APIs in Research

Love Data week seminar 14.2.2019

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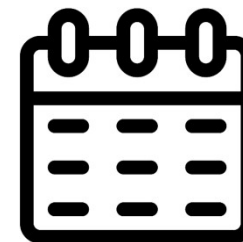
First up…

Introductions!

Who are you?

What's your research area?

Do you have some background in IT?

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Agenda

12.00 – 12.45 > What is an API? What's the use?

12.45 – 13.00 > Break

13.00 – 13.30 > Demo

13.30 – 14.00 > Discussion

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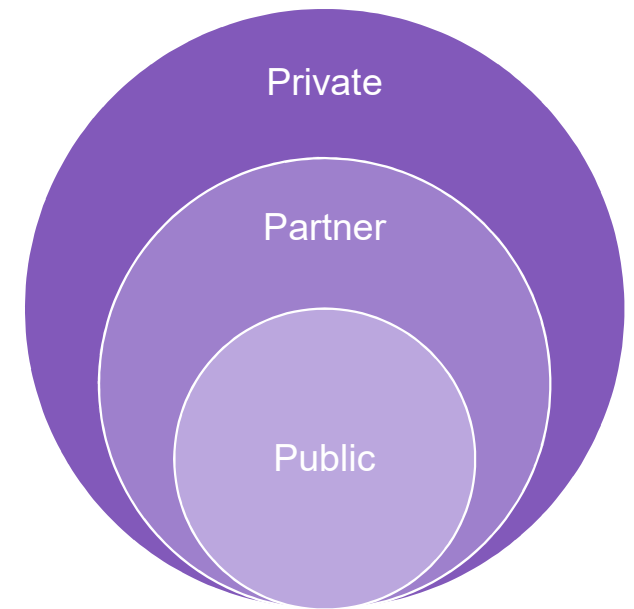# What is an API?

API = Application Programming Interface

"A way for a piece of software to communicate with another piece of software."
- Many times web applications (REST over HTTP)
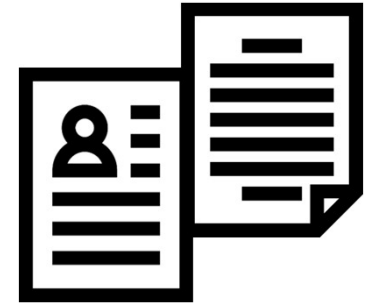- Many times automated (since it's possible)

APIs **simplify** and **define** the ways this **transfer of information** is accomplished.

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APIs on the web:
publicity, license, cost

- Only some APIs are public

- Only some of those are offer usable data

- Only some of thoese are cost-free

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Typical data from public APIs

- "Richer" than simple table-based (.xlsx or .csv) data

- Usually in JSON format
  - Structured
  - Hierarchical
  - Has metadata

What you'll need

- **Data** source with the API
- **Software** that accesses the API
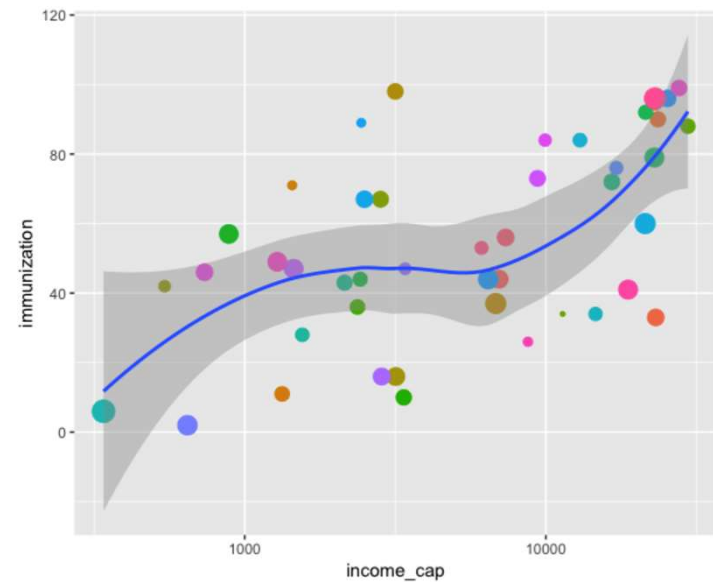- **Computing** (server or computer) resource to run the application

A reminder from the sys admin:
- Prepare for the future! There might be changes in the API, critical security updates required to the software and server, etc.
- Easiest way is to use professional developers (if you aren't one yourself) and have a maintenance agreement on the software

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Example 1: World bank data

World Bank data for an R app

[Using APIs to collect website data (medium.com)](medium.com)

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Example 2: Twitter data

Using the public Twitter API
with Mozdeh

http://mozdeh.wlv.ac.uk

Twitterin käyttö tutkimuksessa
(Kim Holmberg) – esitys intrassa

18.4.2018

**Twitterin käyttö
tutkimuksessa**

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Example 3: Spatial data data

Combining geographic information with other data:

- Language areas
- Spread of books
- etc.

