



# Government Wide API Management

## A Cornerstone in the Journey toward Open Government

Mohamed Frendi

Director of R&D at Innovation, Science and Economic Development Canada

Andrew Pitt

Specialist Solutions Architect, Red Hat

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# Who is ISED?

# Innovation, Science and Economic Development Canada

About Innovation, Science, and Economic Development Canada (ISED):

- Foster a growing, competitive and knowledge-based Canadian economy.
- Help Canadian businesses grow through trade and innovation and promotes increased tourism in Canada.
- Position Canada as a global centre for innovation.

# What is the Government of Canada API Store?

# Government of Canada API Store

The API Store is the central repository of Federal Department APIs!

The goal of the API Store is to solve a number of important problems for the entire Government of Canada:

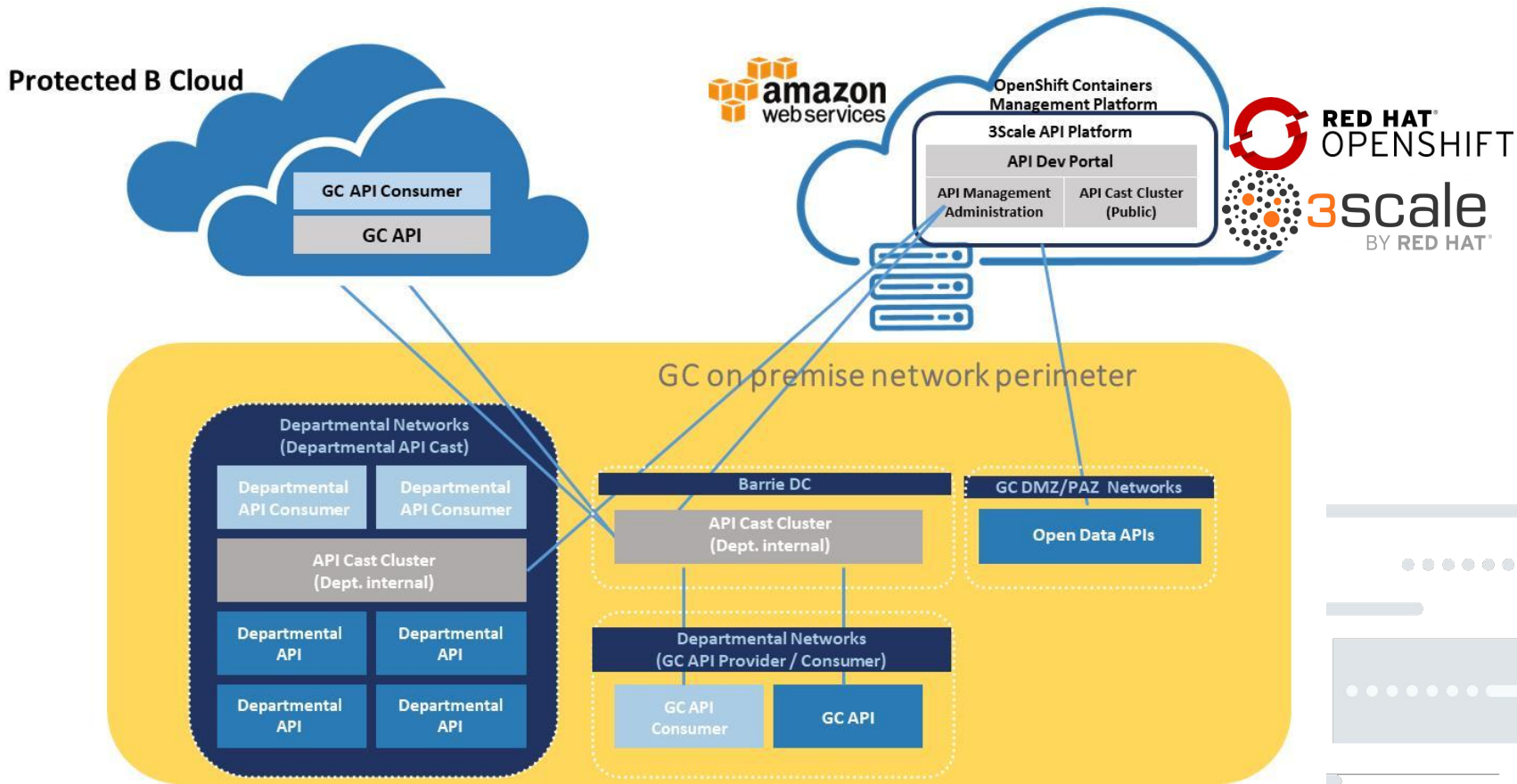
- **Discoverability:** How do you find useful APIs?
- **Security:** How do you secure APIs in a consistent fashion?
- **Performance:** Protect systems with out-of-the-box caching and rate limiting, and quotas.
- **Lifecycle management:** Provide guidance and tools for proper API lifecycle management
- **Process:** Centralize the system, but distribute the responsibility to decrease bottlenecks.

