



APIs for Governments: why, what & how

APIs for Digital Government study findings

European Commission - Joint Research Centre
Digital Economy Unit

Monica Posada – API Research Project manager
Lorenzino Vaccari – API Research External consultant
Keynote speech at the APIdays Paris, Global edition
10th December 2020

JRC - Digital Economy Unit

API team context

The Joint Research Centre (JRC)

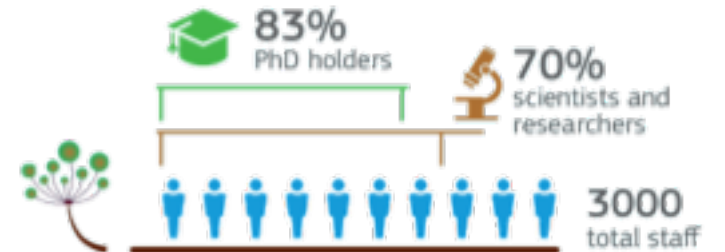
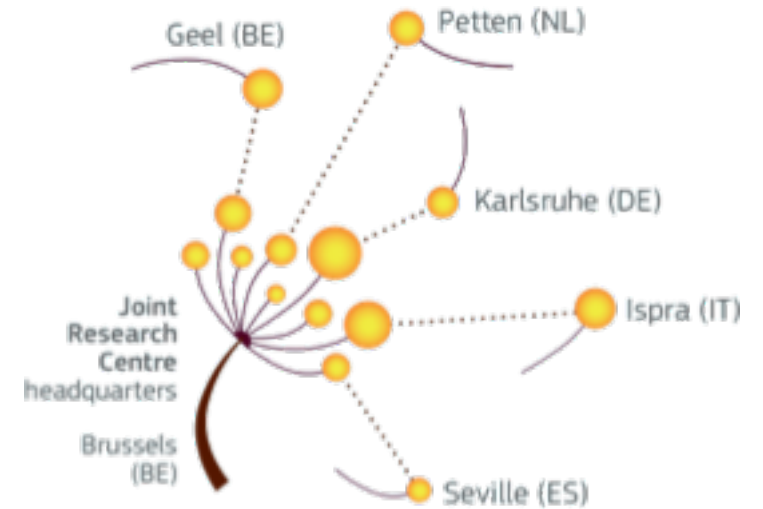
European Commission's science and knowledge service carrying out research to provide independent scientific advice and support to EU policy.

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

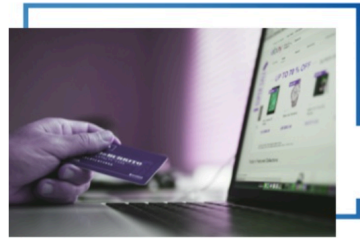
A Europe fit for the Digital Age

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

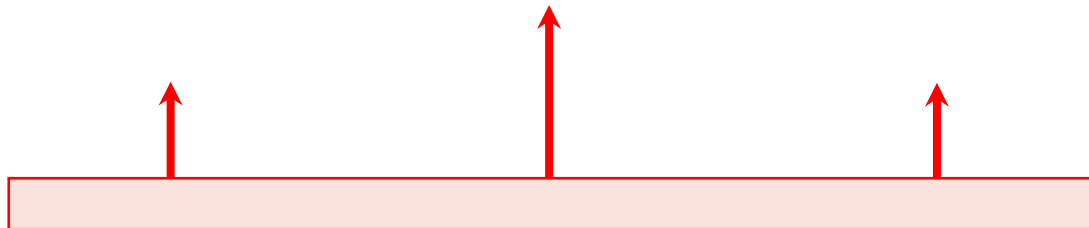
Designing rules that match the pace of technology, such as the rollout of next-generation 5G mobile connections or the Action Plan on Financial Technology.

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 ..

