



# APIs for Governments: why, what & how

*APIs for Digital Government study findings*

European Commission - Joint Research Centre  
Digital Economy Unit

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*Keynote speech at the APIdays Paris, Global edition*  
*10<sup>th</sup> December 2020*

# JRC - Digital Economy Unit

API team context

## The Joint Research Centre (JRC)

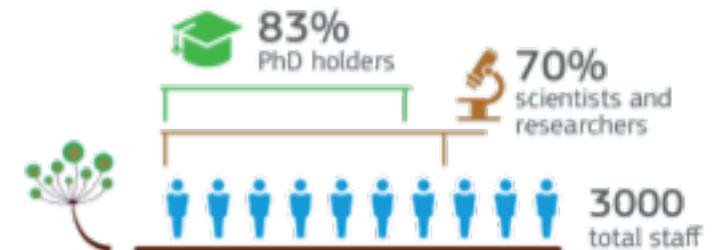
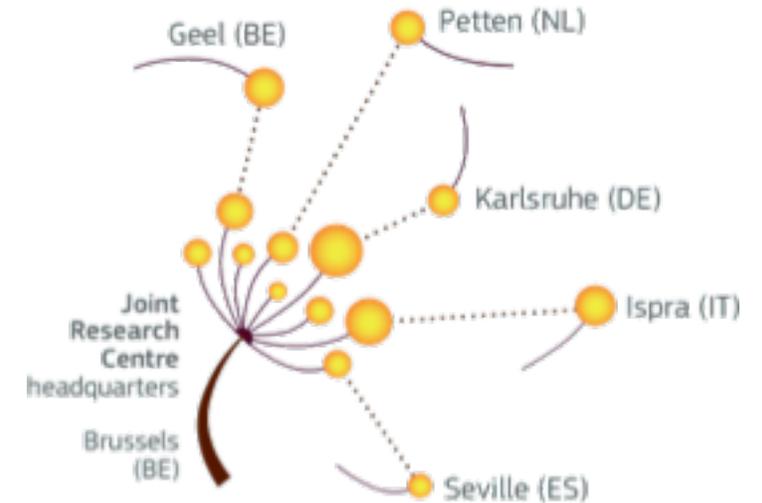
European Commission's science and knowledge service carrying out research to provide independent scientific advice and support to EU policy.

## The JRC B6 Digital Economy Unit

Investigates how the on-going digital revolution and Information and Communications Technologies are affecting the economy and the digital transformation of Governments.

## The APIs4DGov & API4IPS projects

**API team** analyses opportunities and challenges derived from API adoption for the innovation of public administration and policy making .



# APIs, the New Normal & Governments

APIs role in the digital transformation of the public sector

December 8, 9 & 10, 2020

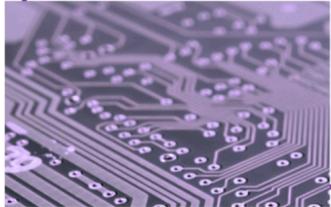
**Responding to the New Normal with APIs**  
**for Business, People and Society**

Apidays Paris becomes

**apidays**  
**LIVE**  
**PARIS**

# A Europe fit for the Digital Age

Actions: APIs' links to policy making



## Excellence and trust in artificial intelligence

Empowering businesses to start, scale up, innovate and compete on fair terms



## European data strategy

Promoting social and environmental sustainability, and making emission-heavy processes more efficient through digital technologies



## European industrial strategy

Using the green and digital transformations to empower industry and small and medium-sized enterprises (SMEs)

## Policy areas

### Data protection

Reforming data protection to give people control over their data and help businesses comply. Ensuring that non-EU countries protect data of EU citizens.

### Better access to online goods for consumers and businesses

Helping to make the EU's digital world a seamless and level marketplace to buy and sell.

### The right environment for digital networks and services

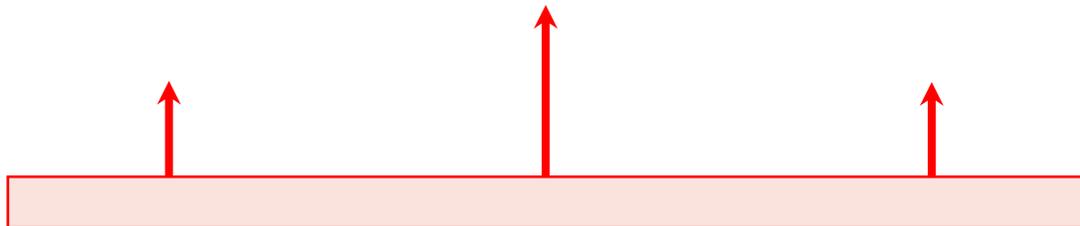
Designing rules that match the pace of technology, such as the rollout of next-generation 5G mobile connections or the Action Plan on Financial Technology.

