CORE: Infrastructure for text mining of open access content at scale

STM Week 2019 - Innovations

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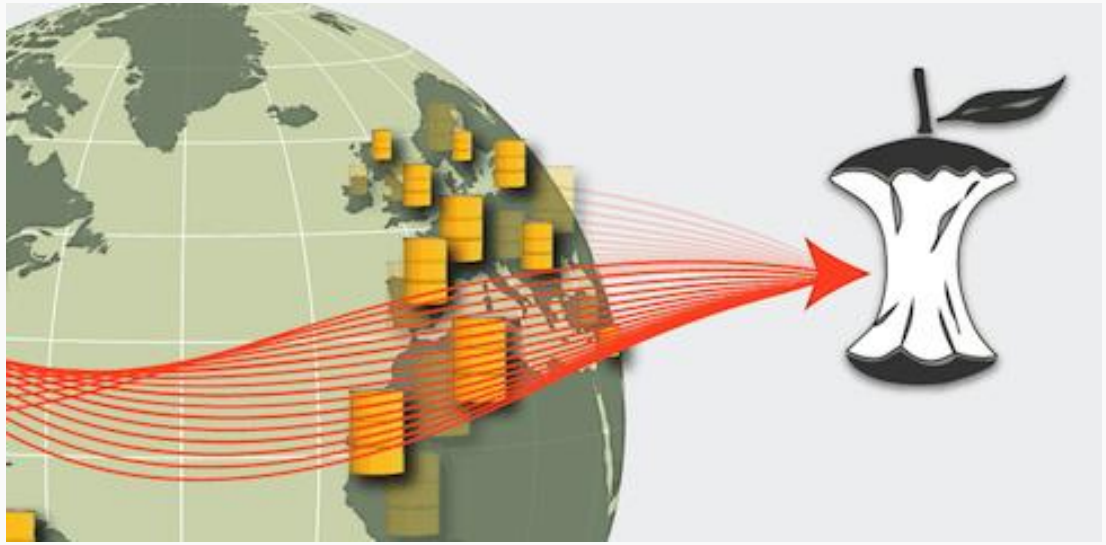
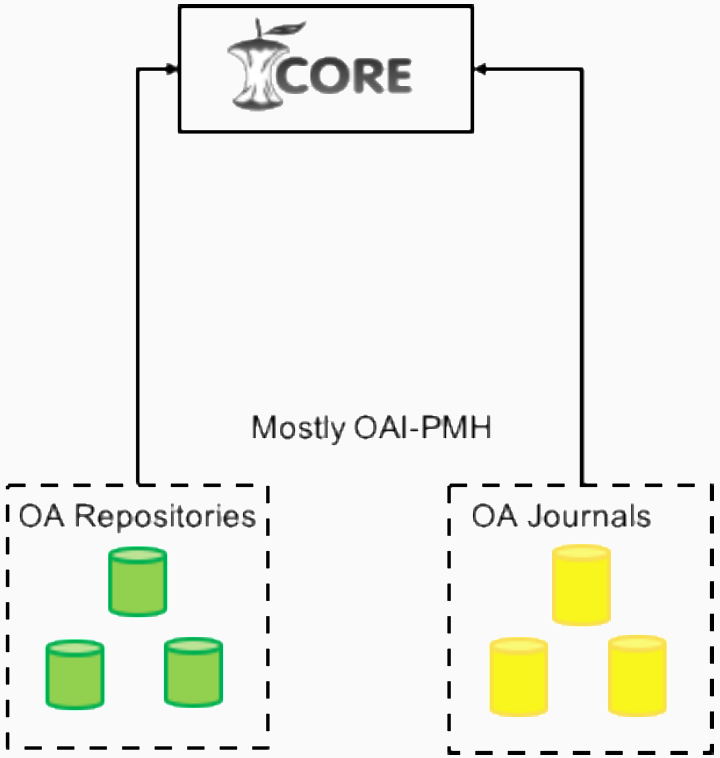
CORE's mission

