EUROPEAN LANGUAGE DATA SPACE

LDS Country Workshop Sweden

Prof. Dr. Georg Rehm (DFKI GmbH, Germany) – LDS Coordinator
georg.rehm@dfki.de

16-05-2024 LDS Country Workshop Sweden
https://language-data-space.ec.europa.eu

Context: Large Language Models (LLMs)

- Large language models are the most disruptive breakthrough in AI in recent history (BERT, GPT-3, ChatGPT, GPT-4 etc.)
- LLMs are trained on vast amounts of training data (language data)
- LLMs use dozens, some even hundreds of terabytes (trillions of tokens) of language and also image, video, audio etc. training data
- Europe's languages are vastly under-resourced, except English
- A concerted effort for the collection of enormous amounts of language data for all European languages is very much needed
- The global NLP/LT/Gen-AI market is in the hundreds of billions of US-$ already and expected to grow to 439.85B US-$ by 2030 – no significant players from Europe
- Already now billions and billions are made but …

BUSINESS

ChatGPT Shows Just How Far Europe Lags in Tech

Analysis by Lionel Laurent | Bloomberg
February 21, 2023 at 2:12 a.m. EST

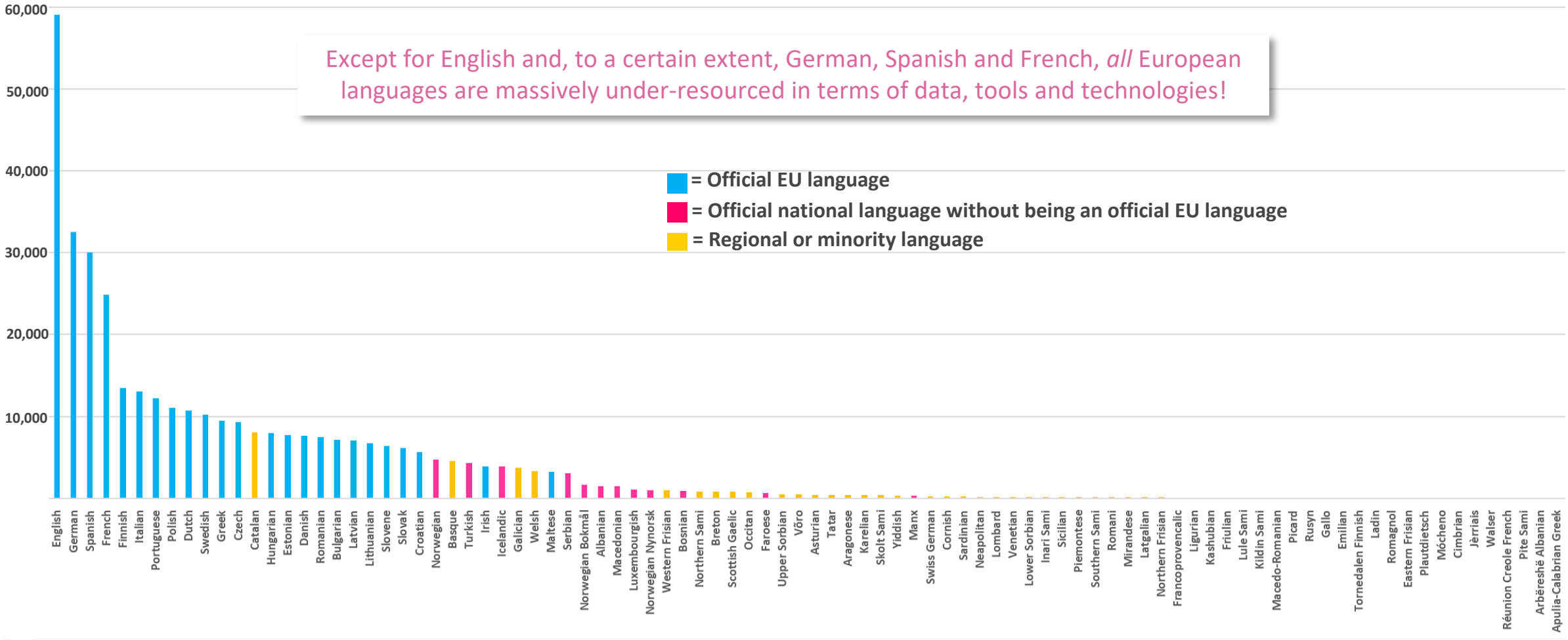
Europe is where ChatGPT gets regulated, not invented. That's something to regret. As unhinged as the initial results of the artificial-intelligence arms race may be, they're also another reminder of how far the European Union lags behind the US and China when it comes to tech.