### Economy and Society

Ensuring that citizens and businesses can take full advantage of the opportunities digitalisation can offer.

### European Data Strategy

To make sure the EU becomes a role model and a leader for a society empowered by data



# Why APIs in government?

APIs are technical enablers of the Digital Transformation of Government



## APIs support to Digital Government objectives:

To **transform** into a robust digital ecosystem

### → *Public Administration innovation*

- *flexible* to adapt to the advances in technology
- able to *rewire* the *interactions* with citizens, business, infrastructure ..

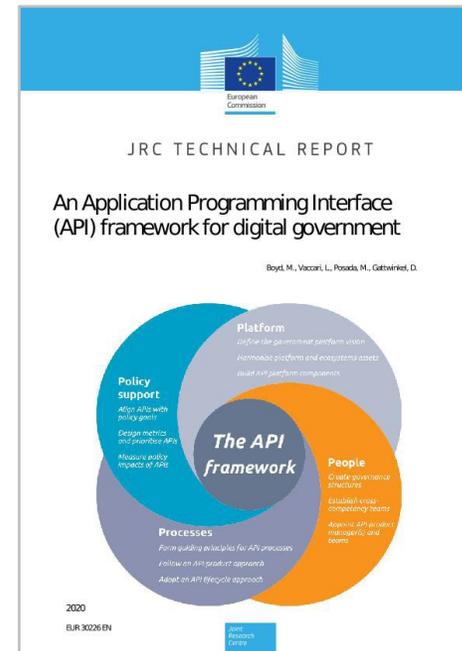
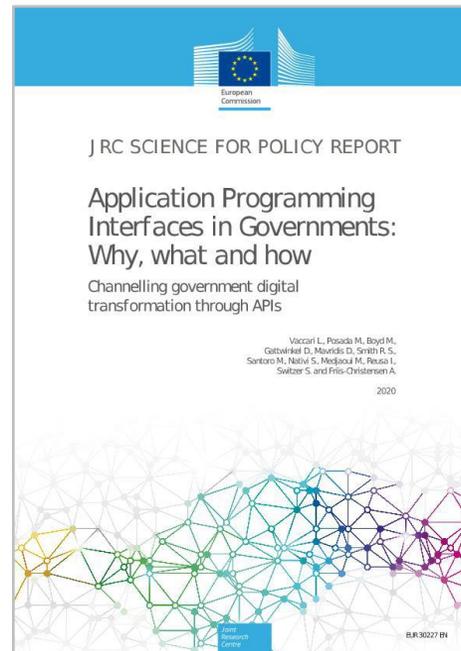
To **control and monitor** digital environments

### → *Policy Making innovation*

- *Streamline information flows* to support decision-making and monitoring

# API for Digital Government tools and reports

*APIs are technical enablers of the Digital Transformation of Government*



- [1] [APIs in Governments: why, what and how](#)
- [2] [API Framework for Government](#)
- [3] [API Framework Self Assessment Tool](#)

# APIs in governments

Landscape, motivations & implementation of API strategies in EU

- Research methods
- Trends, cases and cost and benefits of APIs in governments
- API standards and specifications and API best practices
- An API framework for governments and policy recommendations

1. What is the status of API strategies in governments?
2. Which actions should be taken for government API adoption?



## What?

- Trends, definitions, glossary, policy context
- Landscape: cases, strategies, standards, best practices
- Key enablers, drivers, barriers, risks

## Costs and benefits

- Costs and challenges
- Benefits
- Social highlights

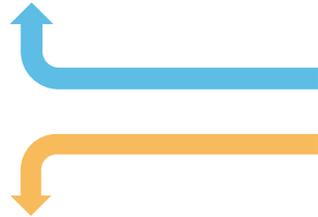
## How?

- EU API framework
- Thematic areas and technologies to focus on
- Policy recommendations



# Our research methodology

- Cases
- Standards
- Best practices
- Trends
- Domains
- Technologies



- Costs
- Benefits
- Drivers
- Enablers
- Barriers
- Risks

**Desk research**

- Governments sites
- EU Policy web sites
- Previous studies
- ProgrammableWeb
- Data catalogues

**Interviews**

- 7 Case studies
- API experts
- Private companies
- Pilot

**Online surveys**

- API strategies
- FW validation
- INSPIRE conference

**Workshops**

- API strategies
- INSPIRE hack
- APIdays events

- Strategies
- Recommendations
- Private sector
- Metrics
- Technologies
- Internal issues & gains