APIs and Government data are the cornerstone of Open Government!

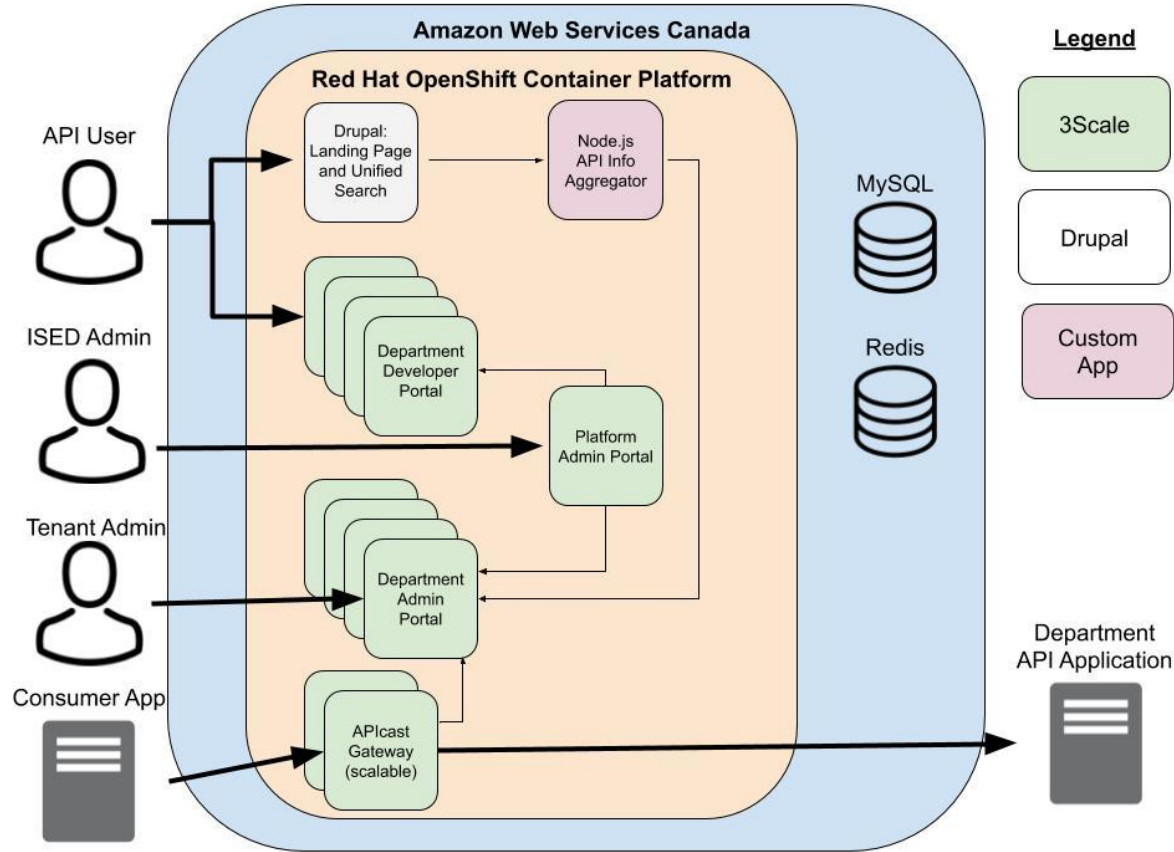
# Journey to the API Store

- In 2014, ISED investigated Service Oriented Architecture (SOA).
- Developers knew SOA was too heavy and expensive for ISED's needs.
- An open source API Gateway was implemented as part of a yearly "CodeSprint" (internal hackathon).
- Caught the attention of Treasury Board Secretariat: API Management was on their radar.
- A commercial product was chosen for 1-year, GC-wide API Store Pilot.
- Many important lessons learned during pilot, but the product didn't meet GC needs.
- ... enter Red Hat 3Scale API Management!