European Initiatives

- European initiatives for the development of LLMs
  - Large research projects in almost every country, e.g., Spain, Denmark, Italy, Germany etc.
  - Companies in many countries, e.g., Finland (Silo.ai), France (Mistral), Germany (Aleph Alpha)
  - EU and nationally funded projects, e.g., HPLT, TrustLLM
  - New pan-European initiative: ALT-EDIC
- Challenges:
  - Availability of data for European languages;
  - HPC facilities;
  - Speed of the big tech players in the US and Asia vs. speed of Europe

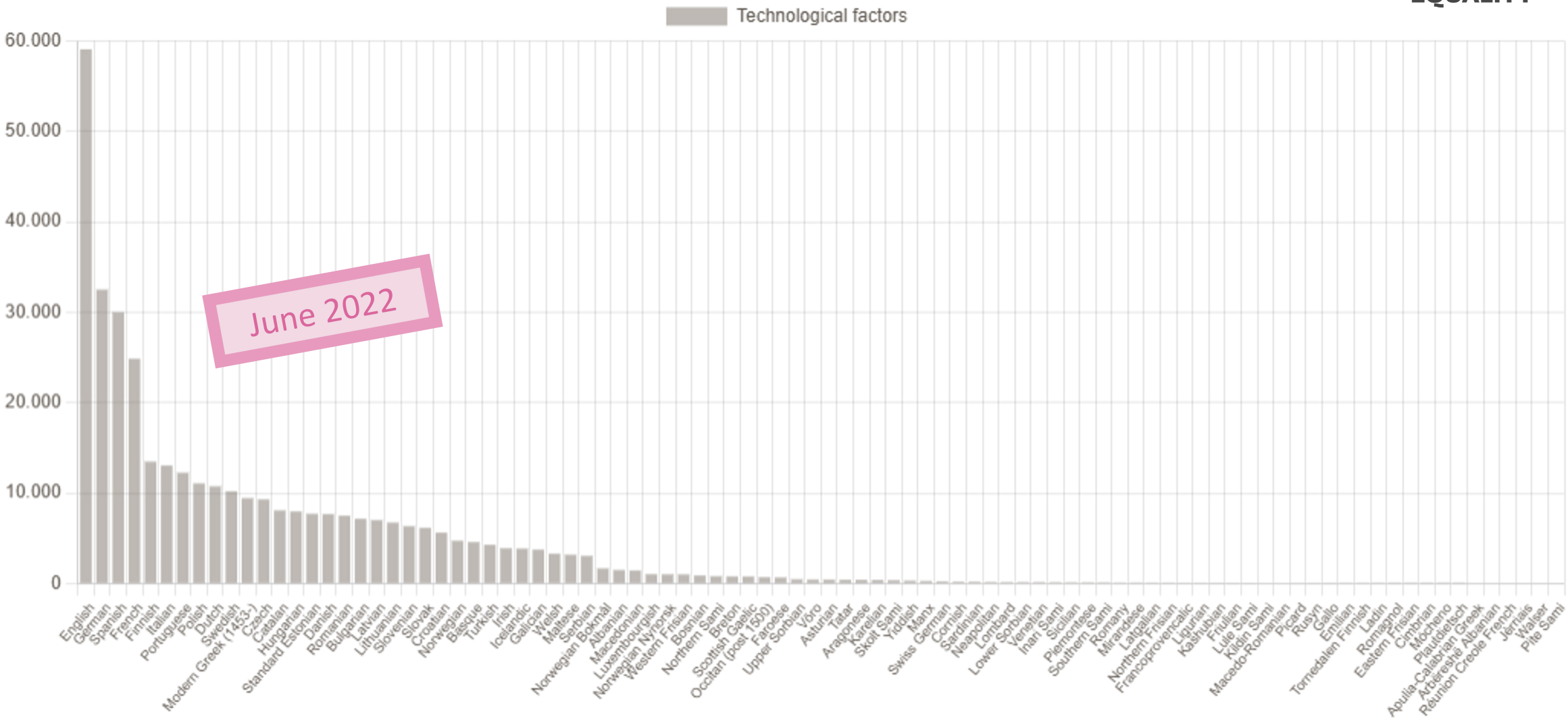
Digital Language Equality Metric: Technological Scores