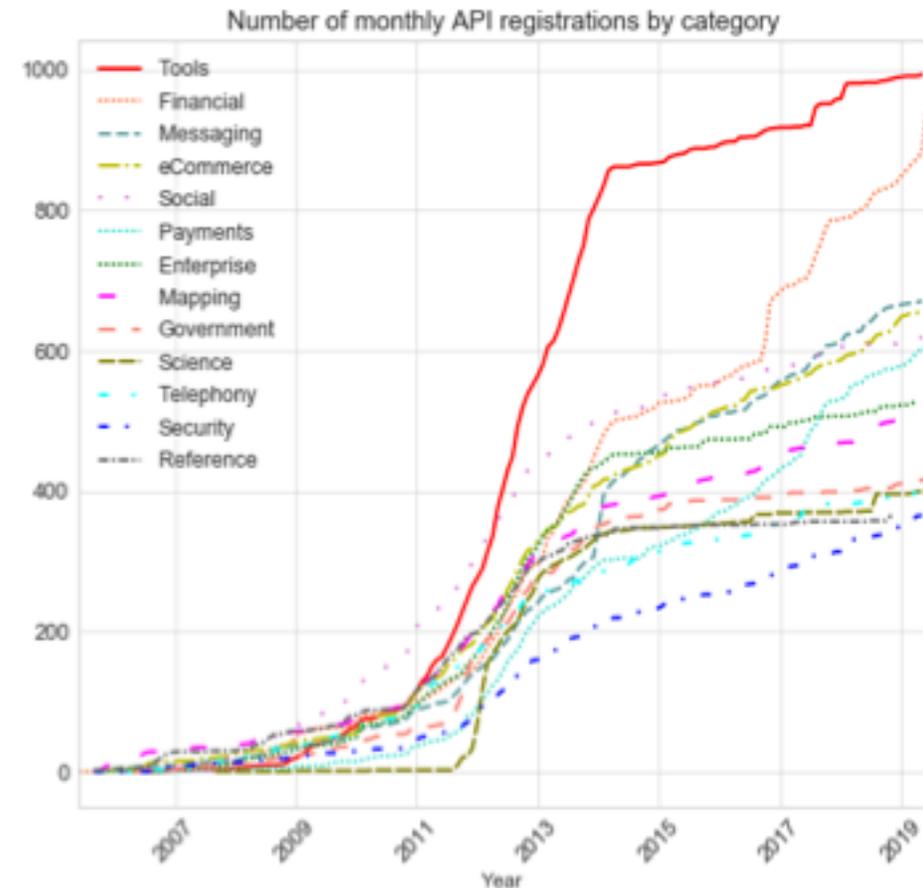


- State of the art in EU
- Technical issues
- Private sector solutions
- Knowledge transfer
- Validation
- Community building

(Source: ICT Impact Assessment Guidelines, ISA<sup>2</sup> Program)