# API Store Architecture



# API Store Architecture





# Discoverability

# Where are the APIs?

The Government of Canada has more than 40 Departments.

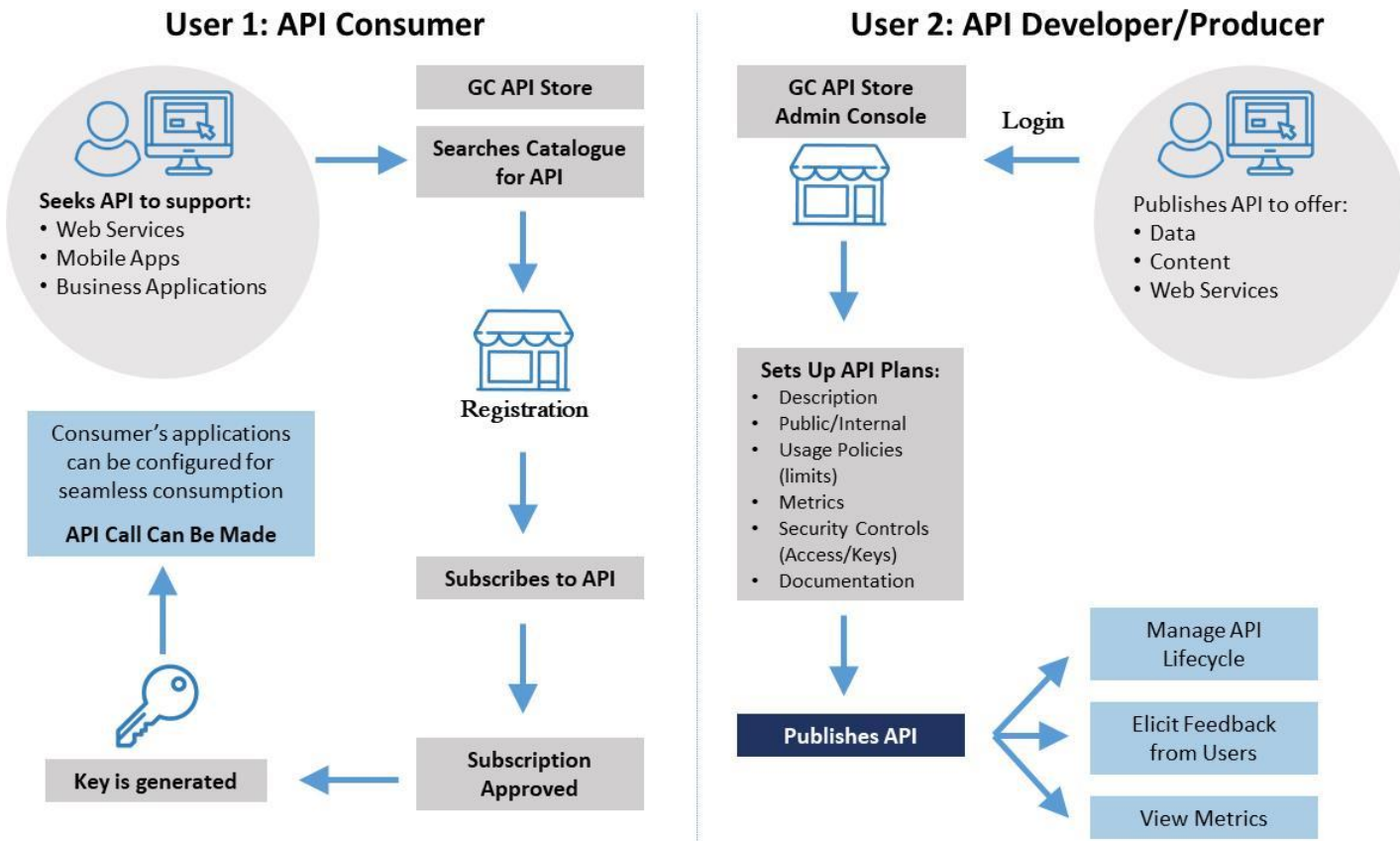
How would development teams in these departments ever find useful APIs?

