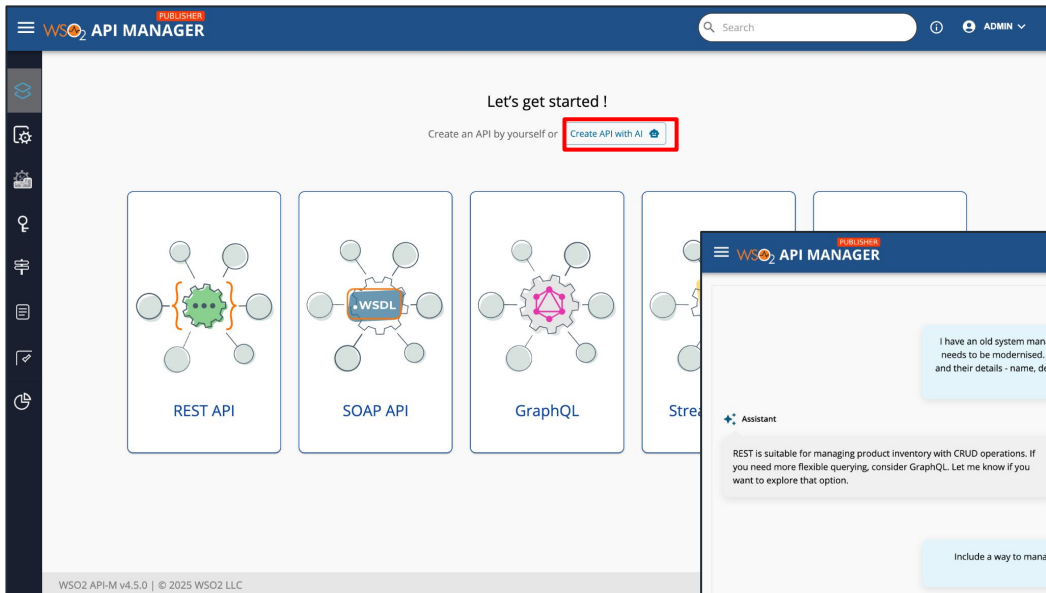
- Chat based API creation allows users to generate REST, GraphQL, and Async APIs using natural language.
- UI Visualization provides a structured view of API resources for easy understanding.
- View and Modify API Specifications enables users to review and update API structures.
- Refinement and Inquiry lets users understand/modify APIs & API elements.

- **Business Impact**

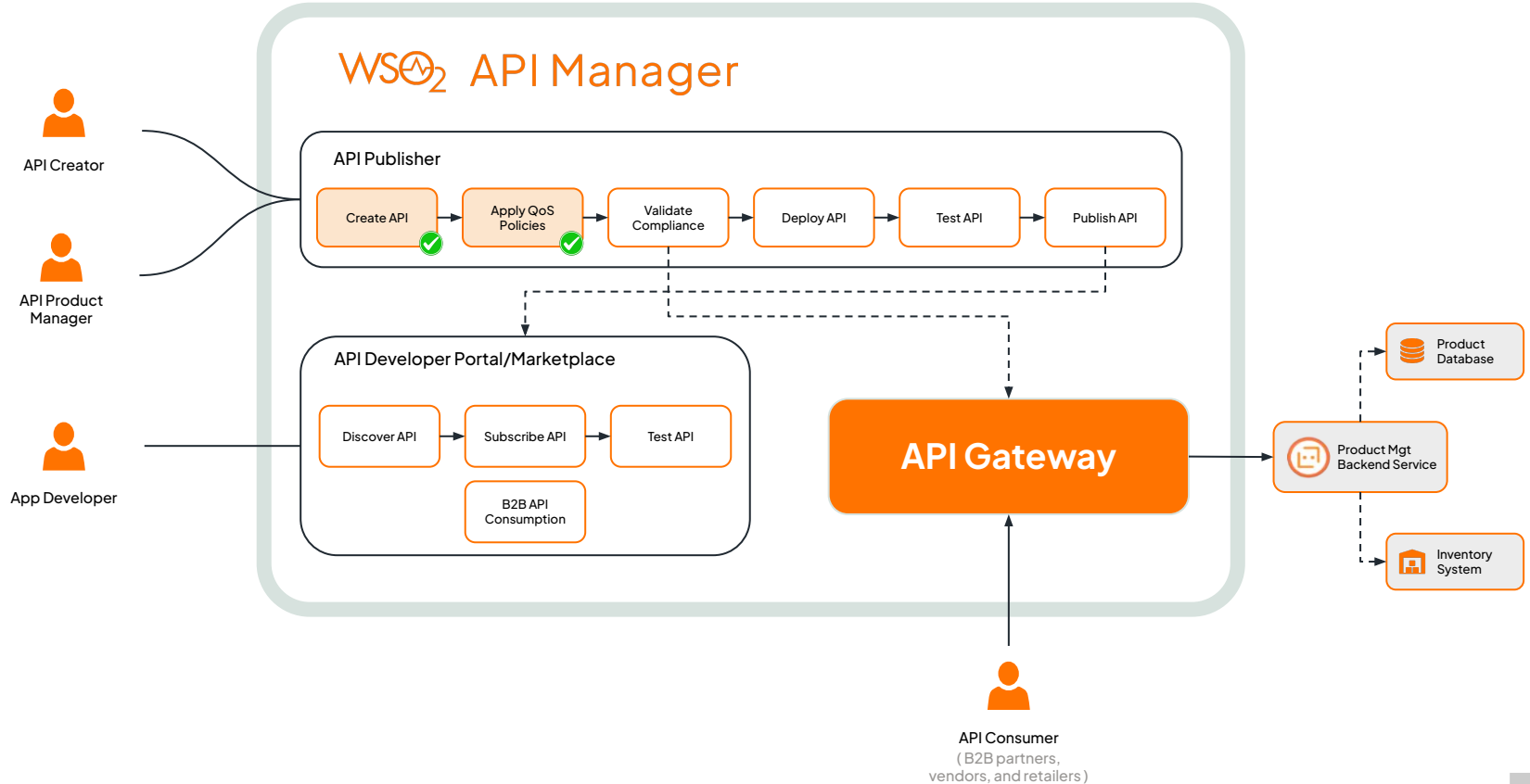
- Speeds up API design by reducing manual effort and ensuring consistency and accuracy.
- Enables both technical and non-technical users to create and refine APIs.



AI Powered API Design Assistant



What We've Accomplished



API Governance

The background is a vibrant space-themed gradient. It transitions from a bright orange-red on the left to a deep blue and purple on the right. Scattered throughout are numerous stars of varying sizes and brightness, some with prominent four-pointed diffraction patterns. In the lower-left quadrant, there is a large, teal-colored planet with a thin, dark ring. In the lower-right quadrant, there is a smaller, purple-colored planet with a thin, dark ring.

API Governance

- **The Challenge**

- ◉ Inconsistent Standards – Varying security & documentation practices
- ◉ Compliance Risks – Weak enforcement leads to vulnerabilities
- ◉ Manual Processes – Inefficient & error-prone policy enforcement
- ◉ Limited Visibility – Lack of control over compliance & governance

- **How API Governance Solves it**

- ◉ Automated Policies – Enforce governance across API design & lifecycle
- ◉ Standardized Practices – Secure, document, & version APIs consistently
- ◉ Compliance Insights – Audit adherence & detect inconsistencies
- ◉ Approval Workflows – Ensure governance in lifecycle changes