# What: Trends in government APIs

Cumulative registration of APIs in ProgrammableWeb.com's API directory

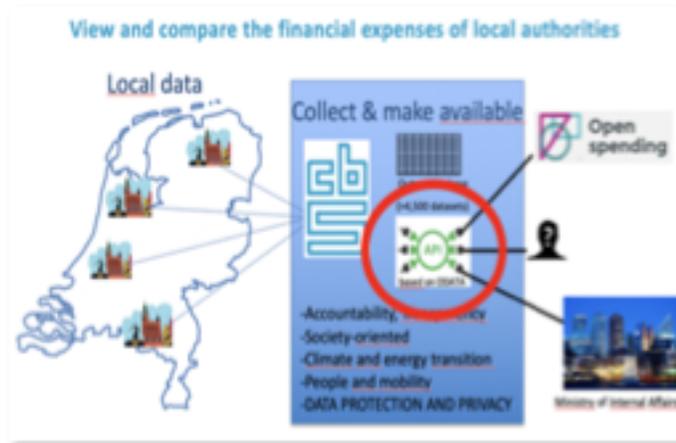


Source: JRC, own elaboration based on ProgrammableWeb.com

# API cases in government

From single APIs to digital ecosystems

API as product



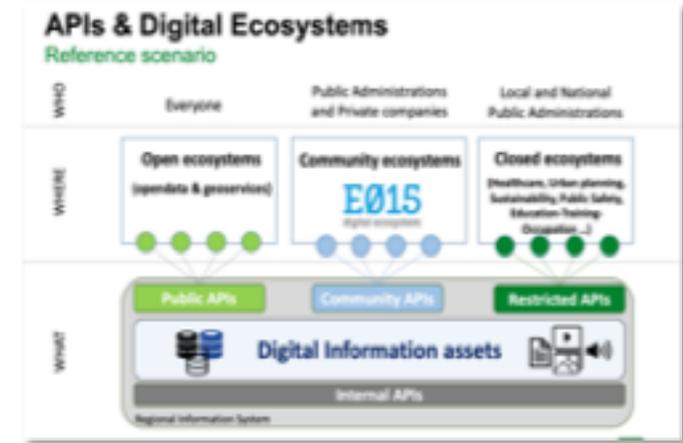
The Netherlands statistical office API

Portfolio management



French government public API registry

API-enabled digital ecosystems



The E015 system in Lombardia, Italy



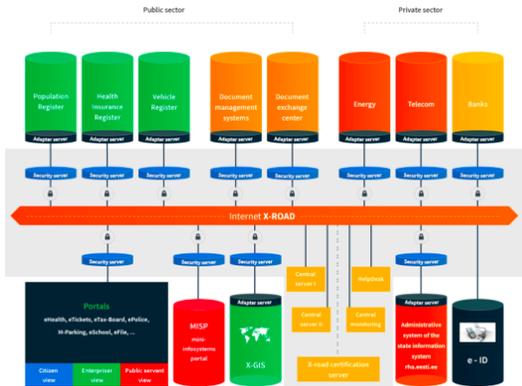
# Benefits: Efficiency gains

- Reduction of costs
- Improve the quality of digital assets
- Improve internal processes and digital public services
- Enhance reporting flows in government processes
- Improve access to (Open) data

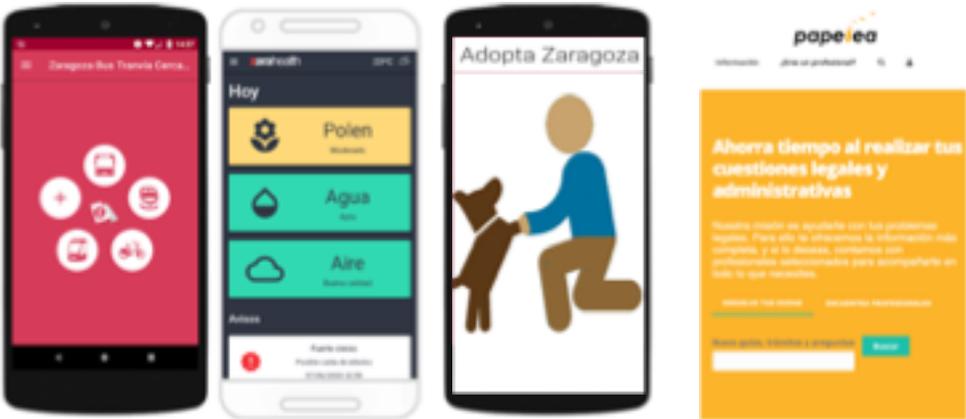
# Benefits: Digital transformation

- Fostering innovation in the public sector
- Enablement of digital ecosystems
- Economic opportunities
  - Help SMEs reducing costs of establishing and running business
  - Easier access to Open Data can further stimulate new economic development

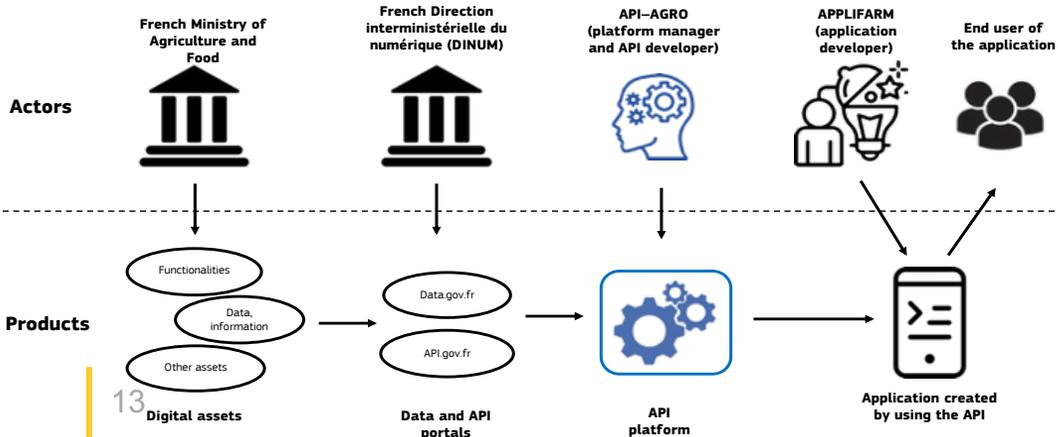
## X-Road



## Zaragoza



## API-Agro



- A lot of different missions
  - 282 different job mission in RIME (Répertoire Interministériel des Métiers de l'Etat)
- A lot of Business Domains
  - with limited interactions between each domains