When Departments publish their APIs to the API Store:

- Other Departments and external consumers can easily find them.
- They can determine the business owner and technical contact for the API.
- They can sign up for the API, and in most cases, start using it immediately.
- They have documentation on how the API is meant to be used.

This discoverability alone is a huge benefit to the Government of Canada, Canadian Business, and citizens in general.

# API Store User Experience



# Security

# Consistent Security

- Existing APIs are mainly point-to-point with many different forms of security (or very little).
- API Store provides a consistent security model to protect systems.
- API Store handles registering API users, provisioning tokens, and handling API quotas.
- Users who abuse the system can be individually quarantined.
- Systems that expose APIs are protected by the 3Scale APIcast Gateway.

# Performance

# Performance and Analytics

- Not all systems that produce APIs have built-in functionality to perform tasks like:
  - rate limiting,
  - user quotas,
  - caching
- The API Store provides this functionality out of the box, so departmental systems don't have to re-invent the wheel and implement these features.
- Report on API usage, performance, and error rates.
- Container-based. Gateways can be automatically scaled to handle demand.

# Lifecycle Management



# Lifecycle Management

- Lifecycle management isn't completely handled by any tool, some education is required.
- 3Scale does provide the functionality necessary for APIs to have a proper lifecycle, but it is up to departments to use them properly.
- This is where documentation and education come in.
- Onboarding process is key!

# Process

# Process: Removing the Bottleneck

A centralized API hub solves many issues around discoverability and consistency, but it can also act as a huge bottleneck if it is centrally managed.

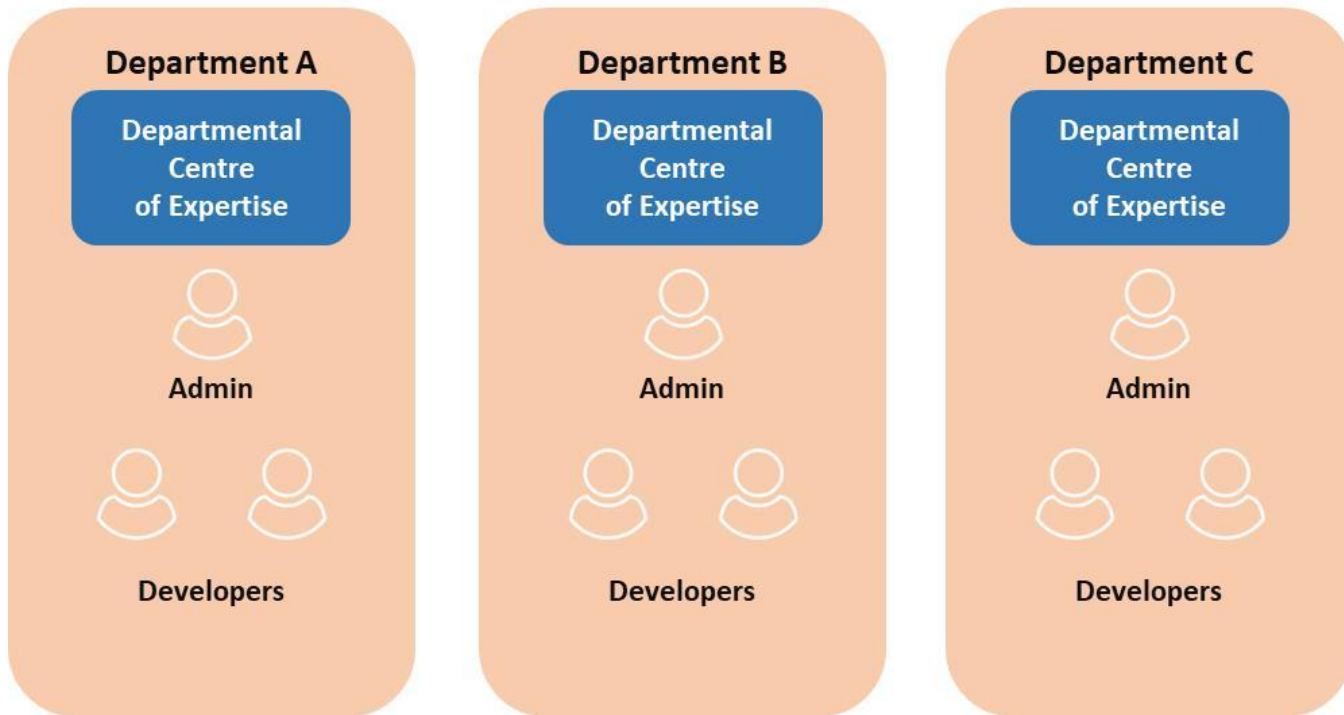
To remove as much friction as possible, ISED leveraged the multi-tenant capabilities of 3Scale to give each Department their own “shelf” in the store.