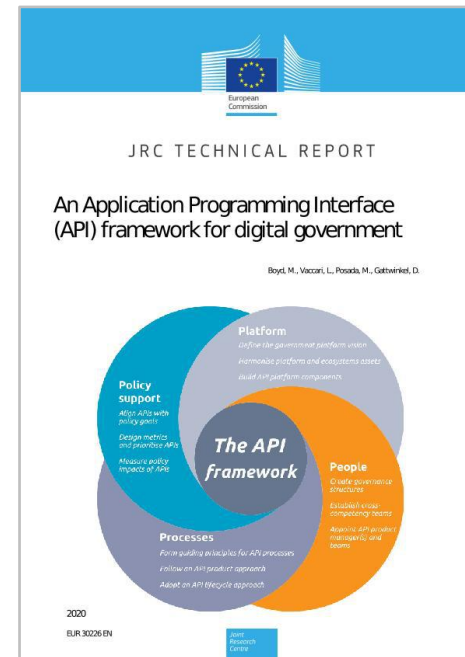
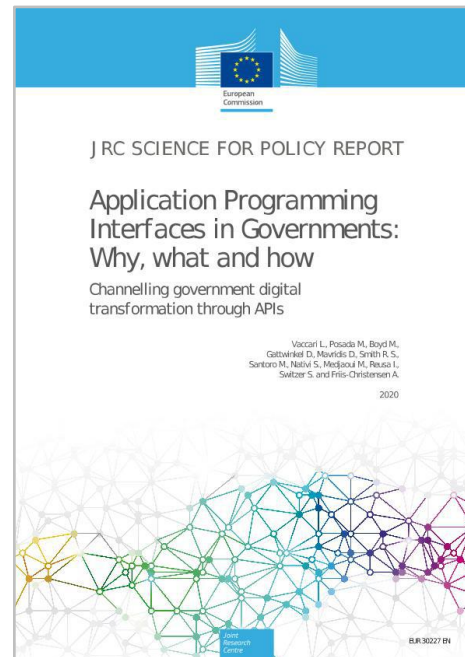
To **control and monitor** digital environments

→ *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

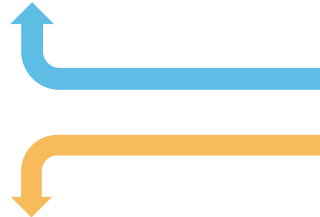
How?