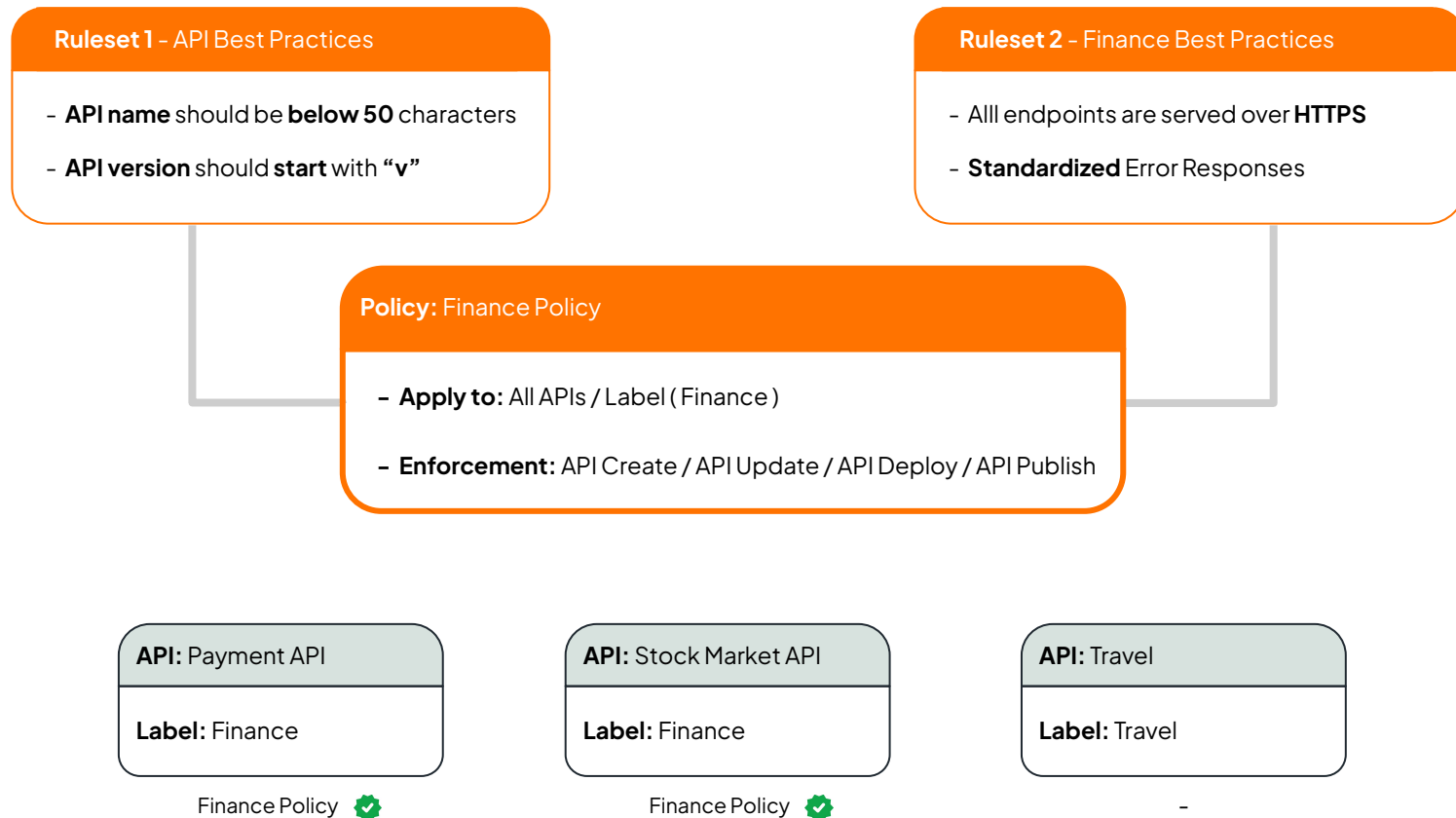


API Governance

- Business Impact
 - ⦿ Reduces overhead – Automates governance, minimizing manual effort.
 - ⦿ Ensures security & compliance – Enforces standardized policies.
 - ⦿ Enhances visibility & control – Manages API practices from design to deprecation.

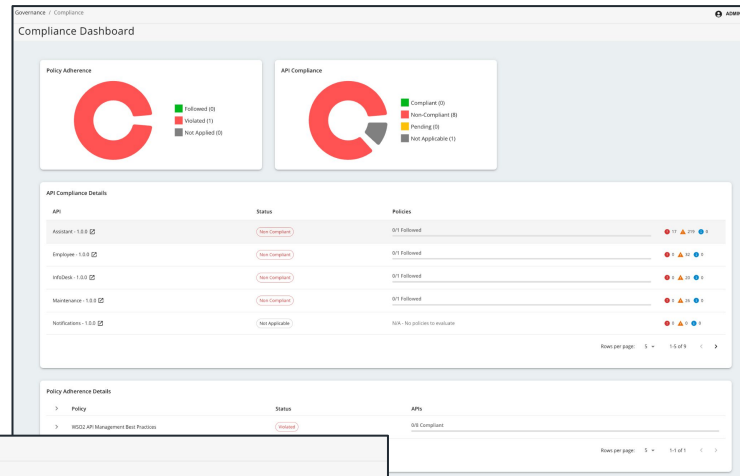
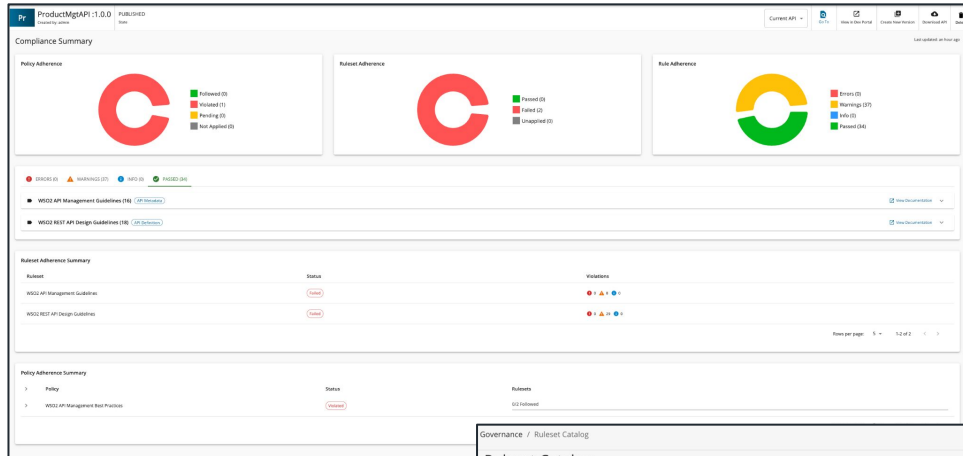


API Governance – Concepts



Governance Dashboard

Dashboards to monitor and manage the governance policies enforced on APIs



Governance / Ruleset Catalog

Ruleset Catalog

Find comprehensive governance rulesets designed to ensure the consistency, security and reliability for your APIs

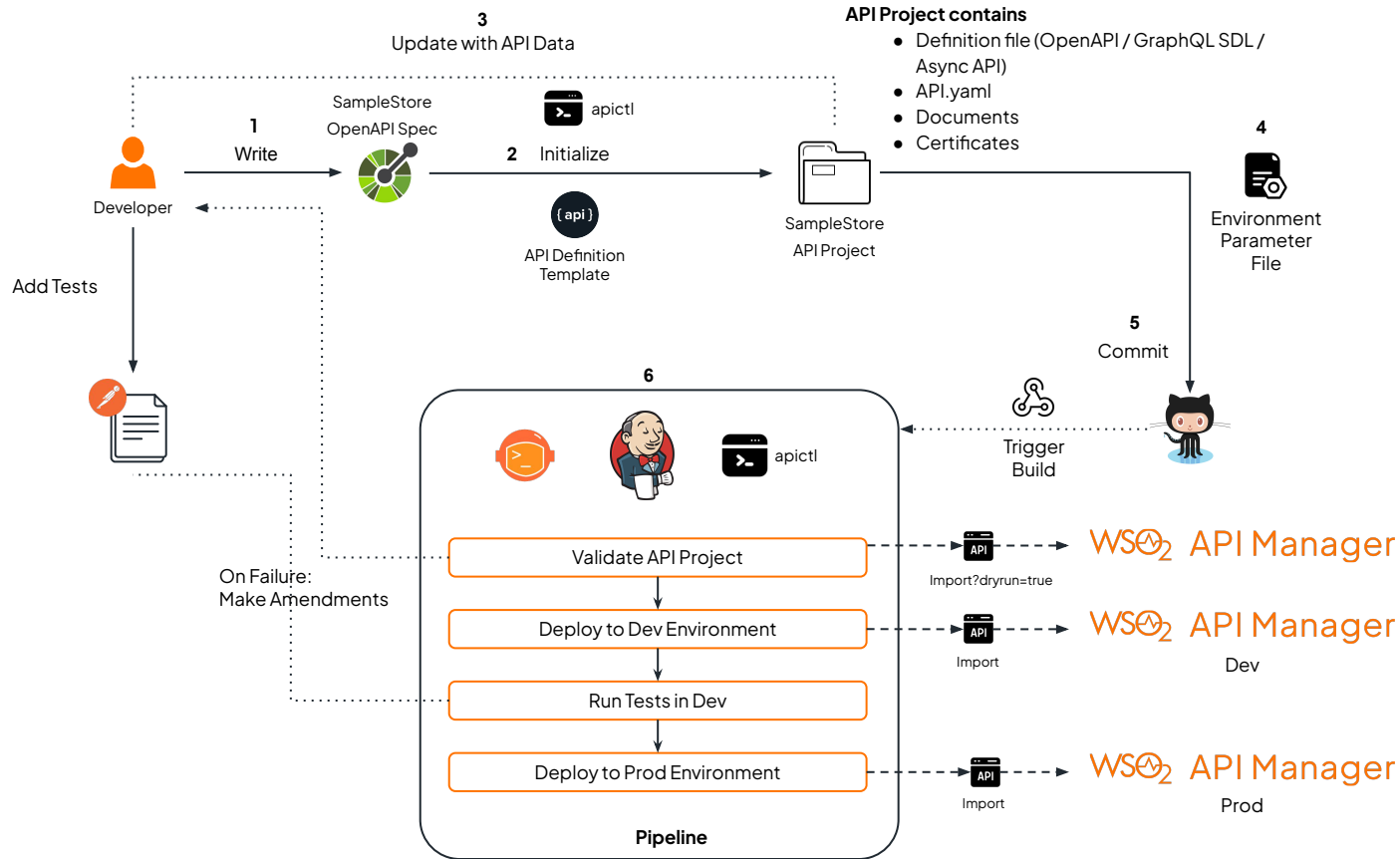
Search rulesets by name or type

Create Ruleset

Ruleset	Artifact Type	Ruleset Type	Provider	Actions
WSO2 Rest API Design Guidelines A set of guidelines focused on enforcing uniformity in API style, L...	REST API	API Definition	WSO2	Edit Info
WSO2 API Management Guidelines A guide detailing best practices for creating robust, scalable, and ...	REST API	API Metadata	WSO2	Edit Info
OWASP Top 10 A set of rules enforcing OWASP security guidelines to prevent on...	REST API	API Definition	WSO2	Edit Info