- As the central administrators of the system, ISED creates a tenant for each Department.
- Each Department has one or more admins responsible for their own tenant.
- These departmental admins grant access and rights to developers in their organizations.

This allows ISED to support the API Store with a small team, while delegating much of the day-to-day work and education involved in publishing and maintaining APIs to the Departments.

# API Store Operational Model

GC API Store Centre of Expertise (ISED)





# One Month Later...



MENU ▾

[Register/login](#)

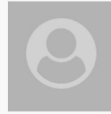
## Opening the door for future digital services

Welcome to the Government of Canada new API Store, our one-stop shop for Application Programming Interfaces (APIs). We encourage you to use these APIs – which provide a wealth of government data and information – to build new applications and services for Canadians. We welcome [your feedback](#) to this version of the store. Check back regularly as we continue to add more APIs to the store.

### Start now by completing these 4 simple steps!

**EXPLORE**

View the list of services and pick what you'd like to use.

**REGISTER/LOGIN**

Create your user account to gain access.

**SUBSCRIBE**

Pick a plan and subscribe for each API you want to use.

**TEST/USE**

Test your key and use it for your project!

<https://api.canada.ca>

## EXPLORE APIs

Not sure what you are looking for? Have a look through our listing.

Filter API listing:

Showing 1 to 13 of 13 entries |

**Canadian Nutrient File (CNF)**

The Canadian Nutrient File (CNF) is the standard reference food composition database reporting the amount of nutrients in foods commonly consumed in Canada.

Health Canada

**Clinical Trial Database (CTA)**

The Clinical Trials Database provides to the public a listing of specific information relating to phase I, II and III clinical trials in patients. The database is managed by Health Canada and provides a source of information about Canadian clinical

Health Canada

**Licensed Natural Health Products Database (LNHPD)**

The Licensed Natural Health Products Database (LNHPD) contains information about natural health products (NHPs) that have been issued a product licence by Health Canada.

Health Canada

# API Store: After the First Month

- Apart from early adopter departments, many other departments are now requesting onboarding to the API Store as well as “API Training”. They see the value the API Store has to offer and want to contribute.
- ISED is collaborating with Treasury Board Secretariat, the Canadian School of Public Service, and Red Hat to build an API curriculum to support departments.
- Government of Canada has issued a directive on APIs, requiring all Departments to publish their APIs to the API Store.
- APIs in Government are gaining visibility.
- Proving out ISED Cloud Strategy.
- A first of its kind, not only for the Government of Canada, but world wide.
- A true partnership with Red Hat!

# Even More...

- Generating interest from many D9 countries.
- Interest from some Provinces.
- Offer from one country to hire ISED staff to build them the same thing!
- Fully open source solution!
  - Red Hat OpenShift Container Platform
  - Red Hat 3Scale API Management
  - DrupalWxT
  - PostgreSQL
  - MySQL
- Working towards open sourcing ISED code and policy.



PostgreSQL



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Experience  
Toolkit



RED HAT  
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THANK YOU



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