AVAA Data Gallery

Data gallery

Paituli spatial data service

Paituli spatial data service

Paituli service provides spatial datasets that are important for research and education.

- ☐ Go to dataset metadata
- ☐ Go to application
- ☐ Go to interface
- ☐ Go to downloads
- ☐ Go to source code repository

PalTuli

Paituli is spatial data download service. Paituli's primary users are students and personnel of Finnish universities and polytechnics, but most of the datasets are open to anyone. The service provides datasets that are important for research and education. Compared to other spatial data services Paituli includes also historical versions of datasets. For many datasets the first version is from 2005, when Paituli started. At the moment datasets from following data providers are available: Finnish Meteorological Institute, National Land Survey, Traffic Agency, Agency for rural affairs, Statistics Finland and Finnish Environment Institute (SYKE).
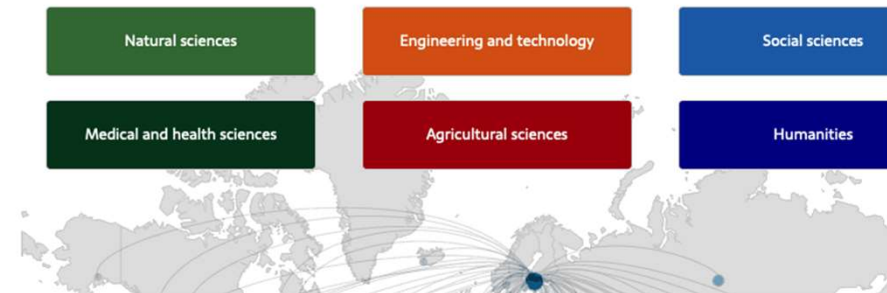
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Example 4: Publication metrics

FImpact gathers publication
data from VIRTA and
combines it with altmetrics

fimpact.utu.fi

FImpact

Top 5% of Finnish research, as measured by altmetrics

Natural sciences

Engineering and technology

Social sciences

Medical and health sciences

Agricultural sciences

Humanities

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Example 5: IoT?