Rows per page: 10 1-3 of 3

CI/CD Driven API Governance



AI Governance

- **Natural Language Policies**
 - ⦿ Define rules using English documents.
- **Automated Quality Checks**
 - ⦿ Detect design flaws & best practice violations.
- **Security & Compliance**
 - ⦿ Prevent vulnerabilities before deployment.
- **Governance Insights**
 - ⦿ Monitor policy adherence & effectiveness.

Note – This is currently available in Bijira (APIM SaaS)



Source: AI (ImageFX) Generated

AI Governance

Policies

Create policies using rulesets or documents to standardize and regulate your artifacts effectively.

Names: ↑ Description Action

Name	Description	Action
WSO2 REST API guidelines validation	API Policy Check for WSO2 guidelines	View Edit
Style Validation Policy	Validate Styles	View Edit

Rulesets / Documents

First documents designed to ensure the consistency, security and reliability for your artifacts across the organization.

Rulesets Documents

WS

WSO2 REST API Design Guidelines

Comprehensive guidelines for designing REST APIs following WSO2's best practices and standards.

RE

REST API guidelines for organizations

WSO2 REST API design document

RE

REST API Design Guidelines - Banking Sector

Specialized guidelines for designing REST APIs in the banking and financial services sector.

RE

REST API Design Guidelines - Government & Public Services

Specialized guidelines for designing REST APIs in government and public service sectors.

Compliance Dashboard

Policy Compliance (2) Project Compliance (4) Artifact Compliance (3)

Policy Compliance

Policy	Status	Projects
WSO2 REST API guidelines validation	Compliant	1/2 Non-Compliant
Style Validation Policy	Adhered	2/2 Compliant

Project Compliance

Projects	Status	Policies
People Management	Non-Compliant	1/2 Violated
Engineering	Compliant	2/2 Adhered

For API Creators

Compliance Dashboard

Policy Adherence (2) Ruleset Adherence (1)

Policy Adherence (2)

Rule	Message	Path
api-level-1	The resulting API should reach Level 1 of the Richardson Matur...	\$path[/get/post]
collection-resources	Group atomic resources of the same type into collection resour...	\$path[/get/findByPage/get]

Ruleset Adherence (1)

Ruleset	Status	Violations
WSO2 Style Guidelines	Adhered	0/0

Policy Adherence Summary

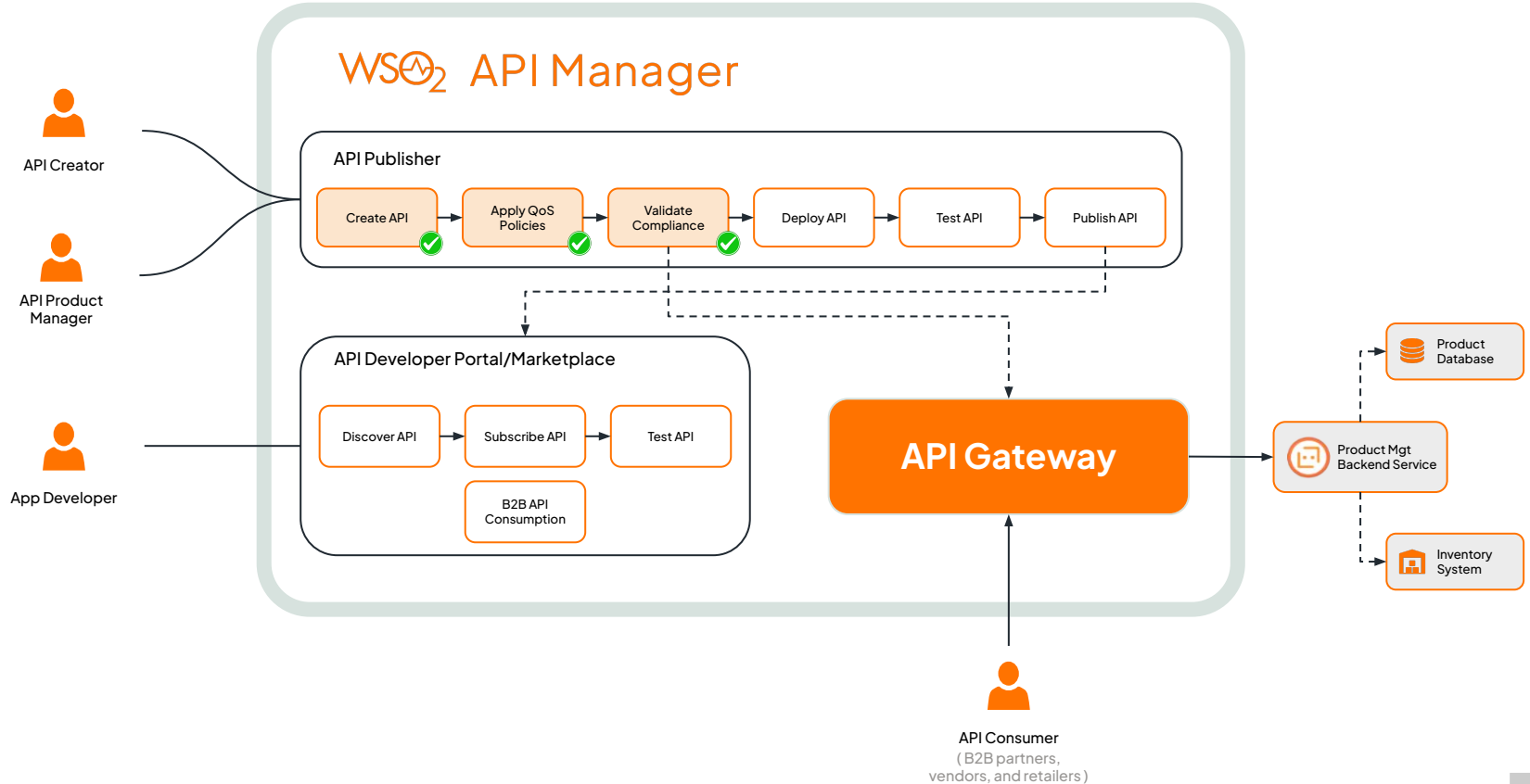
Policy	Status	Ruleset Summary
WSO2 REST API guidelines validation	Compliant	1/2 Violated
Style Validation Policy	Adhered	2/2 Adhered

