

WSO2CON2025

Advancing API Governance for Scalable Systems



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Modern Organizations with Digital Channels



API Usage in Modern Organizations



API Usage in Modern Organizations

Forbes

INNOVATION

Why Almost Every Company Is Now An API Company

By [Iddo Gino](#), Forbes Councils Member.
for [Forbes Technology Council](#), COUNCIL POST | Membership (fee-based)

Sep 1

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INNOVATION | PRODUCT DEVELOPMENT | PRODUCT DEVELOPMENT |

The API Economy: It's Game Time

HBR

Growth Strategy

The Strategic Value of APIs

by [Bala Iyer](#) and [Mohan Subramaniam](#)

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API Usage in Modern Organizations

Average Number of API endpoints per Organization – 613

(State of API Security 2024 - Imperva)

55% of the Organizations have at least 500 APIs

(2025 Global State of API Security - Traceable)

The background is a vibrant space scene with a color gradient 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 planet in the lower-left is a reddish-orange sphere with a thin ring. Another planet in the lower-right is a blue sphere with a thin ring. A large, bright star with a prominent four-pointed diffraction pattern is located in the upper-left quadrant.

**Any organization that uses digital channels
are using scalable systems**

Characteristics of Scalable Systems

- Powered by a large number of APIs
- Large User base
- Performance levels
- Zero Downtime



Challenges posed by Scalable Systems

- Powered by a large number of APIs
 - API Sprawl - Inconsistent API Styles, design and implementation standards, duplicate functionality and increased security vulnerabilities
 - Broader attack surface
 - Management overhead, ensuring seamless inter-service communication
 - Tracking and Managing API usage and dependencies
- Large user base
 - Multiple entry (attack) vectors
 - Authentication and Authorization challenges
- Performance levels
 - Implementations by different teams may lead to bottlenecks
- Zero Downtime
 - Changes to APIs may disrupt system uptime



Challenges posed by Scalable Systems

Each API that powers these systems need to be designed and implemented with scalability, performance and security in mind

This can only be ensured through API Governance !



API Governance (and it's undeniable need)

API Governance is the systematic management of APIs through their entire lifecycle. Governance practices includes processes, policies, standards and tools that organizations use to design, develop, deploy and manage APIs

In modern API development, governance is not about controlling and restricting the API design or usage, but *enabling teams to be innovative, encourage collaboration* and be agile while ensuring security, compliance, consistency are achieved, all of which is important part of an organization's strategic objectives

Modern API Management = API Governance

The background is a vibrant space scene with a color gradient from orange-red on the left to dark blue and purple on the right. It is filled with numerous stars of varying sizes and colors, some with prominent four-pointed diffraction patterns. In the lower-left quadrant, there is a large, glowing cyan planet with a thin, dark ring. In the lower-right quadrant, there is a smaller, glowing purple planet with a thin, dark ring.

API Governance in Scalable Systems

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 planet on the left is light blue with a white ring, and another on the right is dark blue with a thin white ring. The overall aesthetic is futuristic and high-tech.

Advancing API Governance for Scalable Systems

- Establish clear guidelines, standards and policies for creating APIs
 - API design principles, security protocols, business models and Terms of Service
- API First development and well defined API lifecycle
- Maintain a clear inventory of APIs and services
- Promote discovery and reuse of existing APIs
- Track API dependencies and API Usage
- Clearly defined roles and responsibilities
- Trust but verify



Advancing API Governance for Scalable Systems

Design-time Governance

- Standards and Guidelines
- Security and Access Control
- Compliance and Legal Standards
- API Design Tools and Automation
- Reviews and Workflows

Run-time Governance

- Security and Access Control
- Traffic Management
- Monitoring and Observability
- Versioning and Deprecation

Governing AI APIs

As organizations increasingly expose AI models through APIs, governance is essential to:

- Maintain the quality and reliability of AI-powered services
- Ethical and responsible usage of AI
- Protect sensitive data used by AI models
- Control access to AI resources



Use of AI in Advancing API Governance

- Automated API Design, Creation and Deployment
- API Documentation and SDK Generation
- Identify and Manage Common Business Objects
- Intelligent Versioning and Retirement of APIs
- Predictive Threat Modeling
- Automated Security Tests
- Monitor sensitive data on network
- Performance Monitoring and Optimization
- Predictive Maintenance and Automatic Incident Response



Real World Examples – Successful API Gov implementations



- Early period of Uber
 - Monolithic architecture with different teams creating APIs
 - No governance practices

This resulted in

- Inconsistent API design across services
- Duplicated functionality and redundant APIs
- Poor Documentation and discoverability
- Security vulnerabilities due to inconsistent authentication
- Performance bottlenecks as request volumes grew

Moved to a Microservices architecture with API Gateway and Governance tools
Transition took years, cost millions

Real World Examples – Successful API Gov implementations

NETFLIX

- Initially APIs were built in an ad-hoc manner

This resulted in

- Fragmented APIs that were difficult to maintain across different device platforms
- Inconsistent performance across their expanding global footprint
- Difficulty scaling to handle exponentially growing traffic
- Challenges integrating third-party content providers
- Reliability issues that caused service disruptions during peak viewing times

Netflix underwent a massive re-architecture effort moving to microservices and standardizing API governance. Implemented standards across their ecosystem

WSO2 Customers

Finance				 Previously AXA		
Healthcare						
Government						
Retail						
Technology						
Telco						
Education						
Transport						
Hospitality						

Key Takeaways

The background is a rich, multi-colored space scene. It features a gradient from warm orange and red on the left to cool 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 quadrant, there is a large, glowing blue planet with a thin, dark ring. In the lower-right quadrant, a smaller, similar blue planet with a ring is visible. The overall effect is a sense of vastness and cosmic wonder.

Key Takeaways

- Modern organizations use scalable systems powered by thousands of APIs
- The proliferation of APIs could result in significant security vulnerabilities, performance issues and service interruption, if not managed properly
- API Governance can play a significant role in bringing order to this chaos
- Standards and practices can be introduced iteratively with the buy-in from all stakeholders
- A governance framework can be established overseen by a committee that represents all stakeholders
- AI and Automation can assist in increasing operational efficiency

Interested in knowing more ?

- Further Reading - [Optimizing API Governance in a Decentralized Architectural Landscape](#)



18 Feb, 2025

Optimizing API Governance in a Decentralized Architectural Landscape



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The background features a dark, space-like environment with a nebula in shades of red and orange. Scattered throughout are various 3D geometric shapes, including cubes and rectangular prisms, rendered in a blue-to-purple gradient. Some shapes have a glowing effect, and there are also some smaller, fainter shapes. A large, dark sphere is visible on the left side.

Thank you!

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