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



Our research methodology

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



Desk research

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

Interviews

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

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



Online surveys

- API strategies
- FW validation
- INSPIRE conference

Workshops

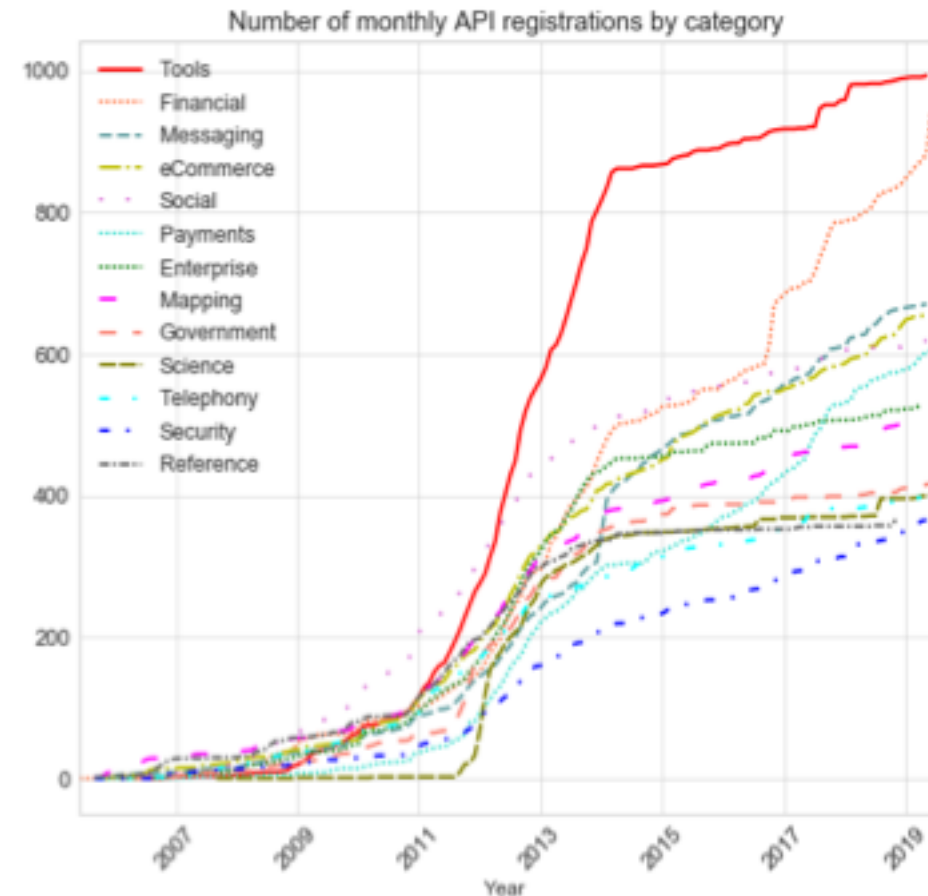
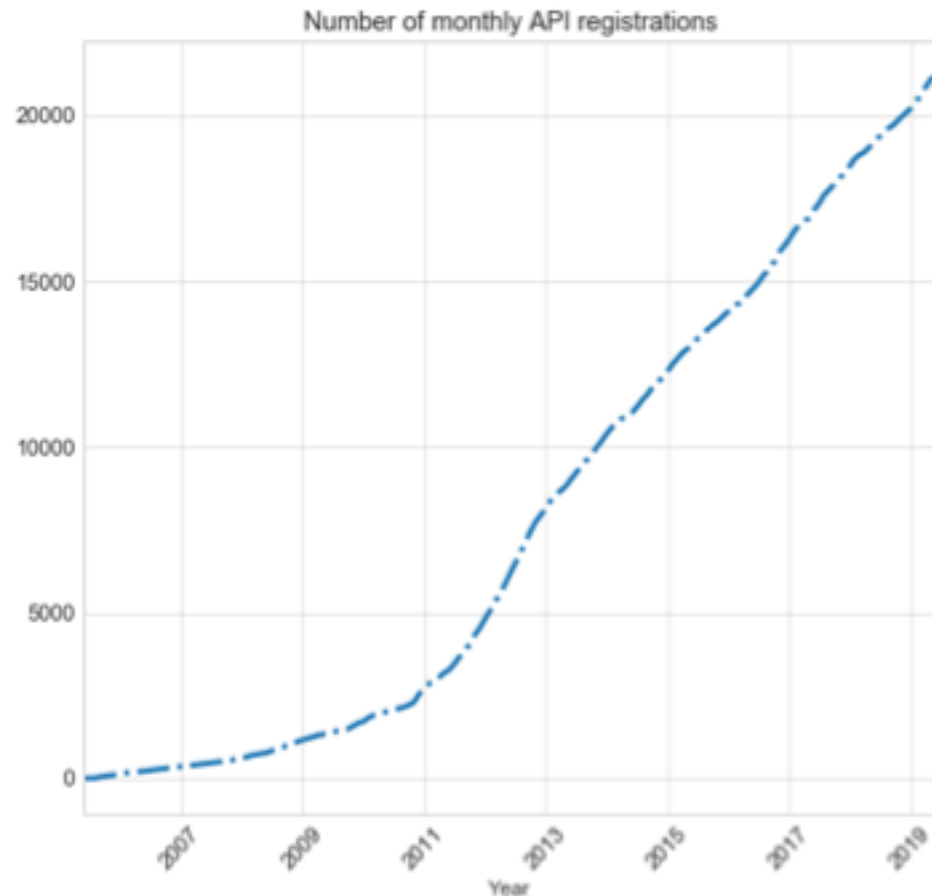
- API strategies
- INSPIRE hack
- APIdays events

