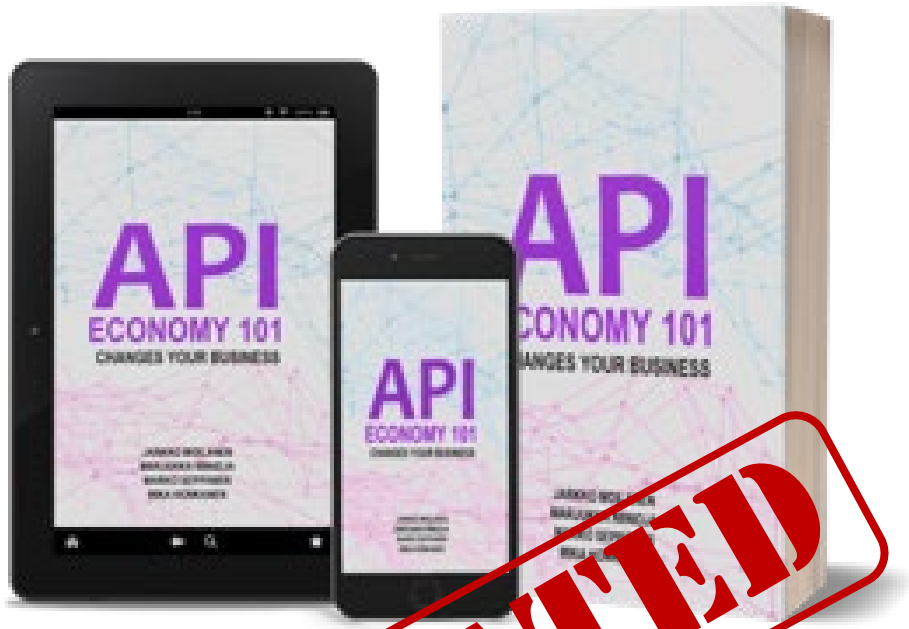
API Economy



PRACTICAL EXAMPLES WITH SCIENTIFIC RESEARCH

MARJUKKA NIINIOJA, OSAANGO

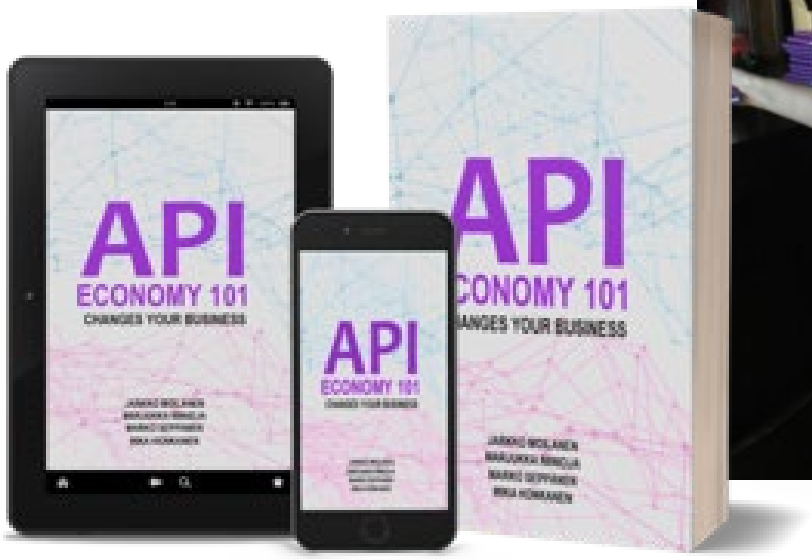
Marjukka Niinioja

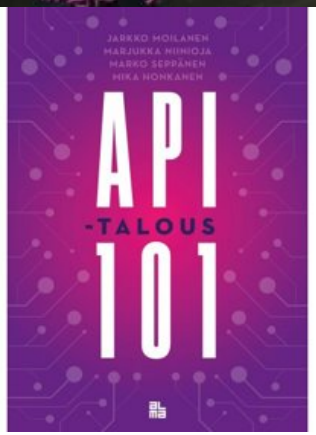
Founding partner Osaango Oy, local organizer of apidays Helsinki (again on Sept 1-2) and APIOps meetups

Consulted and trained 200+ companies and public sector organi zations on platform economy and
API economy business models, service and product strategies an d enterprise architecture

One of the authors of API Economy 101 –
book (2019) combining research with practical experience

“Mother” of APIOps Cycles method.





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#apieconomy101

Platforms and APIs are used to build ecosystem customer journeys

Customer journey combined from resources provided by individual providers via APIs

- **Awareness APIs**
- **Sense APIs**
- **Analytics and content APIs**
- **Recommending products**
- **Personalized offers**
- **Ordering with voice**
- **Optimizing routes**
- **Automated maintenance calls**

"The ecosystem together generates value for its end-customers by integrating functionally interdependent subsystems. "(Source: In API Economy 101 book from Mäkinen – Dedehayir, 2013; more specifically Han, J. et al. 2017. Uncovering the conceptual boundaries of the ecosystems: Origins, evolution and future directions.)

What is API Economy?