Aggregate all open access research articles worldwide …

… enrich this content and provide seamless access to it through a set of data services …



CORE harvests from repositories



Harvesting is challenging

Many OAI-PMH implementations challenges …

No content harvesting support

Restrictions on
full text downloading

Failing resumption tokens

Reliability

Incremental updates

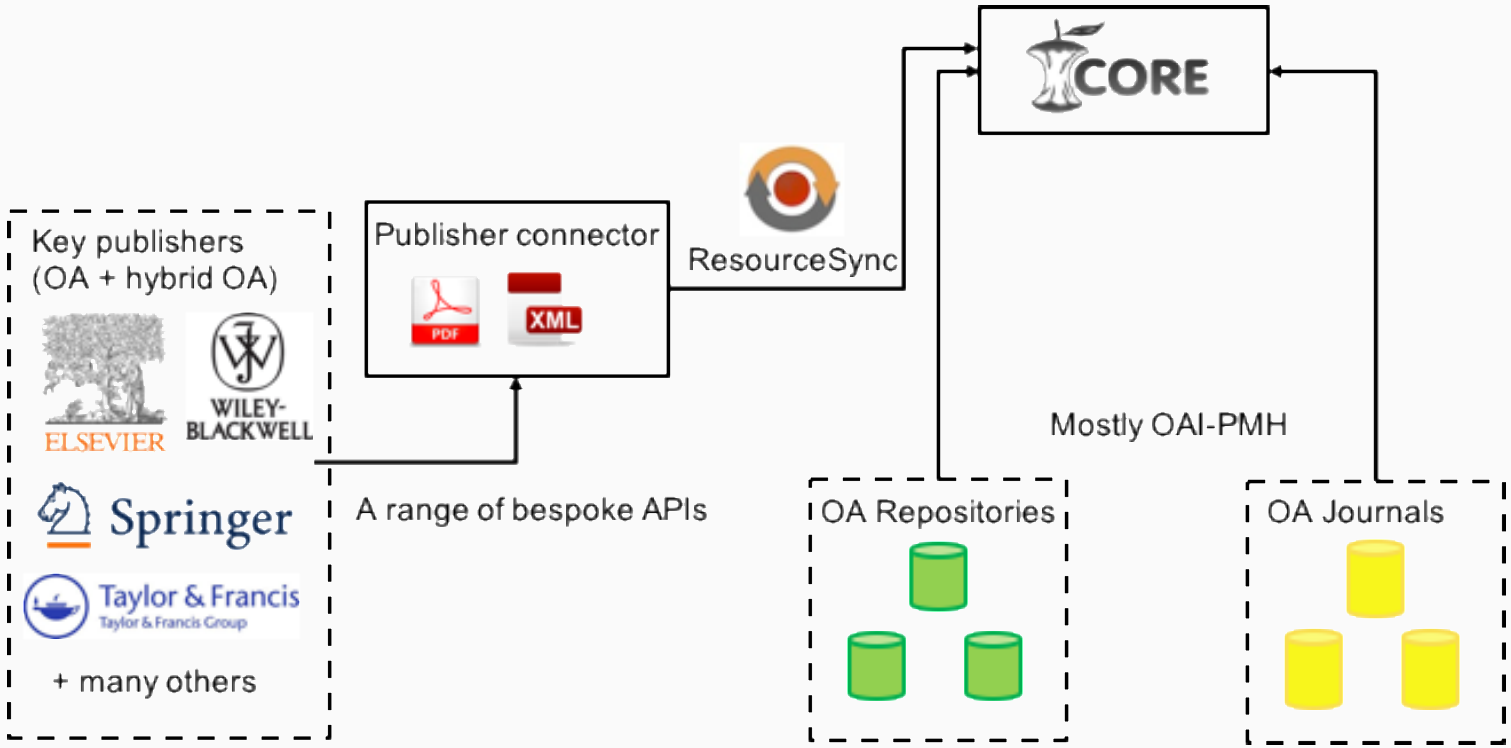
Scalability

Sequential nature of OAI-PMH

Locating full text URLs in metadata

Metadata interoperability

Harvesting data is challenging



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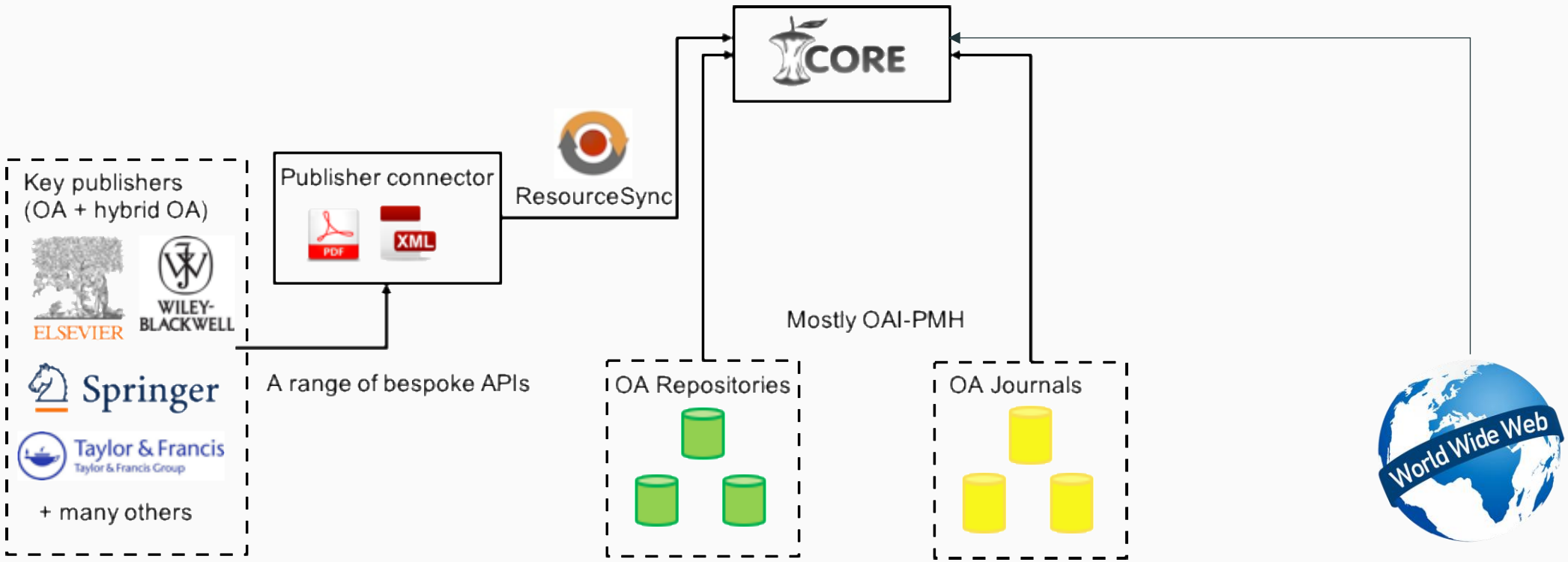
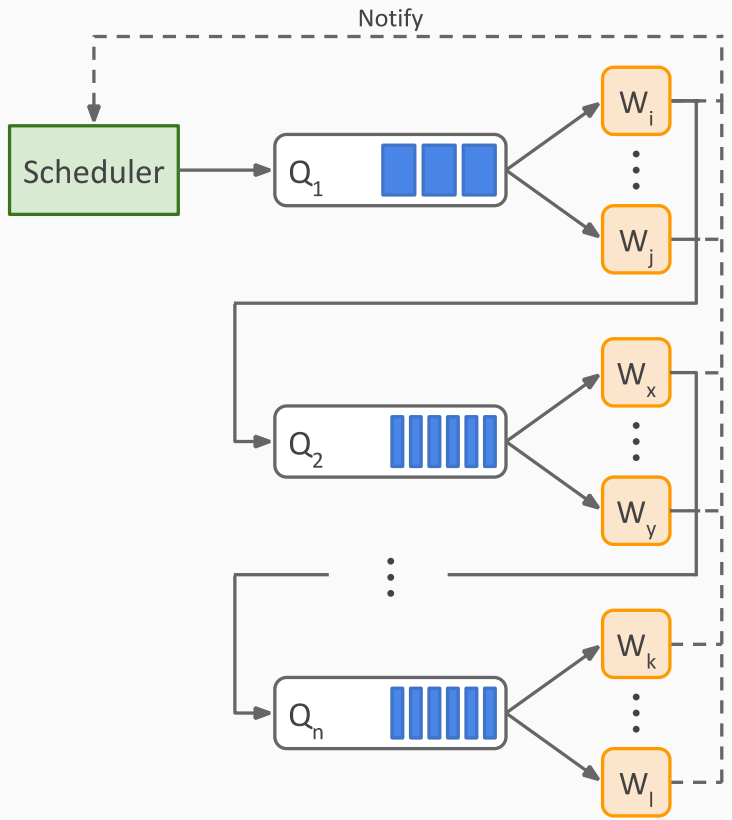