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

(Source: ICT Impact Assessment Guidelines, ISA² 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



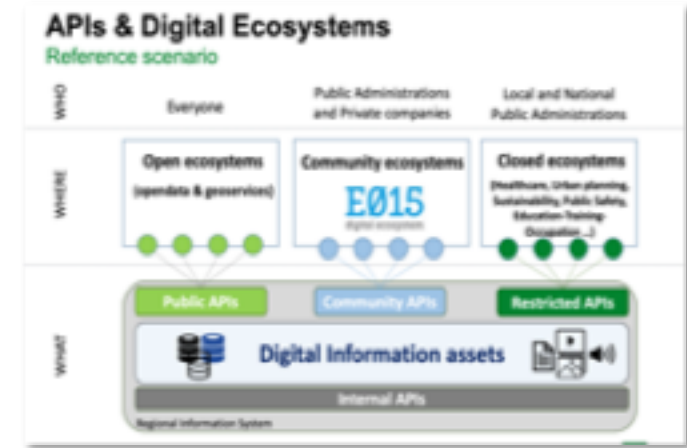
The Netherlands statistical office API

Portfolio management



French government public API registry

API-enabled digital ecosystems



The E015 system in Lombardia, Italy



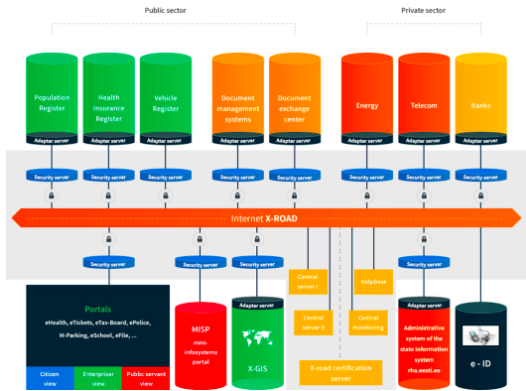
Benefits: Efficiency gains

- 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

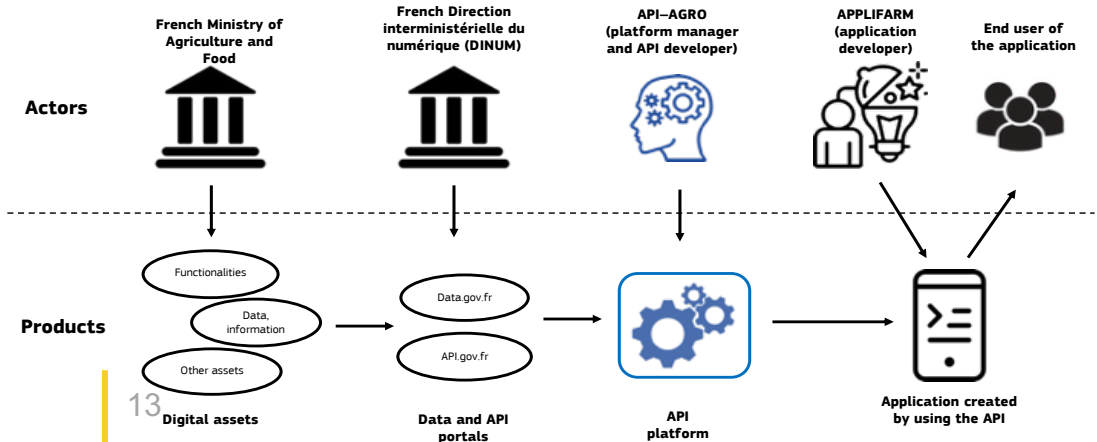
X-Road



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

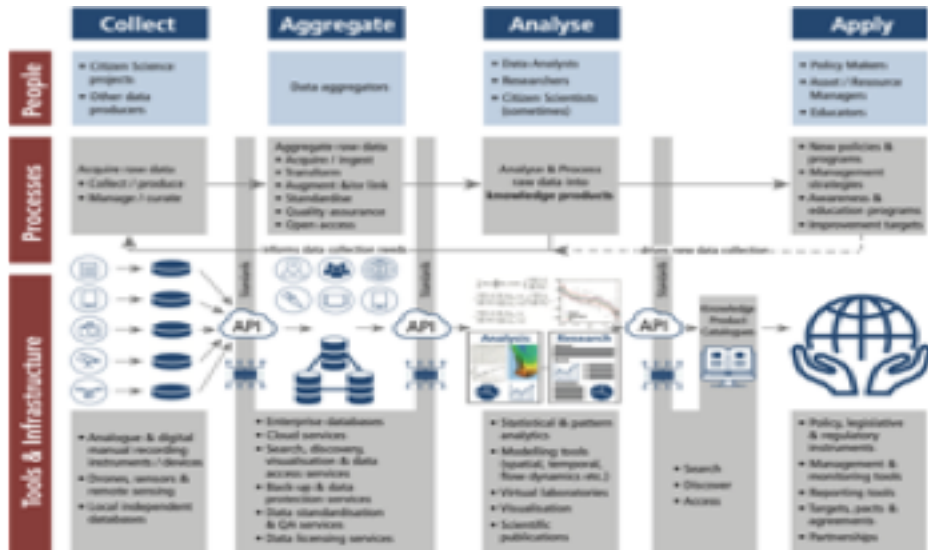