Rulesets Adherence Summary

Ruleset	Status	Violations
WSO2 Style Guidelines	Adhered	0/0

For Admins

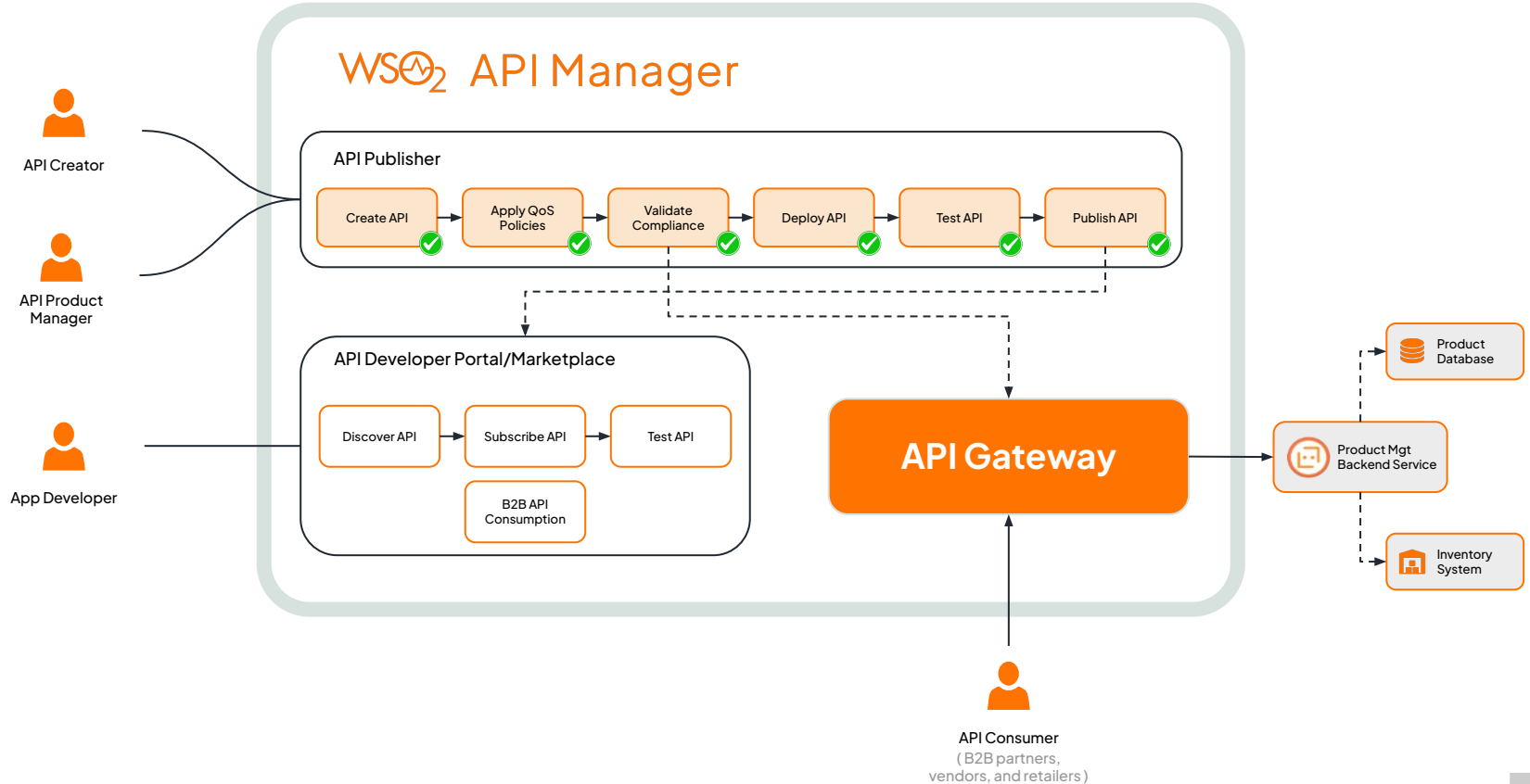
What We've Accomplished



Deploy and Publish API



What We've Accomplished



AI-Powered API Discovery and Consumption



AI-Powered API Discovery and Consumption

- **The Challenges**

- ⦿ Traditional API discovery relies on keyword searches, limiting accuracy.
- ⦿ Finding relevant APIs can be time-consuming and inefficient.
- ⦿ Lack of intelligent recommendations makes API selection difficult.

- **How Marketplace Assistant Solves It**

- ⦿ Uses AI to enable natural language interaction with APIs.
- ⦿ Provides smart recommendations beyond basic keyword searches.
- ⦿ Enhances API discovery with contextual understanding and insights.



AI-Powered API Discovery and Consumption

- **Business Impact**

- Speeds up API discovery and selection, improving efficiency.
- Enhances developer experience with intelligent recommendations.
- Drives better API adoption and usage, maximizing business value.



AI-Powered API Discovery and Consumption

The screenshot displays the WSO2 API Manager Developer Portal interface. The top navigation bar includes the WSO2 API Manager logo, a 'DEVELOPER PORTAL' label, and tabs for 'APIs' and 'Applications'. A search bar is present with the text 'Search APIs'. The user 'DAVID' is logged in.

The main content area shows a grid of API cards. Each card includes an icon, a title, a description, version information, and a star rating. The APIs listed are:

- Assistant**: By.admin, /help, Context, 1.0.0 Version, 0.0/5.0
- Employee**: By.admin, /employee, Context, 1.0.0 Version, 0.0/5.0
- InfoDesk**: By.admin, /train-station-inf..., Context, 1.0.0 Version, 0.0/5.0
- Maintenance**: By.admin, /maintenance, Context, 1.0.0 Version, 0.0/5.0
- Notifications**: By.admin, /notifi..., Context, 1.0.0 Version, 0.0/5.0
- PaymentAPI**: By.admin, /payment-api, Context, 1.0.0 Version, 0.0/5.0
- ProductMgtAPI**: By.admin, /productmgt, Context, 1.0.0 Version, 0.0/5.0
- StationInformation**: By.admin, /stationinformat..., Context, 1.0.0 Version, 0.0/5.0

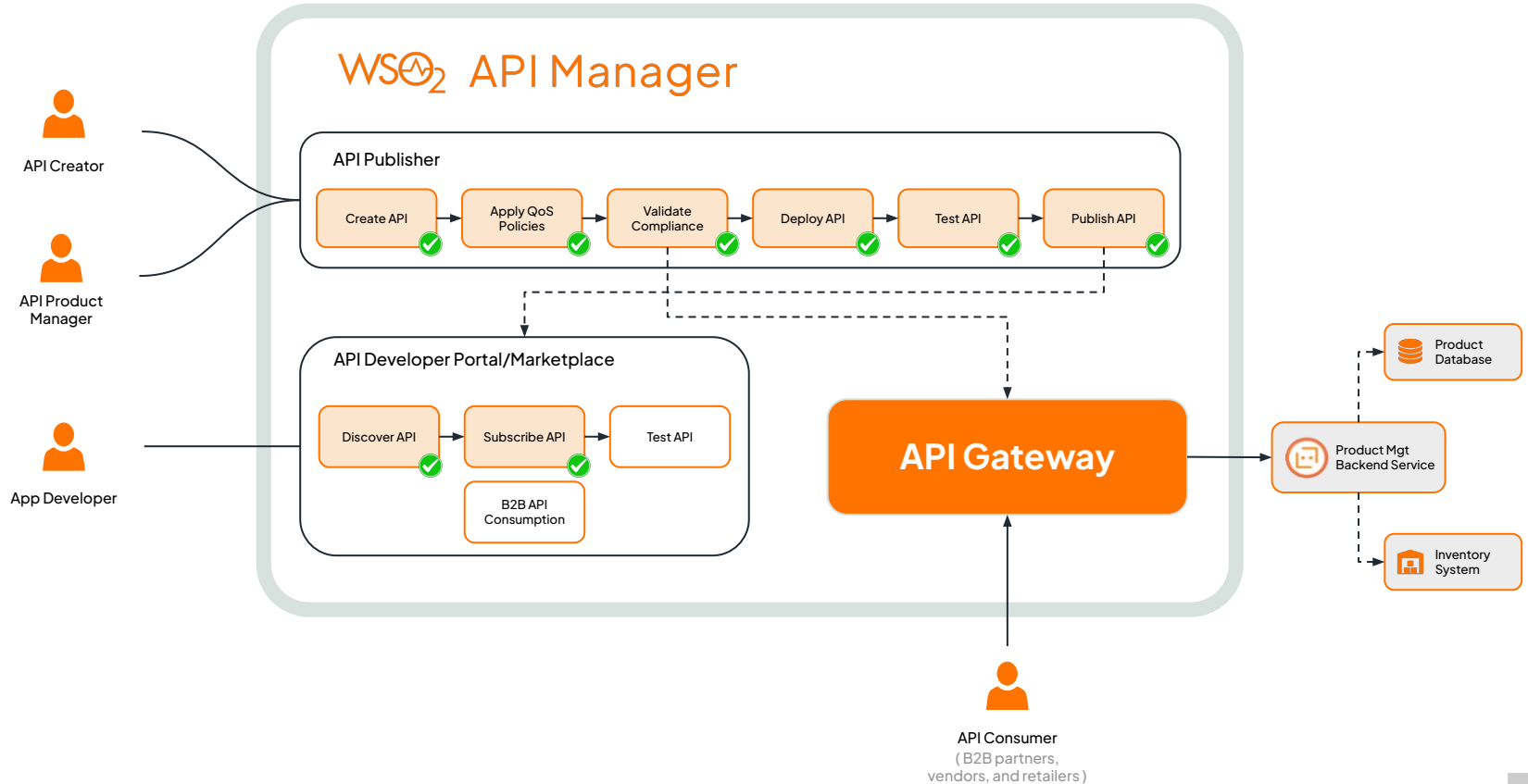
A chat window titled 'API Marketplace Assistant' (Experimental) is open on the right. It shows a conversation with the Assistant and a user named David. The Assistant's messages are:

- Assistant: Hello! I'm here to assist you in discovering and obtaining information about APIs. How can I help you?
- Assistant: I recommend the following APIs for modernizing your online e-commerce store and managing product management, categories, inventory, and payments:

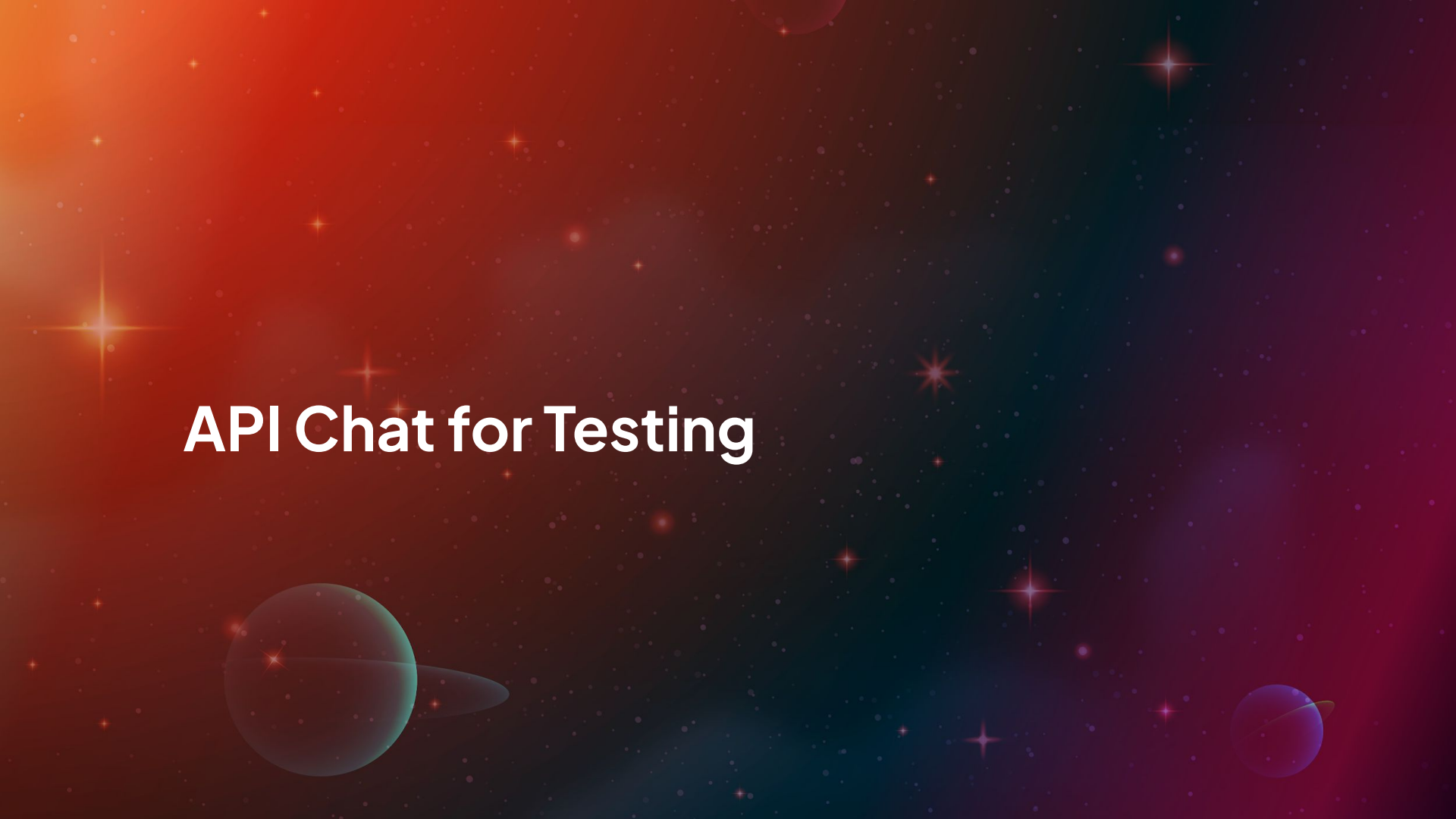
The chat window also displays buttons for 'ProductMgtA...' (Version:1.0.0) and 'PaymentAPI' (Version:1.0.0). At the bottom of the chat window, there is a text input field labeled 'Type a message...' and a send button. The chat window is highlighted with a red border.

API Marketplace Assistant is an early feature and can make mistakes. Verify its outputs.

What We've Accomplished



API Chat for Testing

The background is a vibrant space scene. It features a gradient from orange-red on the left to dark blue and purple on the right. Numerous stars of varying sizes and colors (white, yellow, orange, blue) are scattered across the field. In the lower-left, there is a large, teal-colored planet with a thin, dark ring. In the lower-right, there is a smaller, purple planet with a thin, dark ring.

API Chat for Testing

- **The Challenges**

- ◉ Manual test scenario creation and payload mocking are time-consuming.
- ◉ Managing sequences with multiple resource calls often requires coding and technical expertise.

- **How API Test Chat Helps**

- ◉ Allows engaging with APIs using natural language through API Chat.
- ◉ Eliminates the need for manual test scenario creation and payload mocking.
- ◉ Enables easy communication with APIs without coding, even for complex sequences.



API Chat for Testing

- **Business Impact**

- Streamlines and simplifies API testing, making it more efficient.
- Increases accessibility for non-technical users, improving collaboration.
- Reduces development time and effort, speeding up the API lifecycle.



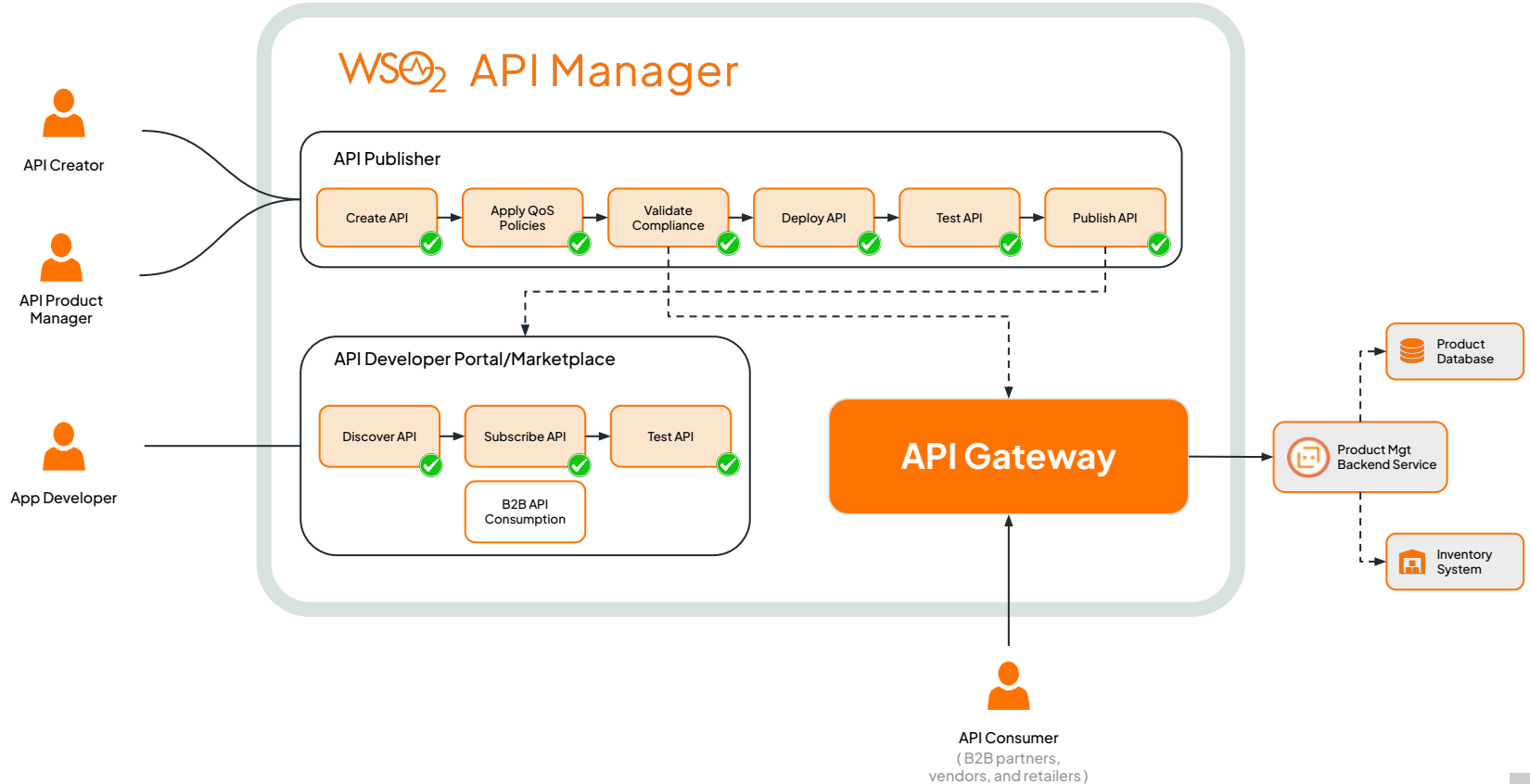
API Chat for Testing

The screenshot shows the API Manager console with a sidebar on the left containing links to API Console, API Chat, Comments, Documents, and SDKs. The main area features a header with 'DEVELOPER PORTAL' and 'API MANAGER' tabs, a search bar, and an 'ADMIN' user profile. A central message states: 'Your API is now equipped with an Intelligent Agent! Effortlessly test your APIs in natural language with our API Chat Agent powered by Azure OpenAI's cutting-edge language models.' Below this, there are three boxes for invoking API resources: 'Invoke all resources of the API', 'Invoke a single resource of the API', and 'Invoke an action involving multiple resources'. Each box has an 'EXECUTE' button and a copy icon. At the bottom, a text input field contains a natural language query: 'Add two new products to the catalog with the below information and update the inventory: Product ID: 12345 Name: Wireless Bluetooth Headphones Price: 79.99 USD Category: Electronics Brand: SoundX Stock: 50 Product ID: 67890 Name: Smart Fitness Watch Price: 129.99 USD Category: Wearables Brand: FitPro Stock: 100 Return the newly added products'.