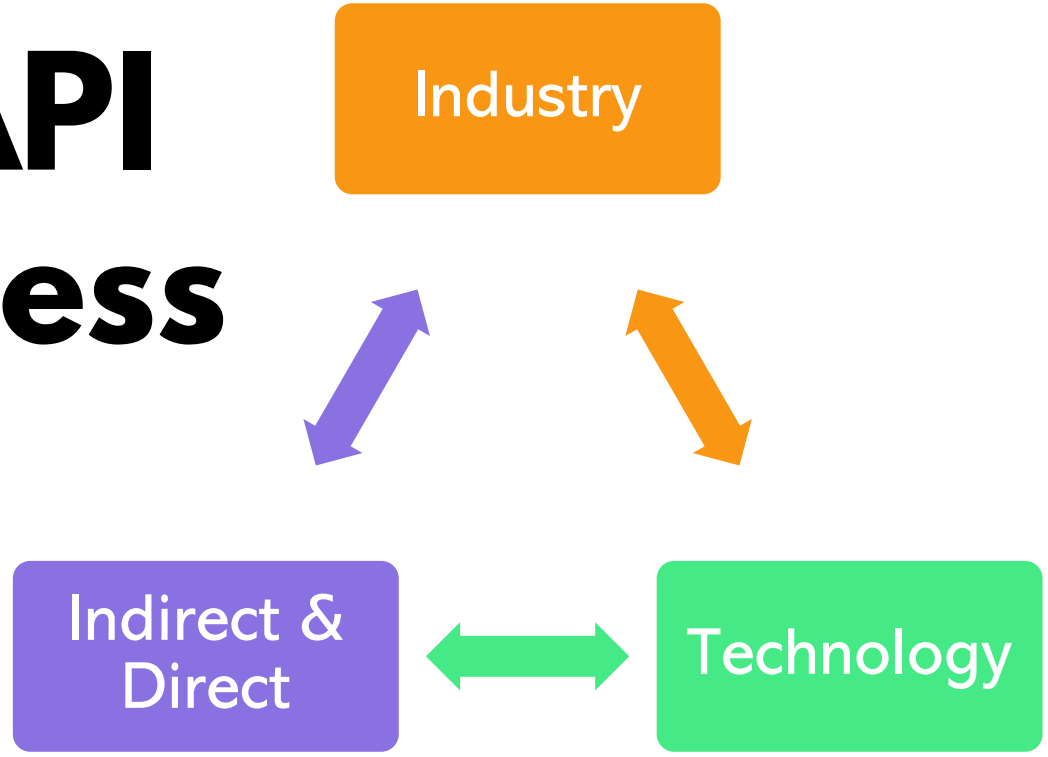
"In API Economy company utilizes resources efficiently and quickly to create added value for own customers. These resources can be for example data or function provided by other organizations.

Building blocks utilized are own APIs and open APIs provided by other organizations (free or commercial) in addition to developer communities. These enable quicker adaptability to unpredictable and faster changing customer needs.

Defining characteristics of API Economy are competing for popularity among application developers and considering them as primary customers. In brief, services are offered from businesses to developers (Business-to-Developers, B2D)."

Moilanen J., Niinioja M., Seppänen M. & Honkanen M. 2019. API Economy 101

What are the API economy business models?



5 misconceptions

1 API Strategy <> business strategy

- Business strategy should not be formed first and then “just add APIs”, this is not a magic trick or instant meal.
- You need to take the APIs, API-related technologies, API-requiring legislation, ecosystems, network effect and other web 2.0 and 3.0 business models into account immediately and simultaneously

API is...	Description	Example	Type of API
Important feature of a tangible product	API is part of a tangible product or productized service. Customer gets the API as part of the deal when buying the product.	Internet of Things (IoT) APIs for controlling and analyzing state of things like home appliances or sensors	Partner or public, sometimes also private
Productized service	API in itself is a productized service, offered to all customers in the same way	Translation APIs, Payment APIs	Public API
Part of a digital or real-world service	API is part of the service experience, for example maintenance service is ordered with an API, or you can monitor package delivery with an API	Logistics API	Partner or Public API
Customer-specific service	API is part of a service offered to customers as a tailor-made solution including for example an integration to a service providers system.	APIs in customer specific applications	Partner
Interface to resources	API is just a means to access a resource the company is selling	Company info APIs (risk category, owners, contact information). Cognitive APIs etc.	Open data APIs, Partner APIs
Interface to platform (boundary resource)	API is a means to connect with a platform and get added value through participation in the interconnecting relationships of the platform (in Platform Econonmy business model)	Online auction API, Apartment sharing API	Partner or Public
Part of an integration	API is means to connect in to applications and devices	Product API, Employees API, business transactions API	Internal or partner API

Niinioja Marjukka. 2018. Translated and revised version. Published in a book about API Economy 101 (2019) by Moilanen, J., Niinioja, M., Seppänen, M., Honkanen, M.

2 API Strategy == Who you provide APIs to

- API-enabled business strategy is as much choosing NOT to cater certain segments or
- NOT to provide certain services or products directly as it is about figuring out what the role of the APIs IS in the business model

Taxonomy of IoT platform business models

VISOR	Dimension	Characteristics of the dimensions						
Value proposition	Core capabilities	Embedded device operation	Connectivity enablement	Device management	Device data storage	Analytics	Application development	Multiple capabilities
	Device support	Selected 3rd party devices	Exclusively provider´s devices	Selected 3rd party devices and provider devices	Any device, if provider's standards are used			
	Customer type	Consumer	Business	Business and consumer				
	Industry focus	Single-industry platform	Cross-industry platform					
Interface	Platform integration	In enterprise system	In web services	In multiple diverse systems	No integration opportunities			
	Application sales channel	Marketplace functionality	External marketplace necessary					
	Platform openness	Fully proprietary	Hardware proprietary	Software proprietary	Open source			
Service platform	Operational level	Operated on device	Operated on cloud	Operated on device and cloud				
	Core technology	Telecommunications	Sensors and microcontroller	Cloud technologies	Other technologies			
Organizing model	Partner system	Open partner system	Proprietary partner system	No partner system				
	Degree of support	Non personal technical support	Personal technical support	Personal technical and business support				
	Operation mode	Operated by platform provider	Operation by 3rd party possible					
Revenue Model	Pricing model	Developer projects are free and enterprise projects are priced	Developer and enterprise projects are priced	Free for use				
	Transaction based revenues	Per connected device	Per API call	Traffic based	Combination of multiple sources	Per request	Free for use	
	Continuous revenues	Time based (monthly / yearly) minimum fees	Pure pay as you grow (no continuous fees)					

Hodapp, D., Remane, G., Hanelt, A., & Kolbe, L. M. (2019). Business Models for Internet of Things Platforms: Empirical Development of a Taxonomy and Archetypes.