What could be researched if you'd get…
- live location data of public transport in Helsinki?
- live weather data combined with other sensor data?
- live heart rate, step count per h and perspiration from humans?
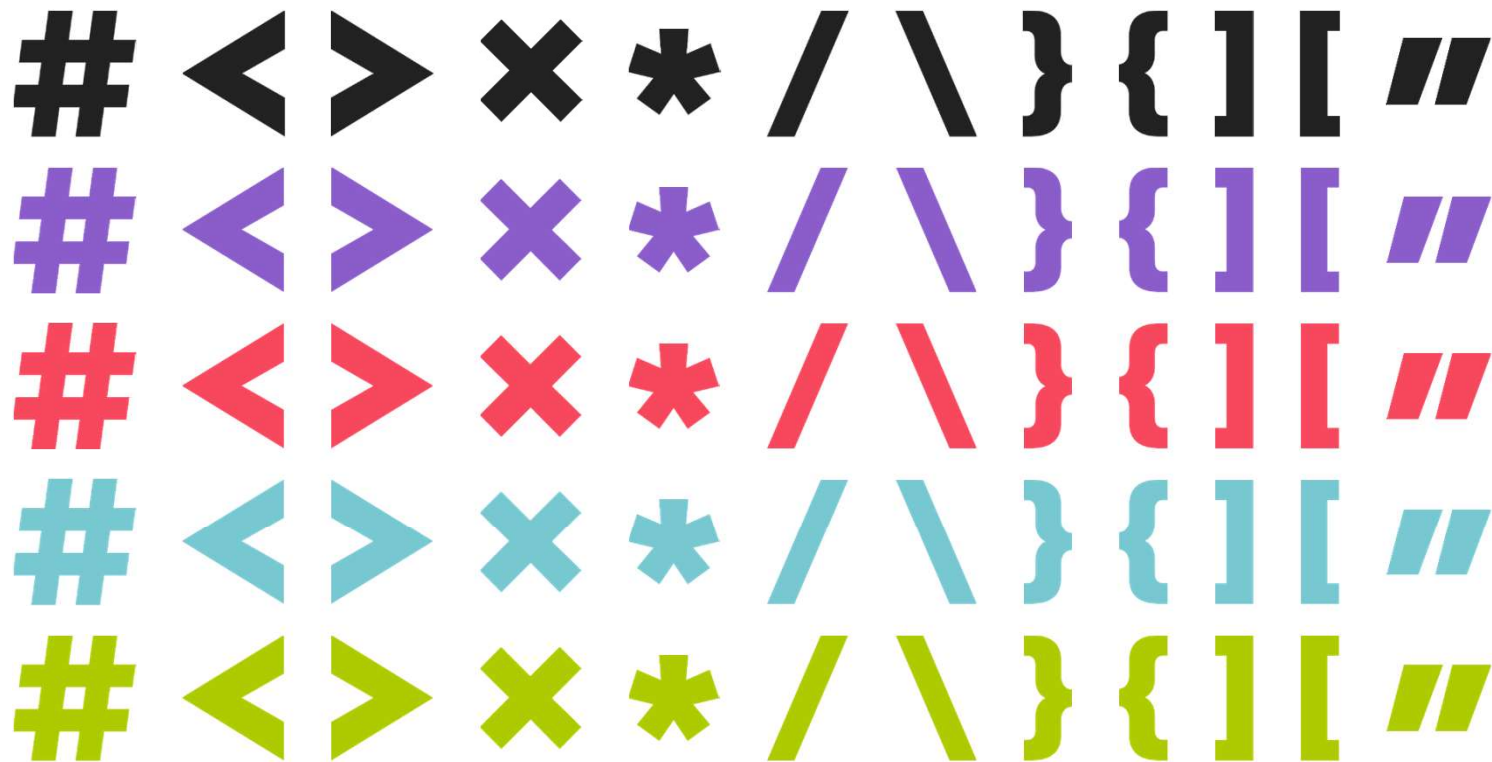
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Break time!