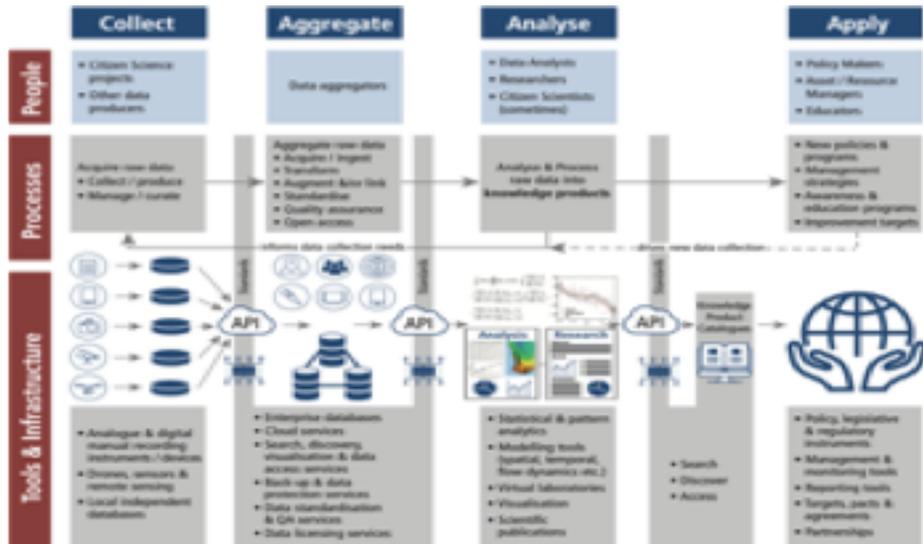


Organizations which design systems are constrained to produce designs which are copies of the communication structures of these organizations. Melvin Conway (1967)

Source: (1) <https://www.fonction publique.gouv.fr/repertoire-interministriel-des-metiers-de-etat>  
 (2) <https://referenciel.modesd'occupation.gouv.fr/information-du-systeme-d'occupation-de-terre>

DINUM

(Source: DINUM - France)



(Figure: A conceptual model for a digital information supply chain. Source: (Brenton et al., 2018)

# Costs

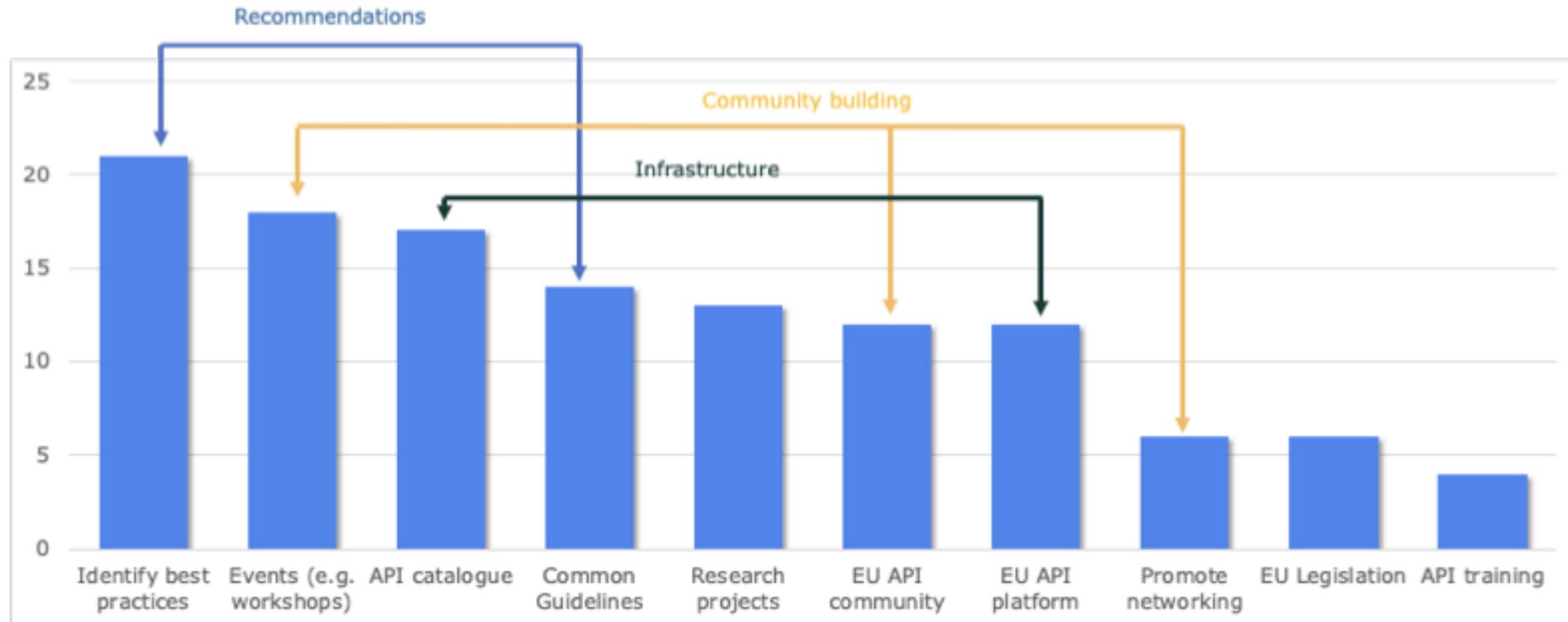
- Implement a whole of government platform vision and re-engineering existing systems towards APIs
- Cultural change, need to acquire new skills