3 Business model == Revenue model

- Business model is not the same as revenue model, revenue model is one part of business model

API Canvas

Business model of the API & API provider

Developer experience

More potential API consumers

Development activities

8 Key Partners

- Water meter technology companies
- Water services providers

6 Key Activities

- …

7 Key Resources

- …

1 API Value Proposition

- Water consumption and quality data for your building / real-estate in a standard format
- Integrate with all the other utility data

3 Relationships

- Support, communications, sales etc..…

4 Channels

- Construction planning software providers
- Data hub providers
- Own developer site

2 API Consumer Segment

- Construction planners
- Real-estate owners
- Construction planning software providers
- Building maintenance and autom. companies
- Energy companies
- Security of supply bodies
- Water services systems

9 Costs

Integration support, Data storage and maintenance

Developer community growth and management

API, SDK etc. Development

Other risk reducing costs (see Business Impact)

Name of the API

- Water cons. API

5 Revenue Streams

- XXXX € / month
- Monthly data included in supply fees, 99,5 & 24/7 SLA, day-old data and over 90 days retention with extra fees
- More quota and more sources = more revenue

4 API monetization == Revenue

- API monetization is as much about creating in-direct value of all kinds as it is about creating direct value, one area of value creation being revenue streams directly from APIs
- Freemium?
- Costreduction?
- Market-share growth?
- Customer engagement?
- ….

Blockchain Business Models

Weking, J., Mandalenakis, M., Hein, A., Hermes, S., Böhm, M., & Krcmar, H. (2019). The impact of blockchain technology on business models–a taxonomy and archetypal patterns. *Electronic Markets*, 1-21.

Table 5 Characteristics of Business Model Patterns

Pattern			Blockchain for Business Integration	Blockchain as Multi-Sided Platform	Blockchain for Security	Blockchain Technology as Offering	Blockchain for Monetary Value Transfer
Value Proposition	Value Classification	*Service Provision*	Interoperability	Marketplace Offering	Authentication	API – Blockchain	Transfer of Value
		Incentives	Data Traceability and Verification	Mediation Improvement	Security Enhancement	Blockchain Offering	Cost Optimization
	Customer Target	*Customer*	Legal Person	Natural Person	Legal Person	Legal Person	Both
		User	Legal Person	Natural Person	Natural Person	Both	Both
		Intermediation Form	Inter & Intra	Inter & Intra	Intergroup	No Intermediation	Intragroup
		User Diversification	No Diversification	User positioning	User positioning	No Diversification	No Diversification
	Underlying Asset		Physical Asset	Virtual Asset	User-specific Asset	No Asset Specification	Money
Value Creation and Delivery	Key Partner		Stand-Alone	Industry Partner	Technology Partner	Stand-Alone	Stand-Alone
	Key Channel		ERP Integration	Website	Technology Provision without Channel	Technology Provision without Channel	Mobile Application
	Customizability		Internal Developer Integration	None	None	Both	None
	DAO Affiliation		No DAO Alignment	No DAO Alignment	No DAO Alignment	DAO Enabler	No DAO Alignment
	Blockchain Classification	*Value Chain Position*	Blockchain Mediator	Blockchain User	Blockchain Enabler	Blockchain Enabler	Blockchain User
		Blockchain Sourcing	Blockchain Combination	External Blockchain Use	Existing Blockchain modified	Own Blockchain	Own Blockchain
		Blockchain Type	Consortium	Private	Private	Public	Private
		Underlying Blockchain	Several	Ethereum	Bitcoin	Others	Others
		Consensus Mechanism	Modified	Existing	Self-Created	Self-Created	Self-Created
	Additional Technology		IoT	None	Cloud	Dapps	None
Value Capture	Revenue Stream	*Customer Charge*	Regularly Fee	Cost per Transaction	Cost per Transaction	Free	Cost per Transaction
		Currency Acceptance	No Currency in BC	Solely own Token	Solely own Token	Additional other Cryptocurrency	Solely own Token
		Token System	No Token	Dual Token System	Own Token Listing	No Token	Own Token Listing
	Cost Structure	*Provision Cost*	SDK Provision	Platform Provision	SDK Provision	SDK Provision	Platform Provision
		Network Sourcing	External Blockchain Use	External Blockchain Use	Own Mining Network	Own Mining Network	Own Mining Network

J. Weking et al.

5 API business models == only about APIs

- Nope. There's IoT, Blockchain, AI/ML, VR/AR, Data and just your "average" business models like SaaS, PaaS, IPaaS, any other kind of Platform etc.

What the energy-sector teaches us?

- New ways of producing and distributing energy
  - Decentralized production
  - Prosumers vs. consumers
  - Aggregators
  - P2P
- Energy datahubs (EU)
- Partnering between existing utility providers and new
- API-dependent technologies
  - Smart utility metering, AI, ML, Blockchain, Big Data, IoT
- Summarized 40 interesting companies and their business models on these areas, also exposing the role of APIs and API-enabled technologies
  - Value Proposition (What are they offering?),
  - Targeted Customers (Who are they targeting?),
  - Value Creation/Value Delivery (How are they planning to create and deliver their service?),
  - Value Capture/Revenue Model (What are the sources of their expected revenue and How are they planning to create this?).