The screenshot shows the API Chat interface within the API Manager console. The sidebar on the left is the same as the previous screenshot. The main area has a header with 'DEVELOPER PORTAL' and 'API MANAGER' tabs, a search bar, and an 'ADMIN' user profile. The 'API Chat' section is active, showing a chat window with a 'Try Out' button and an 'API Chat' button. The chat window displays a message from the user: 'Add two new products to the catalog with the below information and update the inventory: Product ID: 12345 Name: Wireless Bluetooth Headphones Price: 79.99 USD Category: Electronics Brand: SoundX Stock: 50 Product ID: 67890 Name: Smart Fitness Watch Price: 129.99 USD Category: Wearables Brand: FitPro Stock: 100 Return the newly added products'. Below the message, the chat agent responds: 'Certainly! Here are the results of the API calls I executed on your behalf:'. A list of six API calls is shown, each with a status icon (a green circle with a white checkmark), a status code (200), and a description of the call. The calls are: 'Executed POST /products', 'Executed PUT /products/12345/inventory', 'Executed POST /products', 'Executed PUT /products/67890/inventory', 'Executed GET /products/12345', and 'Executed GET /products/67890'. Each call has a copy icon and a dropdown arrow. At the bottom, a summary message states: 'The two new products have been successfully added to the catalog and their inventory updated: 1. Product ID: 12345 - Name: Wireless Bluetooth Headphones - Price: 79.99 USD - Category: Electronics - Brand: SoundX - Stock: 50 2. Product ID: 67890 - Name: Smart Fitness Watch - Price: 129.99 USD - Category: Wearables - Brand: FitPro - Stock: 100 You can retrieve the details of the newly added products using their respective IDs.'

Status	Message	Action
200	Executed POST /products	Copy
200	Executed PUT /products/12345/inventory	Copy
200	Executed POST /products	Copy
200	Executed PUT /products/67890/inventory	Copy
200	Executed GET /products/12345	Copy
200	Executed GET /products/67890	Copy

What We've Accomplished



B2B API Consumption

The background is a vibrant space-themed gradient transitioning from orange-red on the left to dark blue and purple on the right. It is filled with numerous small white stars and several larger, stylized planets. One large planet with a ring is visible in the lower-left, and a smaller one is in the lower-right. A bright star with a prominent cross-shaped lens flare is located in the upper-left.

B2B API Consumption with Organization Support

- **The Challenge**

- Managing API access across business units and partners requires structured control
- Different organizations need specific security, rate limiting, and governance policies
- Manual API provisioning increases administrative effort
- Limited visibility makes monitoring and governance complex

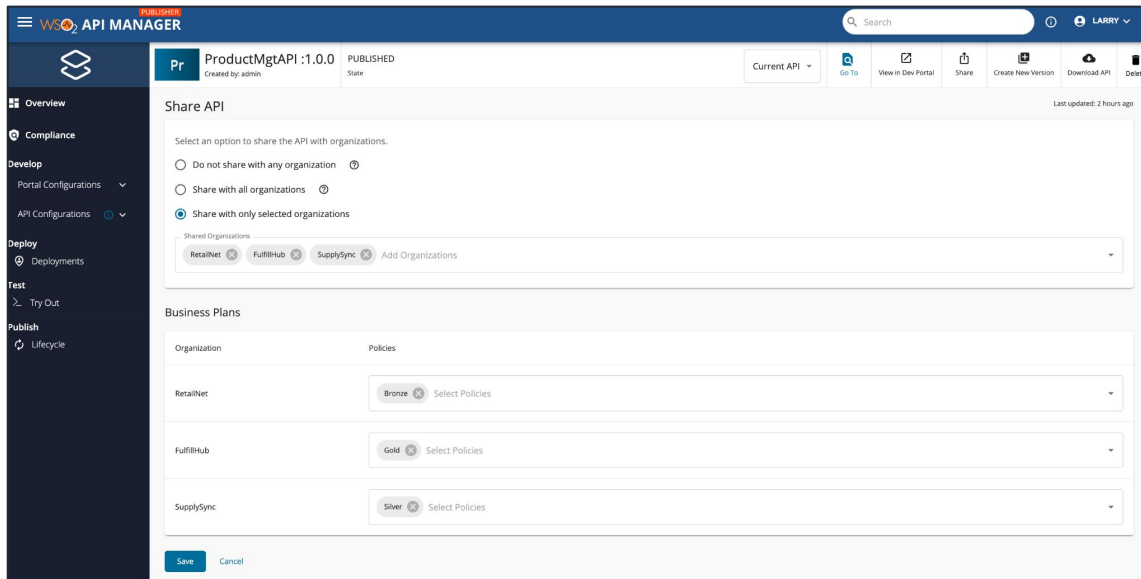
- **How B2B API Management Solves It**

- Role-Based Access Control (RBAC) defines access at organization and user levels
- Hierarchical API access structures visibility and policy enforcement
- Automated API provisioning simplifies onboarding for partners and teams
- Custom organization-specific policies enforce security, rate limits, and governance



B2B API Consumption with Organization Support

- Business Impact
 - Enhances security and governance with structured API access rules
 - Simplifies onboarding and management for partners and internal teams
 - Improves visibility and control over API consumption at the organization level