Organizations which design systems are constrained to produce designs which are copies of the communication structures of these organizations. Melvin Conway (1967)

Source: (1) <https://www.fonction publique.gouv.fr/recherche/repertoire-interministriel-des-metiers-de-letat>
 (2) <https://referentiel.moderation.gouv.fr/infographie-du-schisme-de-l'administration>

DINUM

(Source: DINUM - France)



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

Costs

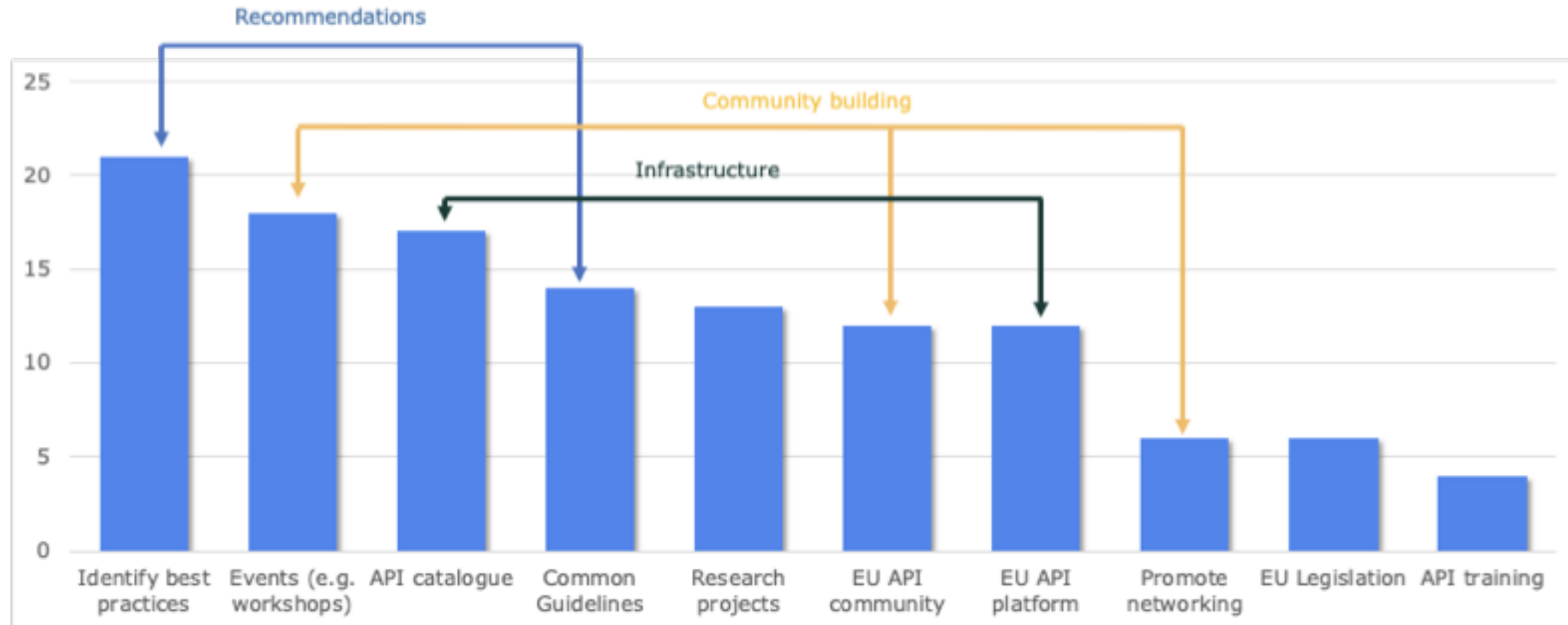
- Implement a whole of government platform vision and re-engineering existing systems towards APIs
- Cultural change, need to acquire new skills