# Challenges

- Increase the cyber-security
- Adhere to legislation (e.g. adoption of GDPR)
- Improve the policy understanding and support

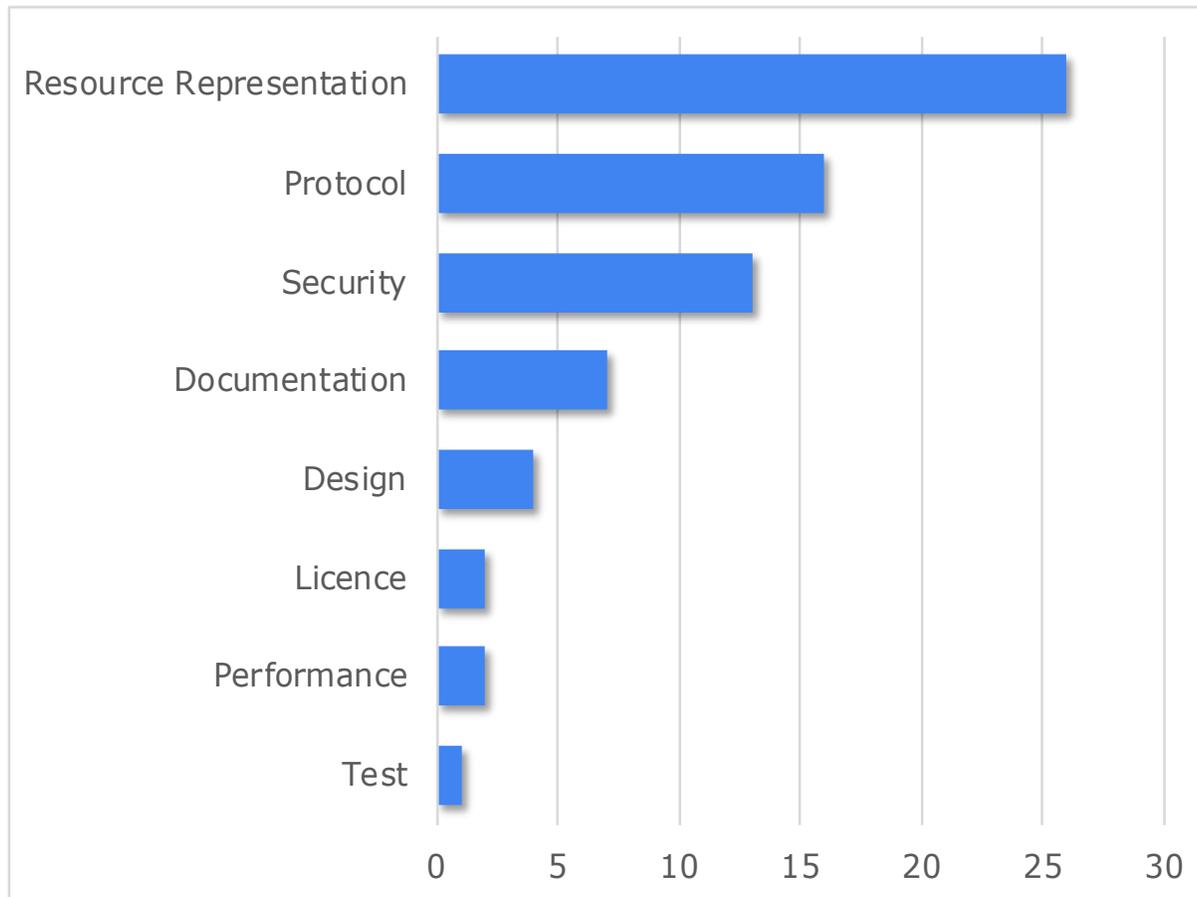
# How?

## Stakeholder consultation



(Source: own elaboration)