Küfeoğlu, S., Liu, G., Anaya, K., & Pollitt, M. (2019). Digitalisation and New Business Models in Energy Sector. https://www.repository.cam.ac.uk/bitstream/handle/1810/294125/cwpe1956.pdf?sequence=3

How to start your API program and how to pick a business model?

- I have outlined the basic steps in the method but also in the book API Economy 101 I co-authored. The main point is that creating an API program requires the whole “village”:
  - Get business and tech at the same table.
  - Don’t create an API program, create a business development program with API focus.
  - Start with the strategic goals.
  - Map out ecosystem journeys and customer and partner needs.
  - I’d recommend starting with the customer needs first. Then see which strategic and operative directions they might take us.
- This may result in a change in business strategy and model.

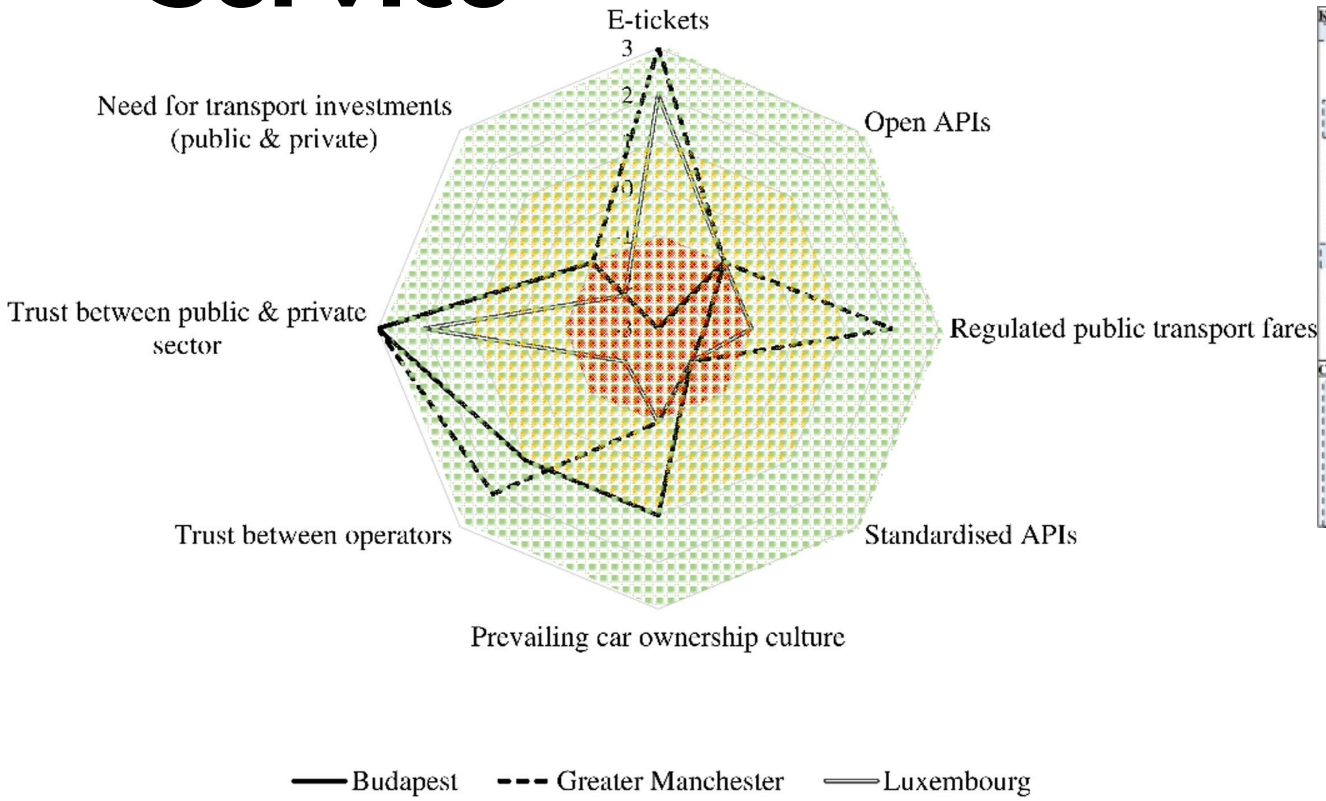
What are the tools needed to support the beginning of an API program?

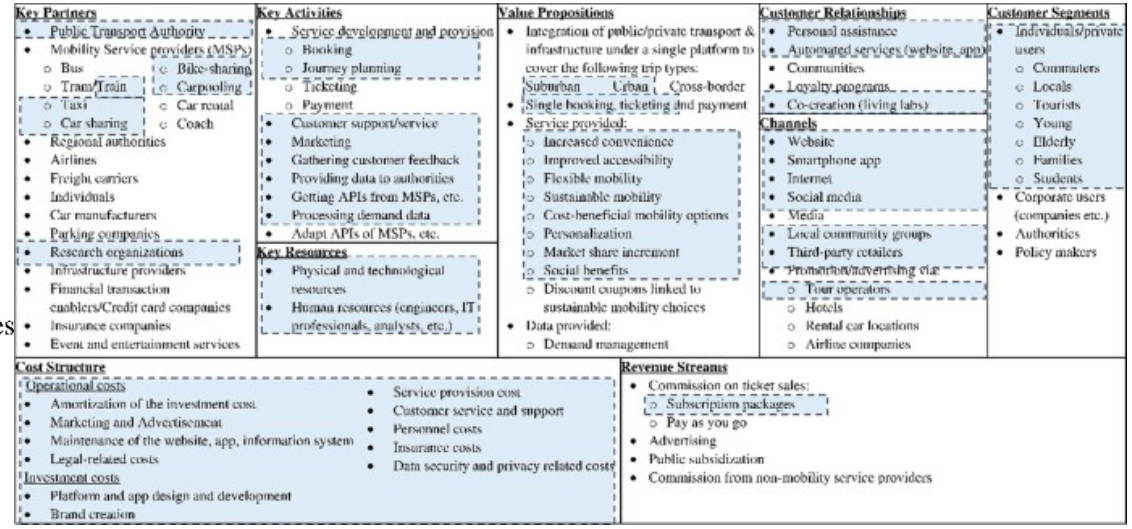
You can use any strategy and business modeling tools you like.