Challenges

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

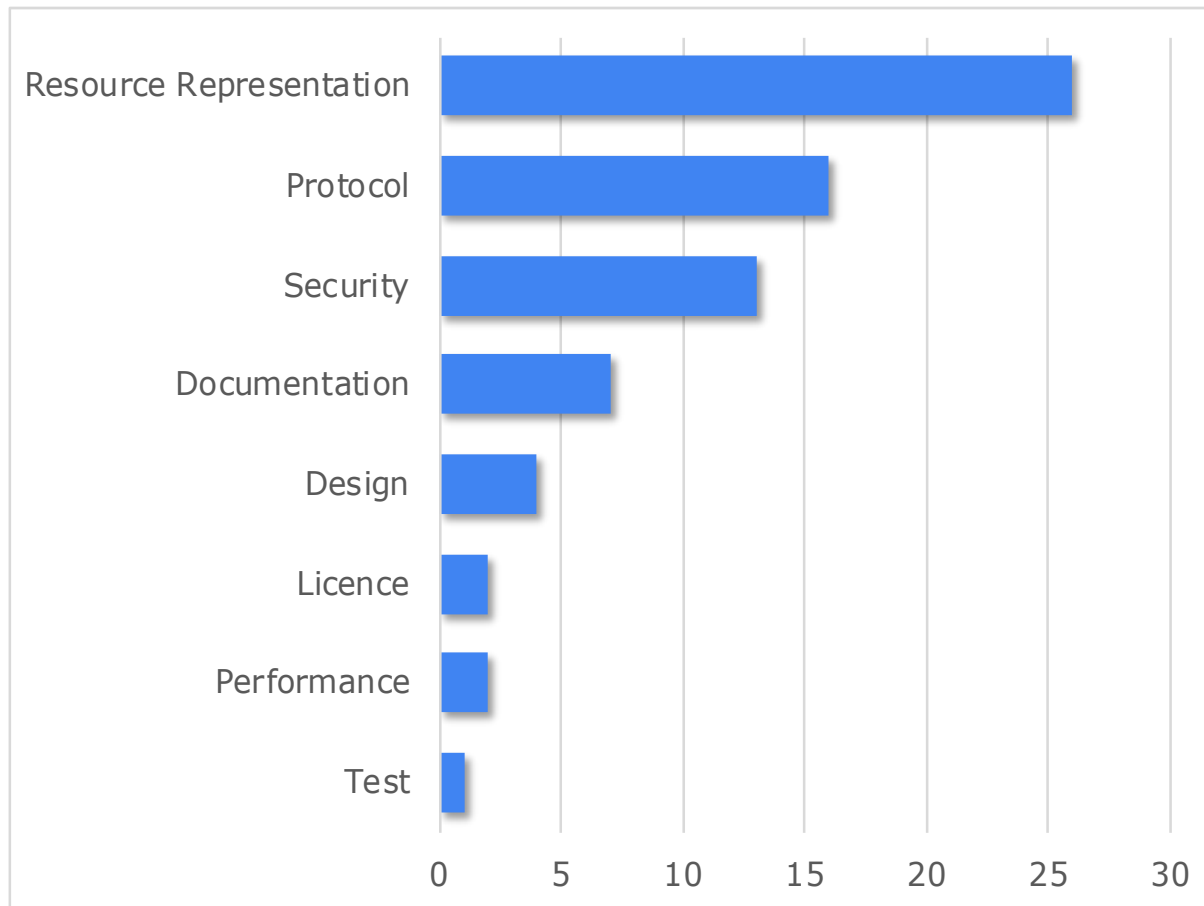
How?