CORE Processing pipeline

- Metadata download, extraction and harmonisation
- Full text download
- Text extractions, sections extraction
- Metadata validation and enrichment (DOI, ORCID, etc.)
- Thumbnails generation
- References and citation contexts extraction
- API enrichment (e.g. finding DOIs, linking to other systems)
- Document type classification
- Deduplication
- Indexing
- Exposing (data dumps, API, FastSync)

How often is the CORE content updated

- Data providers harvested as frequent as hardware allows
- Harvesting time is specified by the CORE scheduler
  - Last time the repository was harvested
  - Repository size
  - Repository location
  - Repository harvesting performance
  - Previous information about harvesting errors
- Schedule functionality reviewed on a regular basis

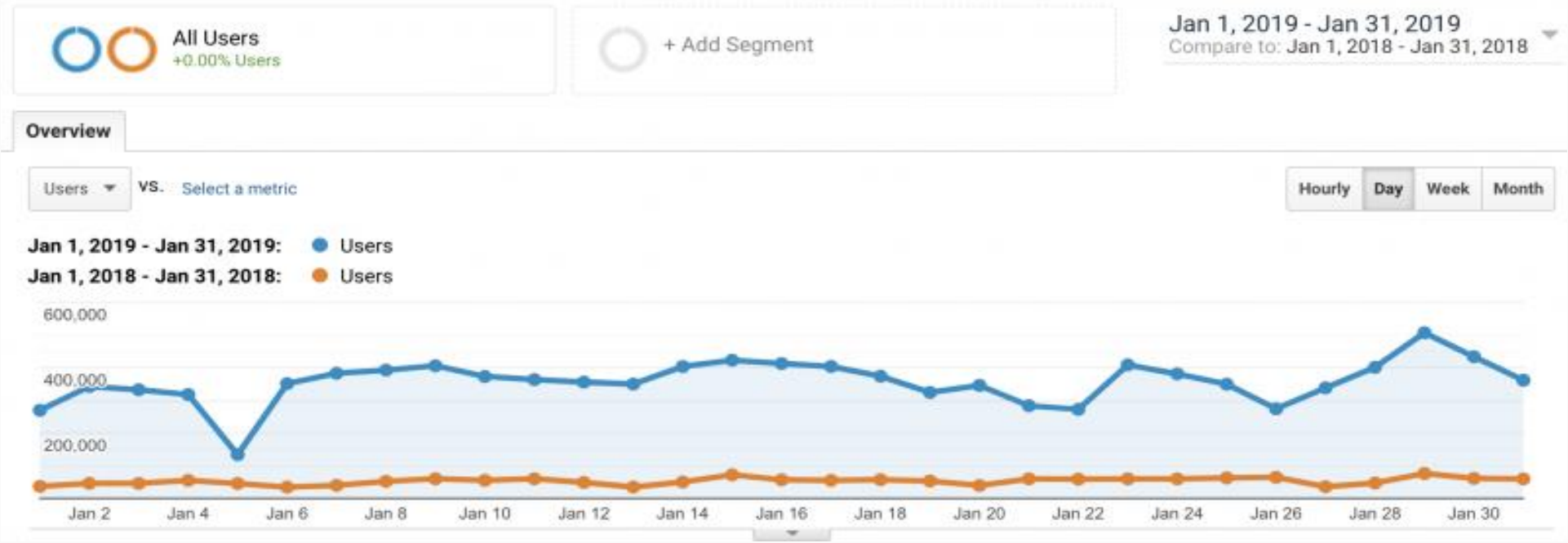


World’s largest dataset of Open Access full texts

- **14,389,274** Hosted full texts
- **24,936,921** Access to free to read full texts
- **135,539,113** Metadata records
- **9,645** Data providers

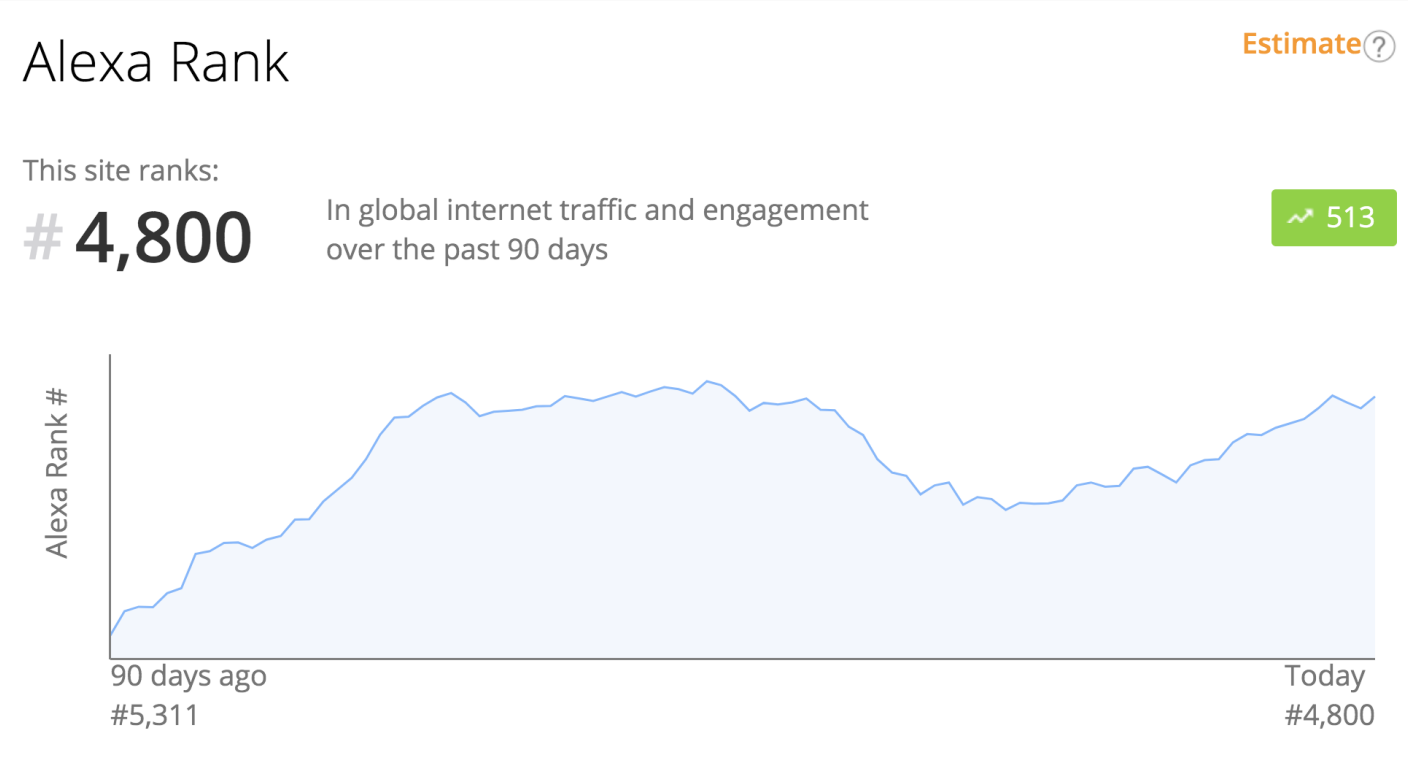
Majority of records in CORE do not have an equivalent in Crossref.