But.

They might only cover the “typical” business model possibilities.

Example from MaaS – Mobility as a Service





Key Partners
- Public Transport Authority
- Mobility Service providers (MSPs)
  - Bus
  - Bike-sharing
  - Tram/Train
  - Carpooling
  - Taxi
  - Car rental
  - Car sharing
  - Coach
- Regional authorities
- Airlines
- Freight carriers
- Individuals
- Car manufacturers
- Parking companies
- Research organizations
- Infrastructure providers
- Financial transaction enablers/Credit card companies
- Insurance companies
- Event and entertainment services

Key Activities
- Service development and provision
  - Booking
  - Journey planning
  - Ticketing
  - Payment
- Customer support/service
- Marketing
- Gathering customer feedback
- Providing data to authorities
- Getting APIs from MSPs, etc.
- Processing demand data
- Adapt APIs of MSPs, etc.

Key Resources
- Physical and technological resources
- Human resources (engineers, IT professionals, analysts, etc.)

Value Propositions
- Integration of public/private transport & infrastructure under a single platform to cover the following trip types:
  - Suburban
  - Urban
  - Cross-border
- Single booking, ticketing and payment
- Service provided:
  - Increased convenience
  - Improved accessibility
  - Flexible mobility
  - Sustainable mobility
  - Cost-beneficial mobility options
  - Personalization
  - Market share increment
  - Social benefits
  - Discount coupons linked to sustainable mobility choices
- Data provided:
  - Demand management

Customer Relationships
- Personal assistance
- Automated services (website, app)
- Communities
- Loyalty programs
- Co-creation (living labs)

Channels
- Website
- Smartphone app
- Internet
- Social media
- Media
- Local community groups
- Third-party retailers
- Promotion/advertising via:
  - Tour operators
  - Hotels
  - Rental car locations
  - Airline companies

Customer Segments
- Individuals/private users
  - Commuters
  - Locals
  - Tourists
  - Young
  - Elderly
  - Families
  - Students
- Corporate users (companies etc.)
- Authorities
- Policy makers

Cost Structure

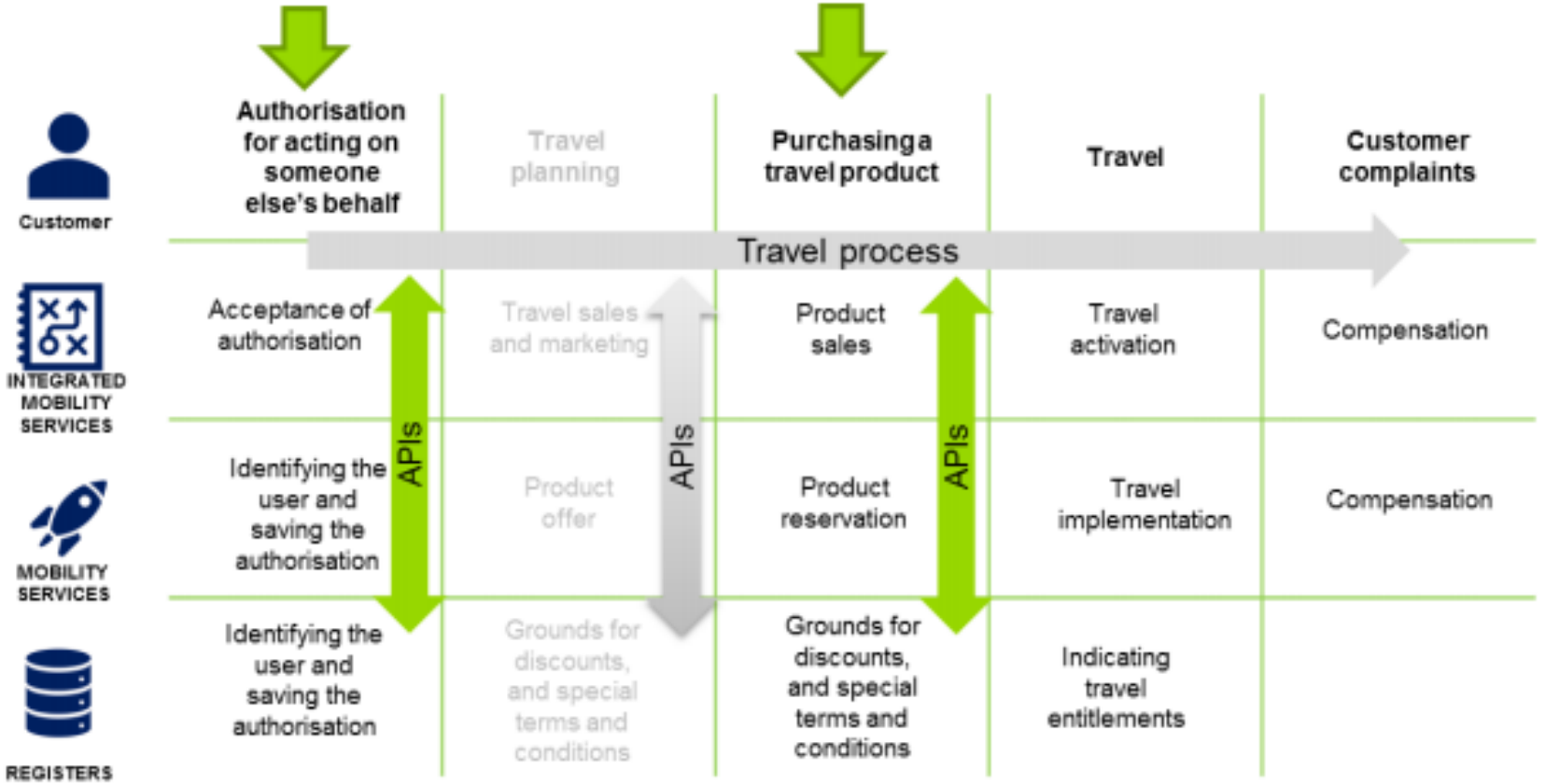
Operational costs
- Amortization of the investment cost
- Marketing and Advertisement
- Maintenance of the website, app, information system
- Legal-related costs
- Service provision cost
- Customer service and support
- Personnel costs
- Insurance costs
- Data security and privacy related costs