- We'll continue at…
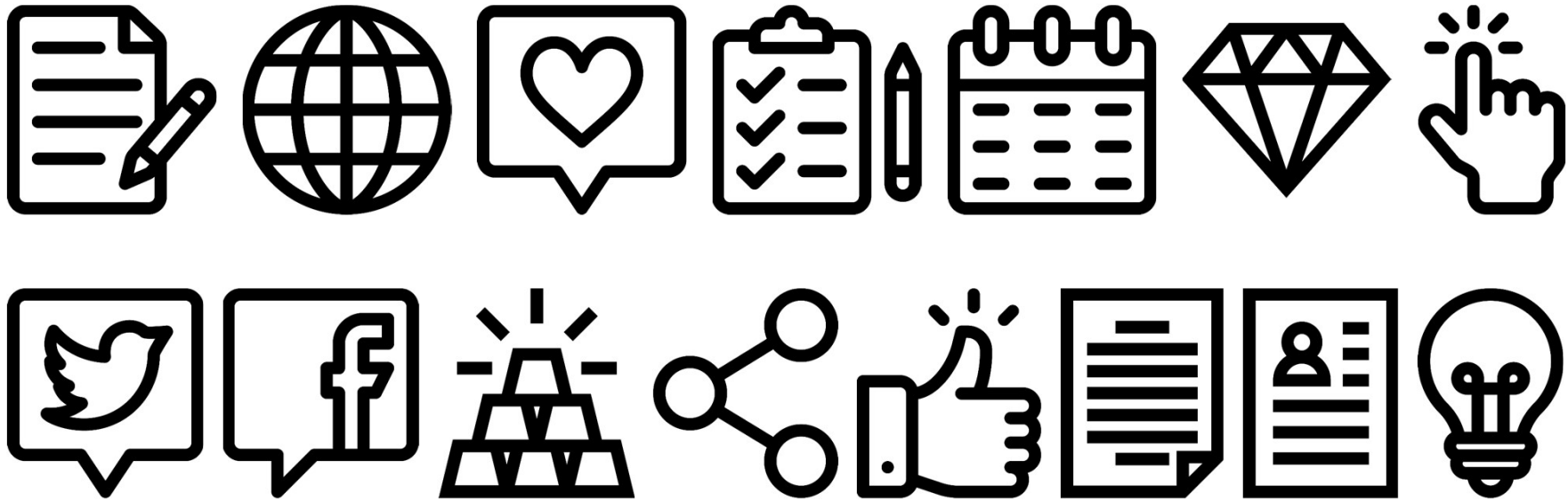
Demo

ty.fi/apidemo

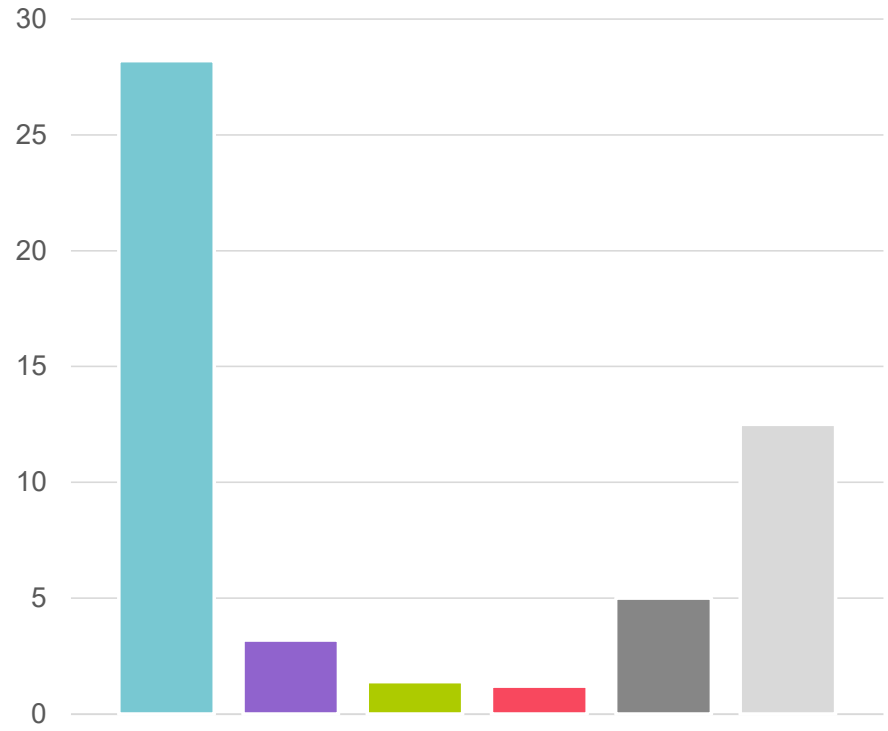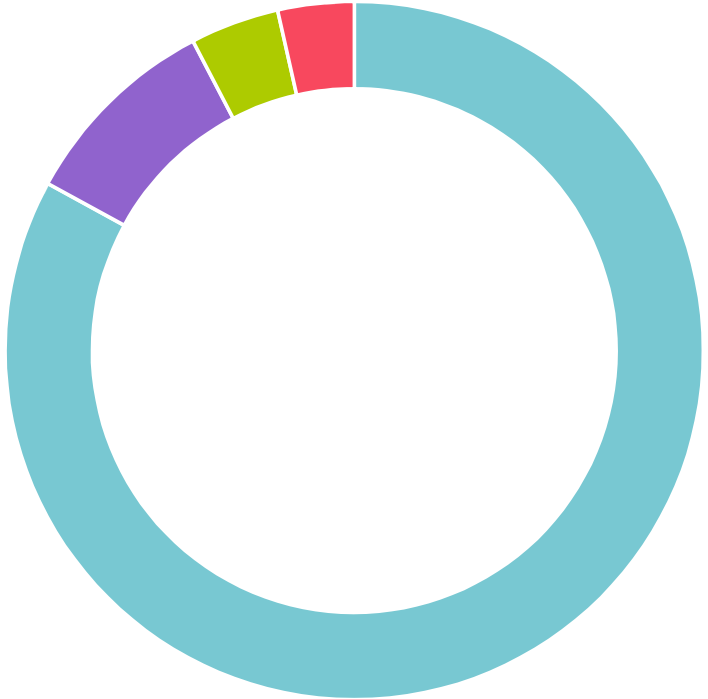# Discussion

Graphic elements

Icons

Graphs

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Thanks!

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