CORE usage



- January 2019 – CORE reached **over 10M monthly active users** for the first time
- 571% increase from January 2018

CORE Usage



- December 2019 – CORE within top 5k websites globally by user engagement.
- a combination of daily visitors and page views on a website over a 3 month period
- core.ac.uk by usage in the **top 0.0009% of global websites**
- Allows to compare traffic for any domain - https://www.alexa.com/siteinfo/

CORE wins an award

- Outstanding Impact of Research on Society and Prosperity Award 2019
- Greatly motivated to serve the community even more!

CORE services

- Access to raw data

API

Dataset

FastSync

- Content discovery

Recommender

Discovery

- Managing content

Repository Dashboard

CORE's raw data services

Raw data services – CORE API

- Enables the development of new applications
- Real-time machine access to the world's largest collection of open access papers
- Harmonised access to data from across the network of CORE providers
- Direct machine access to full texts of research papers

Raw data services – CORE Dataset

- Download millions of research papers for text and data analysis
- Prototype, analyse and mine your data in your infrastructure

Raw data services – CORE FastSync

- Keeps your data in sync with research content from around the world
- Fast and incremental updates as soon as they become available. No usage restrictions
- Based on ResourceSync

Types of collaborations

ontochem
IT SOLUTIONS

Microsoft

INNOVATION
ENGINEERING

turnitin

IRIS.AI

CACTUS

NAVER

LEAN Library
A SAGE Publishing Company

Artificial Researcher

Use cases powered by CORE

- It is beyond human capacities to read all scientific literature
- Example use cases in which CORE is applied:
  - Improving discovery
  - Plagiarism detection
  - Question answering in science
  - Literature based discovery
  - Fact checking and detection of misinformation
  - Analysing research trends
  - Finding experts in a particular domain
  - Research evaluation and scientometrics
  - Exploratory and visual search
  - Classifying citations based on context
  - …

CORE Opportunities

- Growing demand for raw data access services
  - Help companies to develop innovative services analysing and mining research papers
- Monitor compliance with Plan S
  - Help institutions to comply as well as monitor their compliance
- Development of products to serve the needs of HEIs
  - Help institutions to increase the discoverability of their research outputs via CORE services (Recommender, Discovery, Search, integrations with other systems, etc.)
  - Make repositories more engaging

Take home

- Data providers (repositories, preprint servers, journals, etc.) and aggregators need to work together to allow text and data analysis, processing and reuse of large volumes of research papers.
- CORE provides the tools for programmatically processing open access data fast, reliably and from across the global network of repositories.
- If you are a developer or analyst:
  - Build your own stuff using CORE‘s data services on top of the global full text open access courpus
- If you are a company wanting to text mine research papers globally
  - Talk to us and register for our raw data services.

Thank you!

https://core.ac.uk