Investment costs
- Platform and app design and development
- Brand creation

Revenue Streams
- Commission on ticket sales:
  - Subscription packages
  - Pay as you go
- Advertising
- Public subsidization
- Commission from non-mobility service providers

Amalia Polydoropoulou, Ioanna Pagoni, Athena Tsirimpa, Athena Roumboutsos, Maria Kamargianni, Ioannis Tsouros, Prototype business models for Mobility-as-a-Service, Transportation Research Part A: Policy and Practice, Volume 131, 2020,
Pages 149-162, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2019.09.035.

Travel chains & ecosystem according to the Finnish Act on Transport Services



https://www.traficom.fi/sites/default/files/media/file/APIs%20when%20acting%20on%20someone%20else%C2%B4s%20behalf.pdf

APIs as platform boundary resources

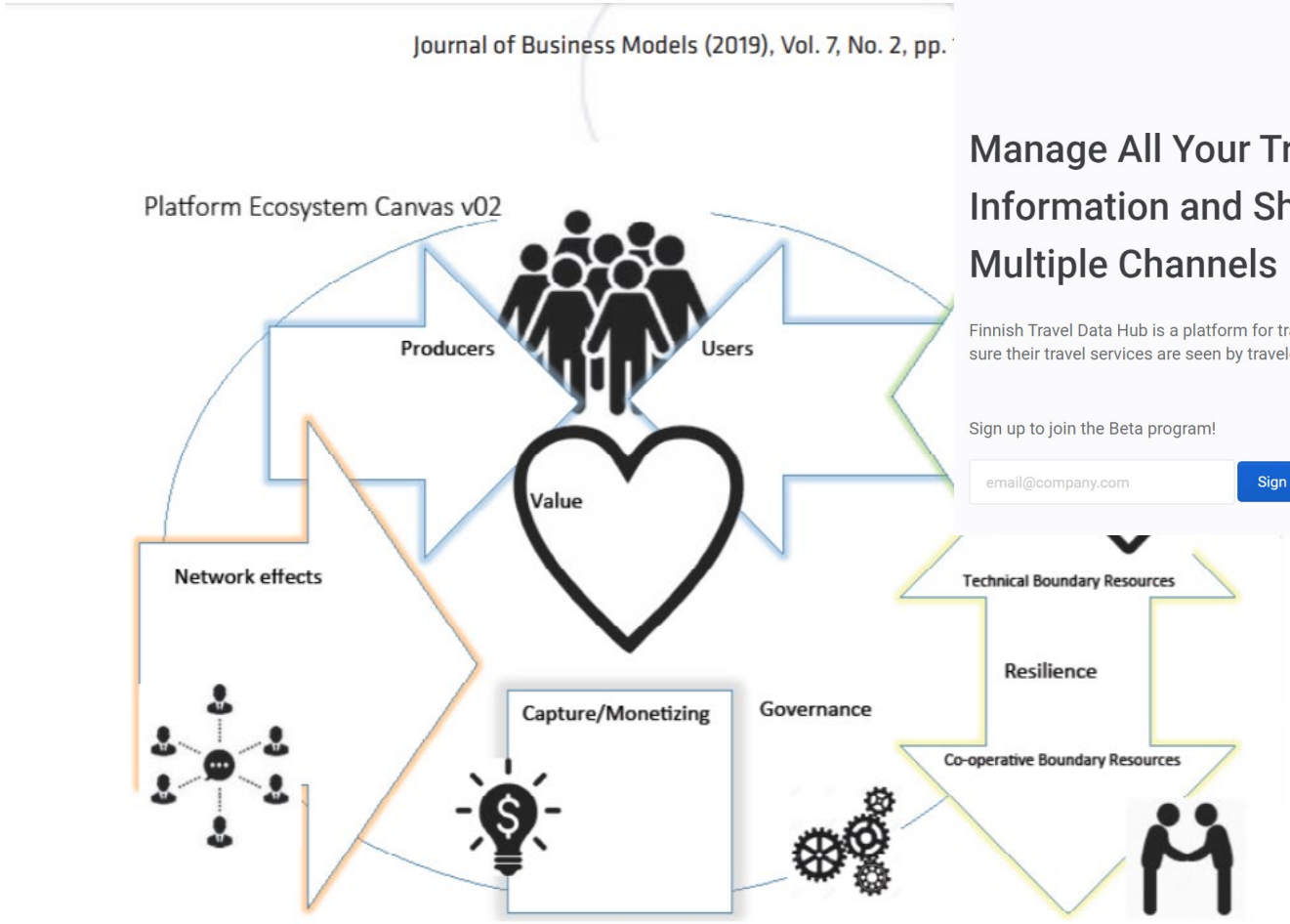
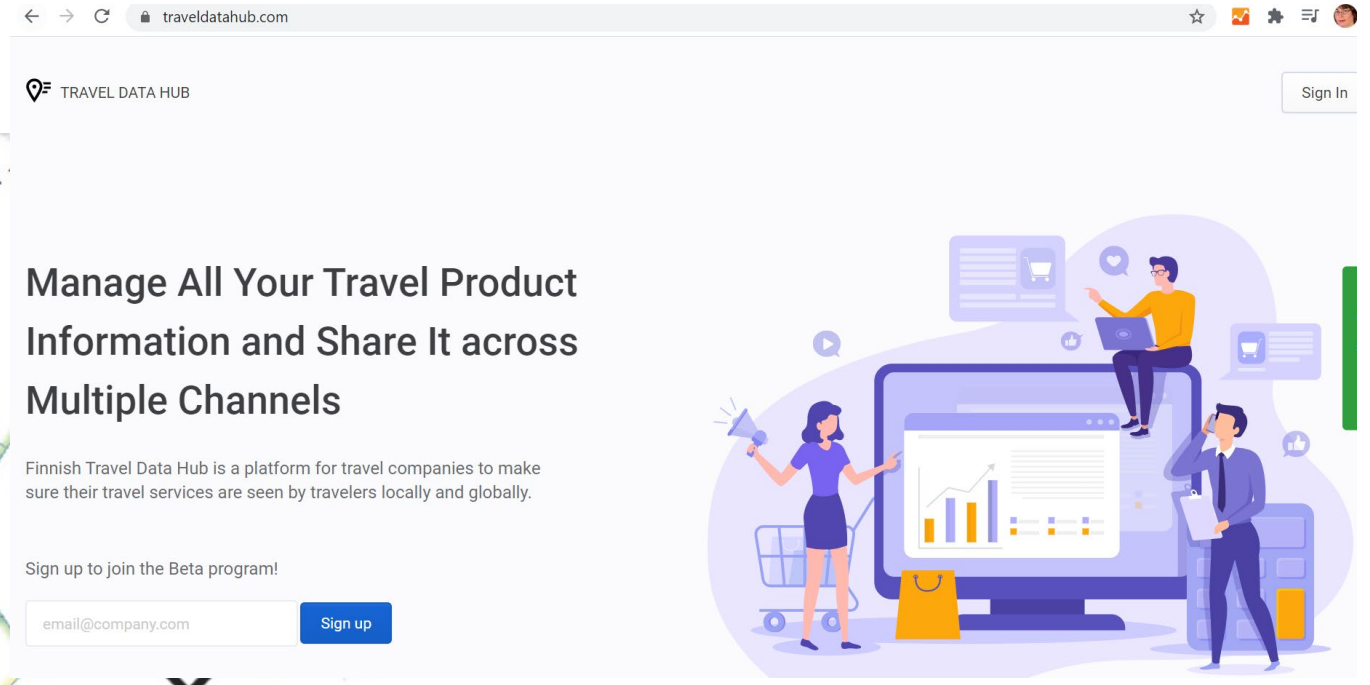