# API standards and specifications

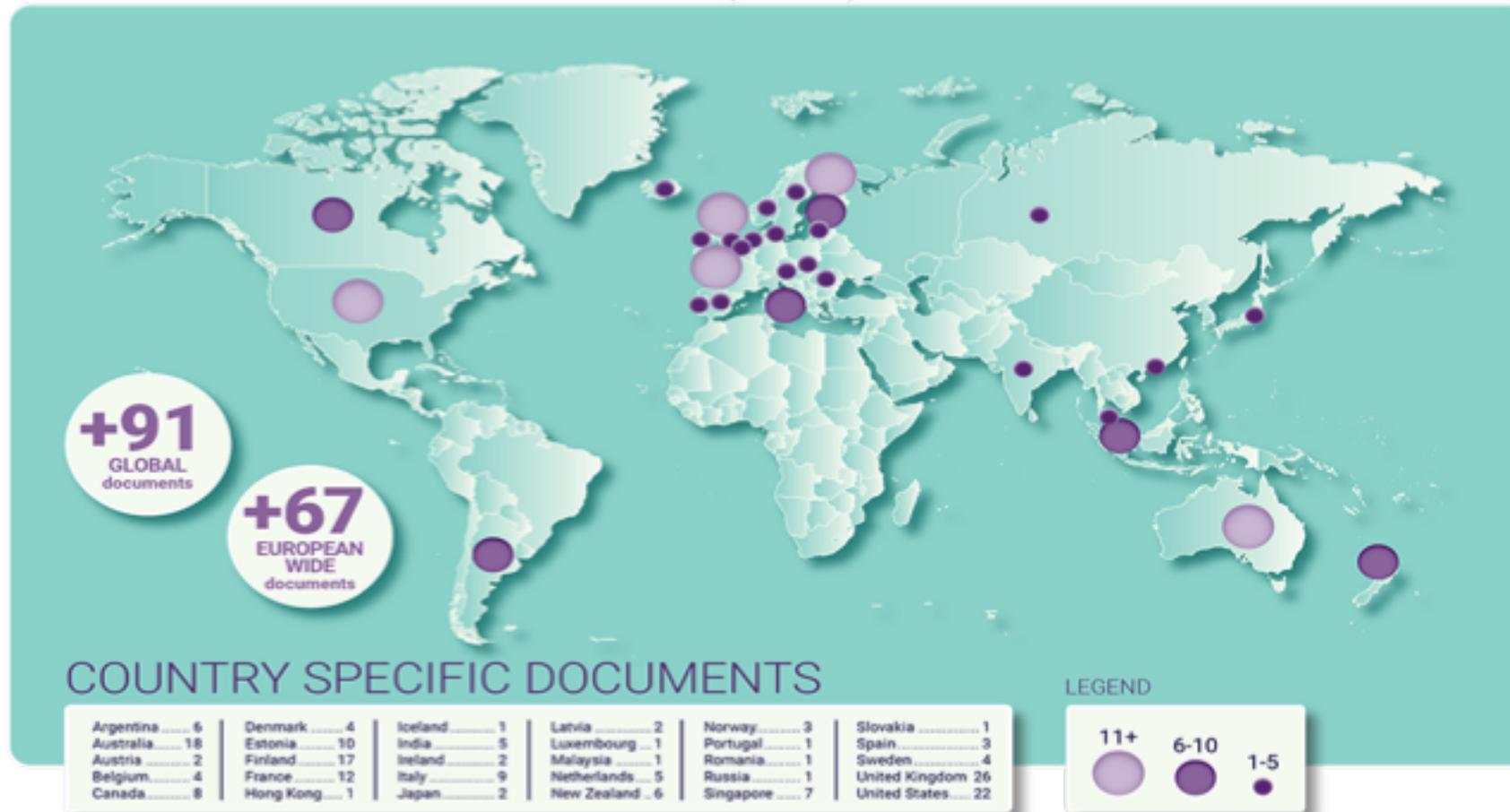


Name	Use	Provided by	TS/S	Scope	Theme	Initial Release
<a href="#">Application Performance Index (APDEX)</a>	API performance	<a href="#">APDex Alliance</a>	TS	Generic	Various	2007
<a href="#">API Blueprint</a>	API documentation	<a href="#">apiblueprint.org</a>	TS	Specific	Various	2013
<a href="#">Atom feed</a>	Data encoding	IETF	S	Generic	Various	2005
<a href="#">Connecting Europe Facilities (CEF) Building Blocks</a>	ICT service	European Union	TS	Generic	Various	2018
<a href="#">Collection+JSON</a>	Pattern	Mike Amundsen	S	Specific	Various	2012
<a href="#">Common Object Request Broker Architecture (CORBA)</a>	Architectural style	Object Management Group (OMG)	S	Generic	Various	1991
<a href="#">Context Broker</a>	ICT service	European Union	TS	Generic	IoT	2018
<a href="#">Core Service Public Vocabulary (CPSV-AP)</a>	Data model	European Union	TS	Generic	Public service	2012
<a href="#">Date and Time on the Internet: Timestamps</a>	Timestamp	IETF	S	Generic	Various	2002
<a href="#">eArchiving</a>	ICT service	European Union	TS	Generic	Various	2018
<a href="#">eDelivery</a>	ICT service	European Union	TS	Generic	Document	2018
<a href="#">eID</a>	ICT service	European Union	TS	Generic		2018
<a href="#">eIDAS</a>	Regulation	European Union	TS	Generic	Electronic Identity	2014
<a href="#">eInvoicing</a>	ICT service	European Union	TS	Generic	Business	2018
<a href="#">eSignature</a>	ICT service	European Union	TS	Generic	Security	2018
<a href="#">eTranslation</a>	ICT service	European Union	TS	Generic	Translation	2018
<a href="#">eVoting</a>	ICT service	European Union	S	Generic	Various	2018