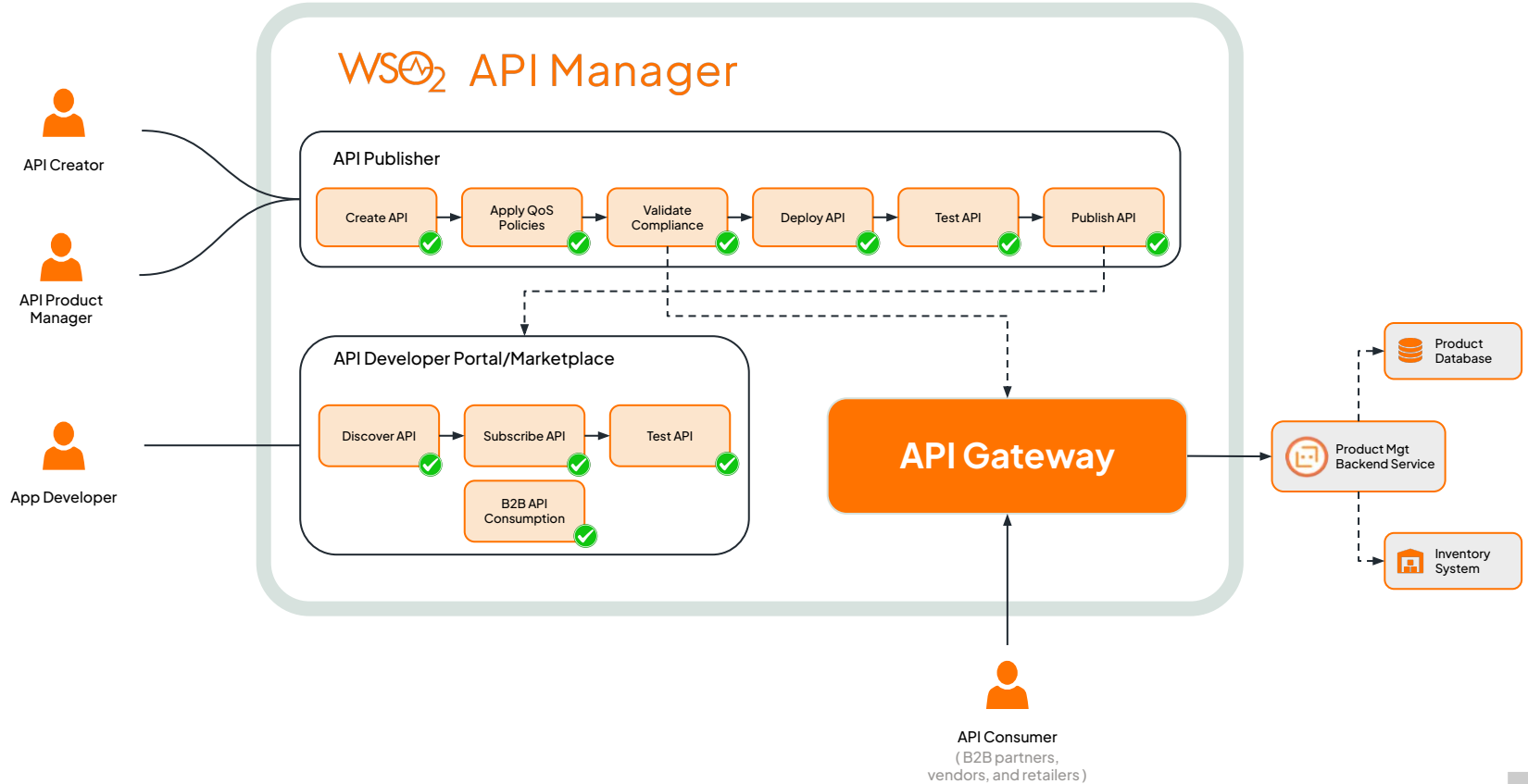


B2B Partner Organizations

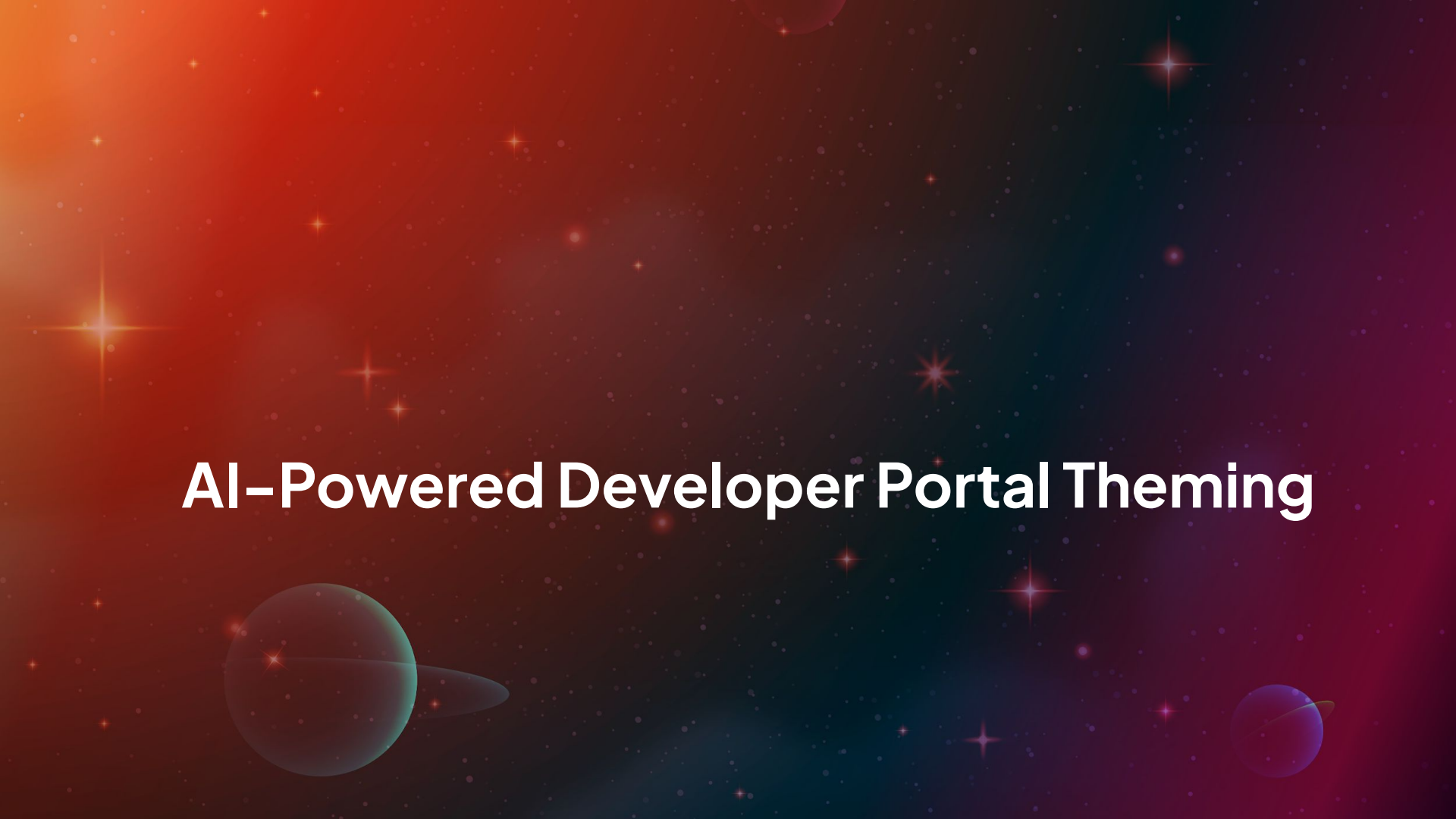
Username	Partner Organization	Role	Responsibility
Ethan	SupplySync (Supplier and Manufacturer)	App Developer (Internal/subscriber)	Discover, subscribe and utilize the Product Management API
Bob	FulfillHub (Warehouse and Fulfillment Center)		
Sophie	RetailNet (Retail Partner)		



What We've Accomplished



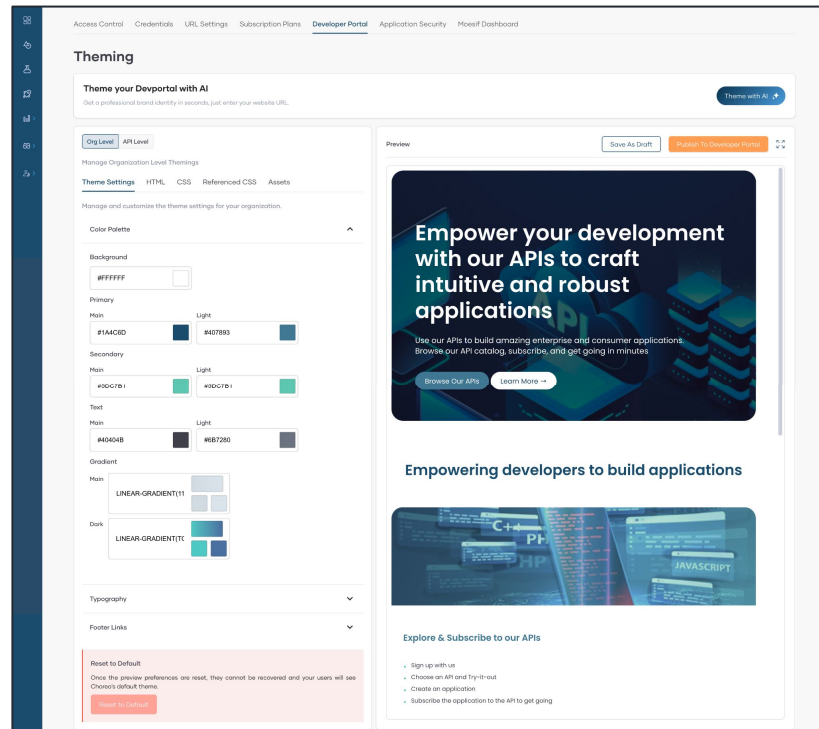
AI-Powered Developer Portal Theming

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AI-Powered Developer Portal Theming

- **Domain-Based Theming**
 - Users provide their organization's domain for AI-driven styling.
- **Brand Identity Extraction**
 - AI extracts colors, fonts, and styles from the organization's website.
- **Automated Customization**
 - AI applies a brand-aligned theme instantly.