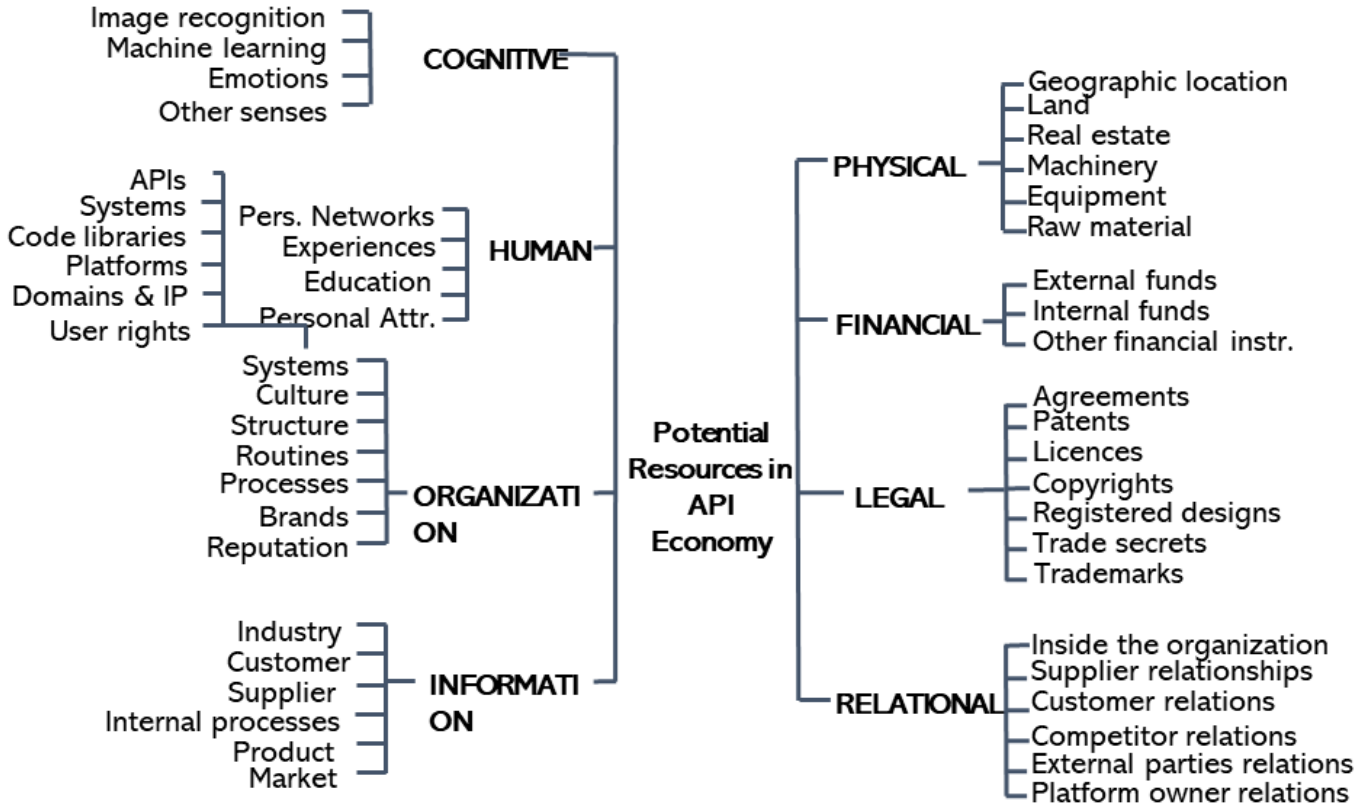
Figure 1: Platform Canvas



Sorri, K., Seppänen, M., Still, K., & Valkokari, K. (2019). Business model innovation with platform canvas. *Journal of Business Models*, *7*(2), 1-13.

Do you own resources that can be APIfied?

Or do you want to use resources provided by others?



Potential organizational resources in API Economy: Marko Seppänen and Marjukka Niinioja. 2019. API Economy 101

APIOps Cycles for Lean API Development

APIOps Cycles™
https://www.apiopscycles.com/
For lean and business-oriented API Development
Openly licensed with CC-BY-SA 4.0

Partners:

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tieto

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A SOLITA COMPANY