Number of documents (tot. 78)

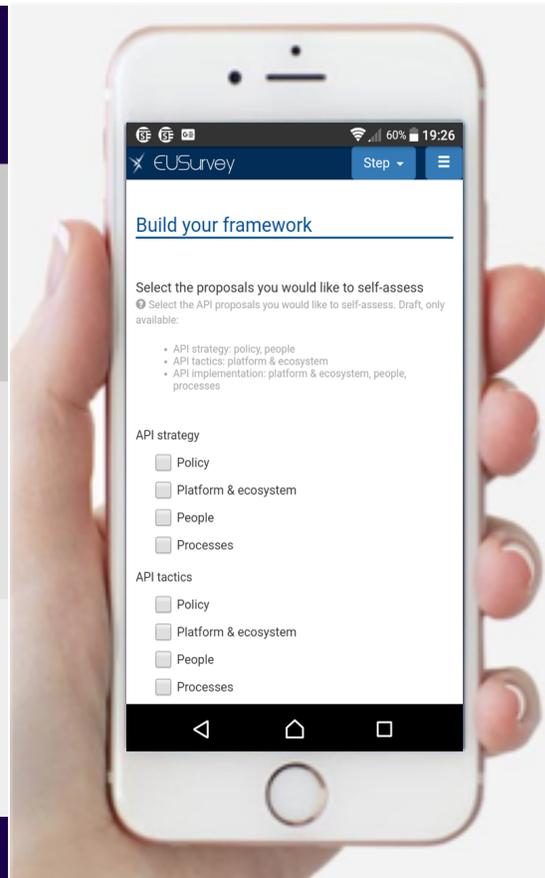
# API best practices

AREA APPLICABLE TO BEST PRACTICE  
IN LITERATURE REVIEW DOCUMENTS (N=343)



# Framework for API adoption

## & self-assessment online tool



**EU Survey**

**Introduction**  
 This maturity assessment tool, built within the [European Commission APIs4Gov study](#), has been prepared to self-assess the adoption of APIs in governments.

The framework is based on twelve proposals distributed on **four aspects** or 'pillars' (policy, platform, people and processes) and **three action levels** (strategic, tactical and operational). It is inspired by the EIF of the European Commission and available government best practices documents on API adoption.

**Policy support**  
 Align APIs with policy goals  
 Design metrics and prioritise APIs  
 Measure the policy impact of APIs

**Platform**  
 Define the government API platform vision  
 Harmonise platform/ecosystems assets  
 Build API platform components

**People**  
 Create governance structures  
 Establish cross-competency teams  
 Appoint API product manager(s) and teams

**Processes**  
 Form guiding principles for API processes  
 Follow an API product approach  
 Adopt an API lifecycle approach

<https://ec.europa.eu/eusurvey/runner/APIFrameworkTool>



# Policy recommendations



Explicitly **adopt APIs** in governments



Create and improve the '**API culture**' in governments



Utilize and validate our **API framework**



Become **digital ecosystem aware**:  
Engage both public EU governments  
actors and the private sector

# What's next?

API essentials for public sector innovation

- Technical essentials: lifecycle management, discoverability, security
- Legal & organizational essentials

# APIs for the public sector &

2020 & beyond



## Workshop I. API technical essentials

*Public administration & private sector API co-design*

## Workshop II. API technical essentials

*API governance, Security & Specifications*

## Keynote:

- *API for the digital transformation of the public sector*
- *Reconcile EU data strategy with Green Deal objectives*



## Q1 2021:

*API in government:  
privacy, organisational & legal aspects*

# API4DT Joinup collection – stay tuned!



Join our community and stay tuned:



Contact us directly [irc-apis4dgov@ec.europa.eu](mailto:irc-apis4dgov@ec.europa.eu)

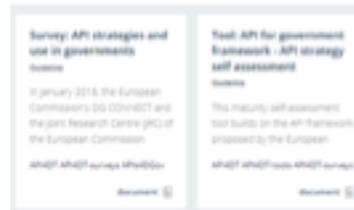
## REPORTS



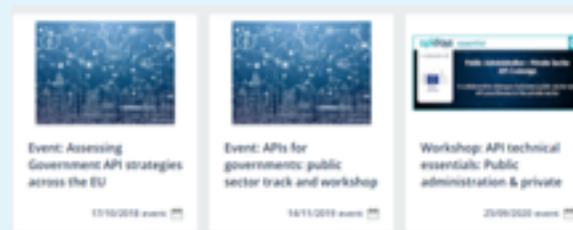
## DATASETS



## TOOLS & SURVEYS



## EVENTS



# Thank you!



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