Stakeholder consultation



(Source: own elaboration)

API standards and specifications



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

Number of documents (tot. 78)

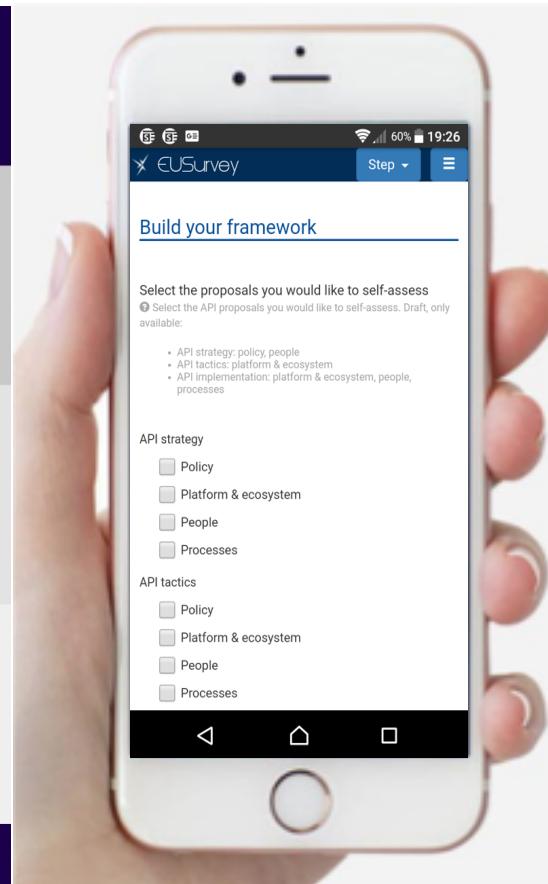
API best practices

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.

The API framework

- 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

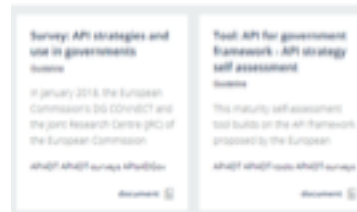
REPORTS



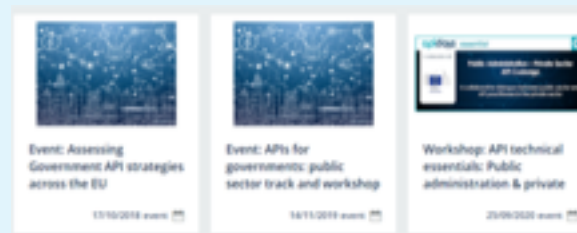
DATASETS



TOOLS & SURVEYS



EVENTS



Thank you!



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