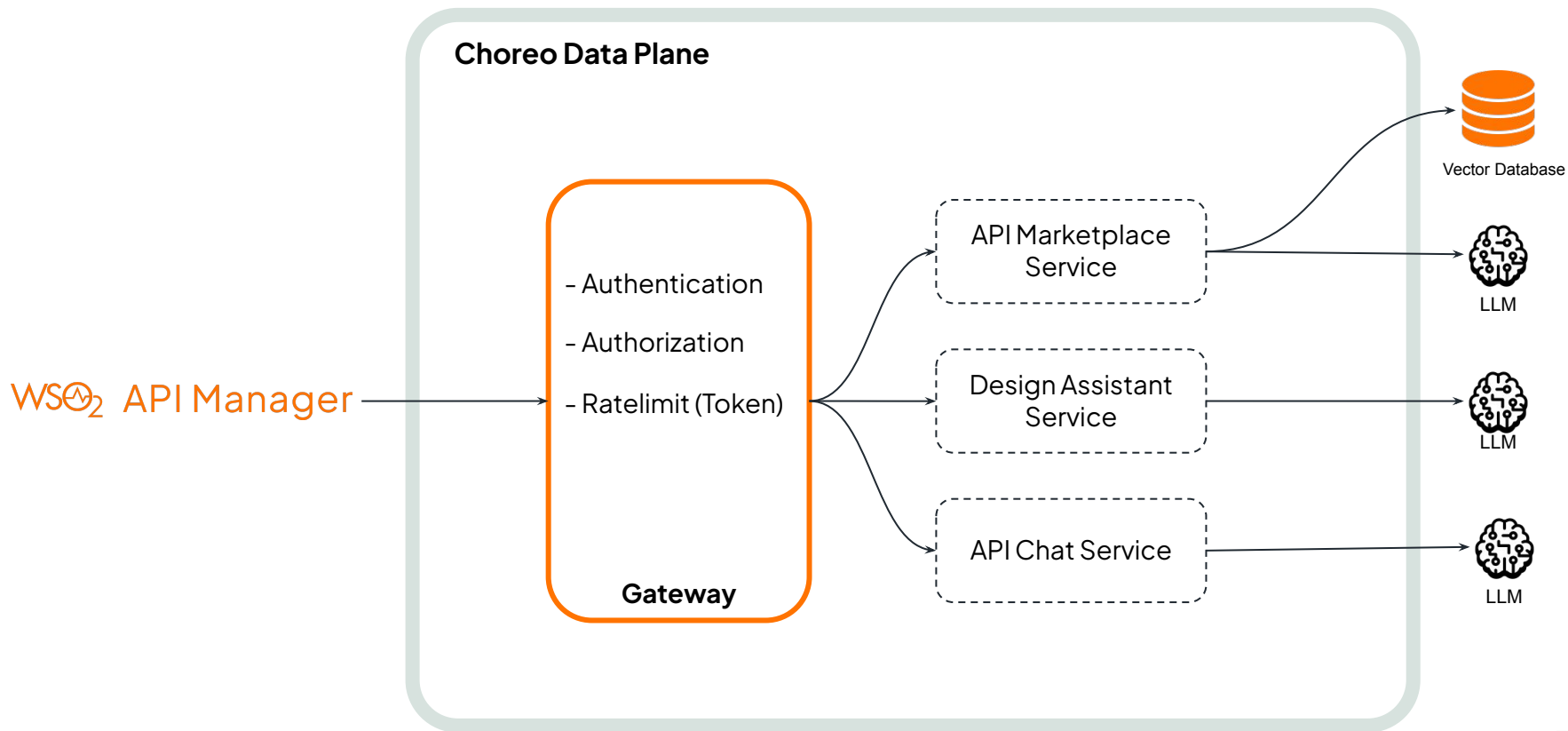
Note – This is currently available in Bijira (APIM SaaS)



AI Service Architecture



AI Service Architecture



Future AI-Powered Capabilities



Future AI Powered Capabilities

- **AI-Driven Documentation & Mocking**

- ⦿ Automated API Documentation – Generates OpenAPI documentation automatically, reducing manual effort.
- ⦿ AI-Powered API Mocking – Auto-generates realistic mock APIs to enhance API testing workflows.

- **AI-Enhanced SDK & API Development**

- ⦿ AI-Generated SDKs – Creates SDKs optimized for multiple programming languages.
- ⦿ Custom SDK Creation – Modify and customize SDKs based on project-specific requirements.

- **AI-Driven Insights & Analytics**

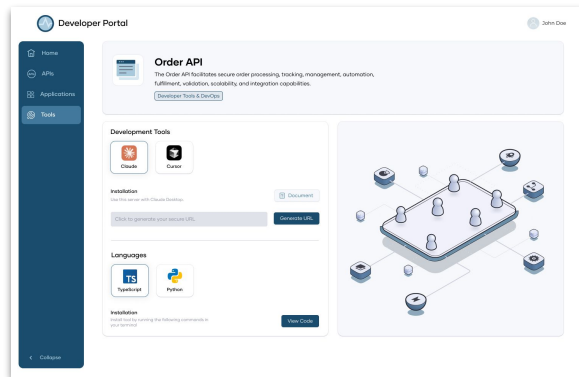
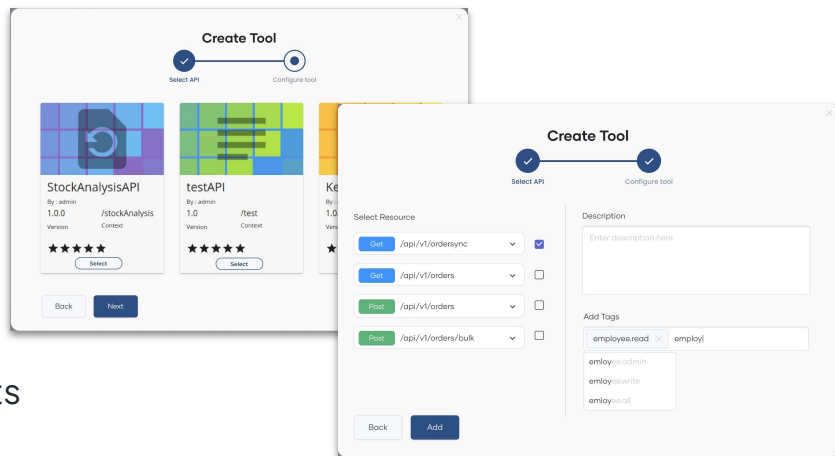


APIs Powering Agentic AI Workflows (Coming Soon!)



APIs Powering Agentic AI Workflows (Coming Soon!)

- Empower AI Agents
 - Utilize APIs as functional tools.
- API-to-Tool Conversion
 - Transform APIs or resources into AI Agent compatible tools.
- Enhanced Metadata for AI Agents
 - Provide structured metadata to help AI agents understand and use tools effectively.
- Tool Marketplace Integration
 - Push tools for easy access and adoption.
- Seamless MCP Integration within gateway
 - Easily integrate tools with MCP (Model Context Protocol) support.



Key Takeaways & Next Steps



Key Takeaways & Next Steps

- **AI-Driven Efficiency**
 - ⦿ From design to governance, AI enhances automation, compliance, and security.
- **Simplified API Management**
 - ⦿ AI-powered features streamline branding, governance, testing, and consumption.
- **Stronger Security & Governance**
 - ⦿ AI enforces policies, detects anomalies, and optimizes CI/CD workflows.
- **Apply AI in Real-World Projects**
 - ⦿ Leverage AI-driven API management with WSO2 API Manager.
- **Next Steps**
 - ⦿ Explore AI-powered capabilities and integrate them into your API workflows with WSO2 API Manager.



Try WSO2's API Management Solutions Today!

- Run Anywhere

- ◉  WSO2 API Manager - <https://wso2.com/api-manager>

WSO₂ API Manager

- WSO2 APIM SaaS - Bijira

- ◉  Sign Up & Explore Bijira - <https://bijira.dev>
- ◉  For more information - <https://wso2.com/bijira>



- Lab Session Materials

- ◉  <https://github.com/wso2con/2025-BCN-apim-tutorial>

Upcoming API Management Sessions

Upcoming API Management Sessions

- Conference Day 1 (Tuesday, March 18th)

**Unified
Management of
Ingress and
Egress Across
Multiple API
Gateways →**

Sanjeewa
Malalgoda
Director of
Engineering, WSO2

Arshardh Ifthikar
Technical Lead,
WSO2



Upcoming API Management Sessions

- **Conference Day 3 (Thursday, March 20th)**

**API-First Architectures
for Modernization →**

Thilini Shanika
Associate Director and Head
of Engineering, APIM BU,
WSO2

**Managing Egress APIs
for AI and SaaS
Applications →**

Arshardh Ifthikar
Technical Lead, WSO2

**Advancing API
Governance for
Scalable Systems →**

Vidura Gamini Abhaya
Vice President, Solutions
Architecture, WSO2

**Federated API
Management for
Enterprise Agility →**

Sanjeewa Malalgoda
Director of Engineering,
WSO2

**Bijira: API PaaS for the
Cloud and AI-Native
Era →**

Pubudu Gunatilaka
Associate Director &
Architect, WSO2

**Customer Panel:
Journeys in Enterprise
Modernization Through
API Management →**



Question Time!



The background is a dark, deep blue space filled with a vibrant, multi-colored nebula or galaxy. Numerous 3D cubes of various sizes are scattered throughout the scene, some appearing to float and others as if they are falling or moving. The cubes are primarily blue and purple, with some showing red and orange highlights. A large, dark blue sphere is visible on the left side. The overall effect is a sense of depth and movement.

Thank you!

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