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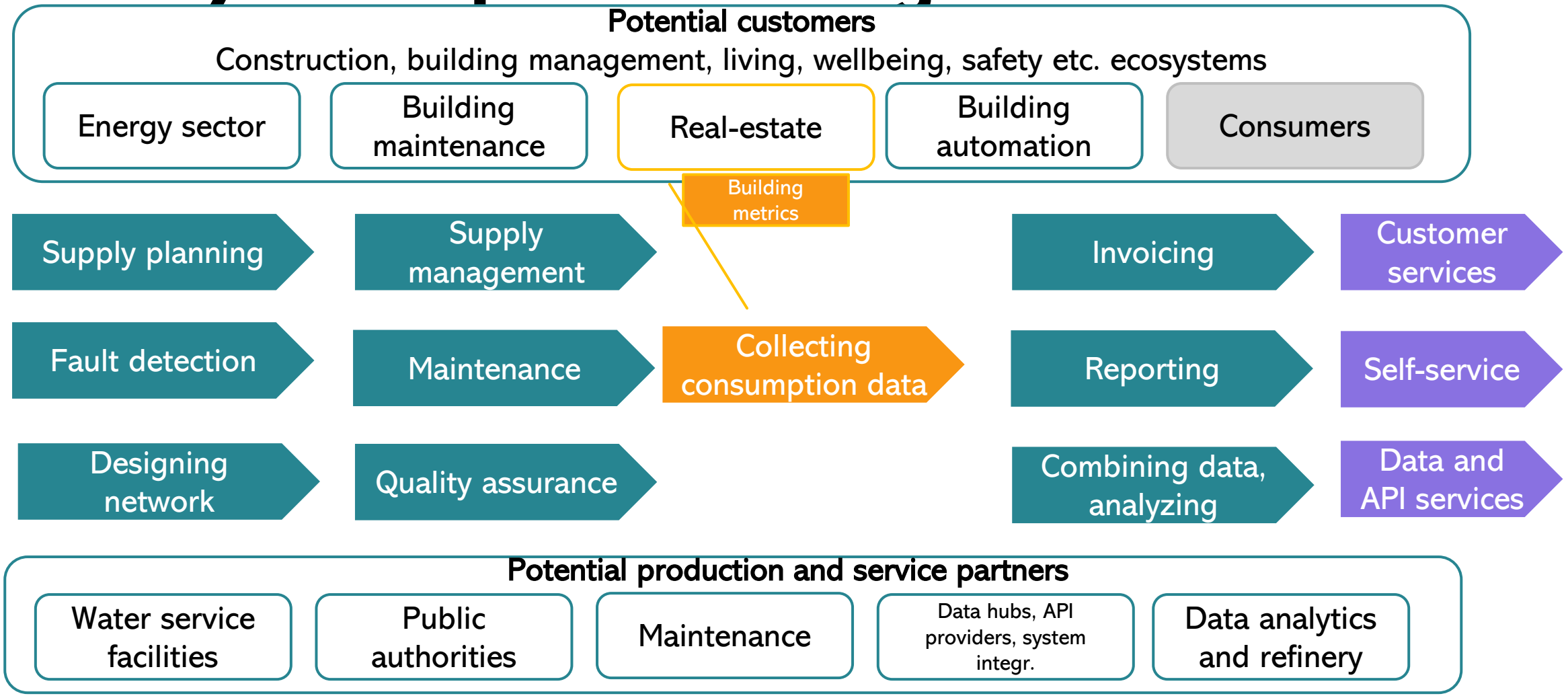
WAPITEA

Example from water services ecosystem – potential target state



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- More quota and more sources = more revenue

Similar API, but with anonymized or pseudonymized data and different SLA could be used for open data API

0,5-2 hours

Read more

OR ASK FOR TRAINING OR CONSULTING JUST FOR YOUR TEAM – ONLINE AND REMOTELY

WWW.APIOPSCYCLES.COM

WWW.OSAANGO.ACADEMY

HTTPS://WWW.APISCENE.IO/DX/HOW-TO-START-AN-API-PROGRAM-USING-APIOPS-CYCLES-METHOD/ - INCLUDES A FULL VIDEO FROM APIDAYS HELSINKI

WWW.APIECONOMY.INFO OR GET THE BOOK FROM YOUR NEAREST ONLINE STORE