EUROPEAN LANGUAGE EQUALITY



DLE Metric: 2022 vs. 2023 (1/3)

EUROPEAN LANGUAGE EQUALITY



DLE Metric: 2022 vs. 2023 (2/3)

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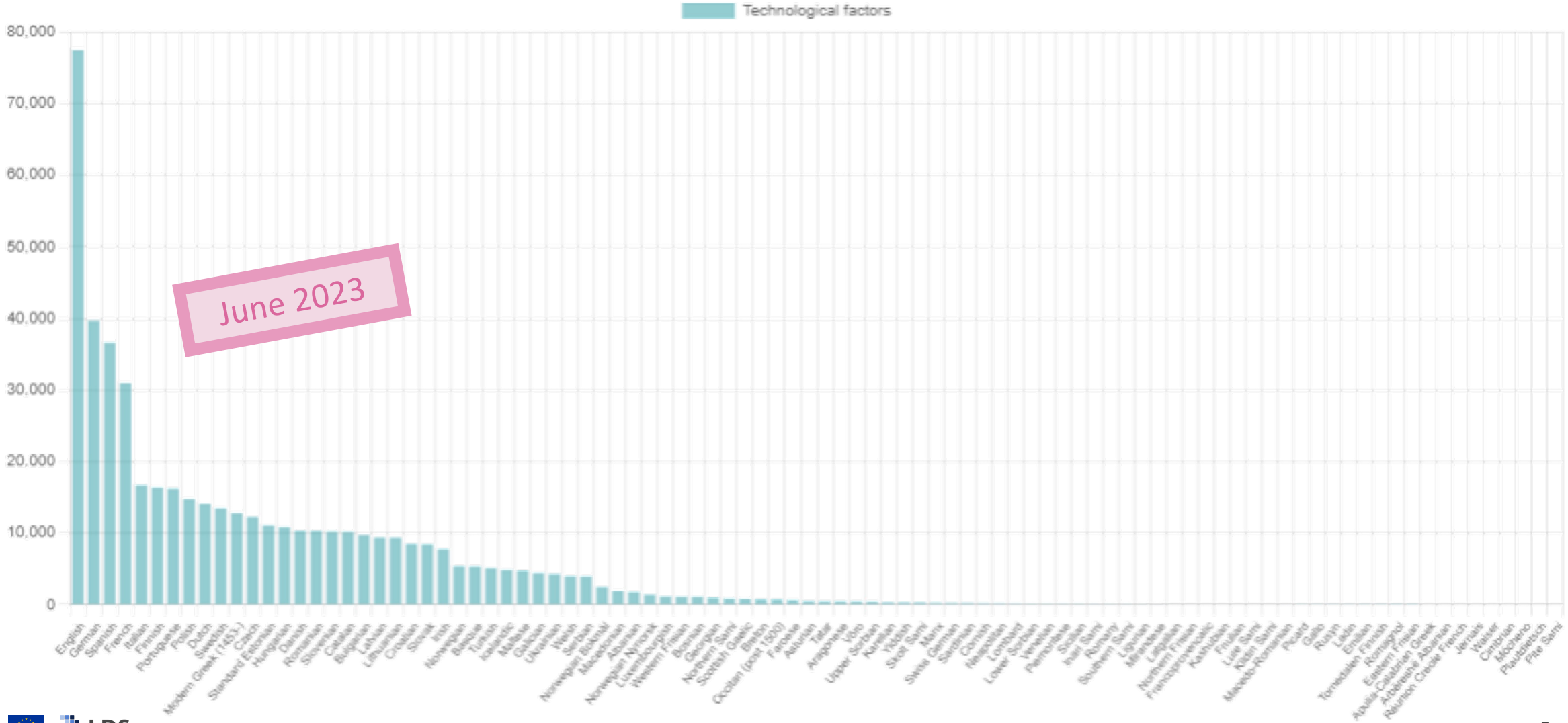

DLE Metric: 2022 vs. 2023 (3/3)

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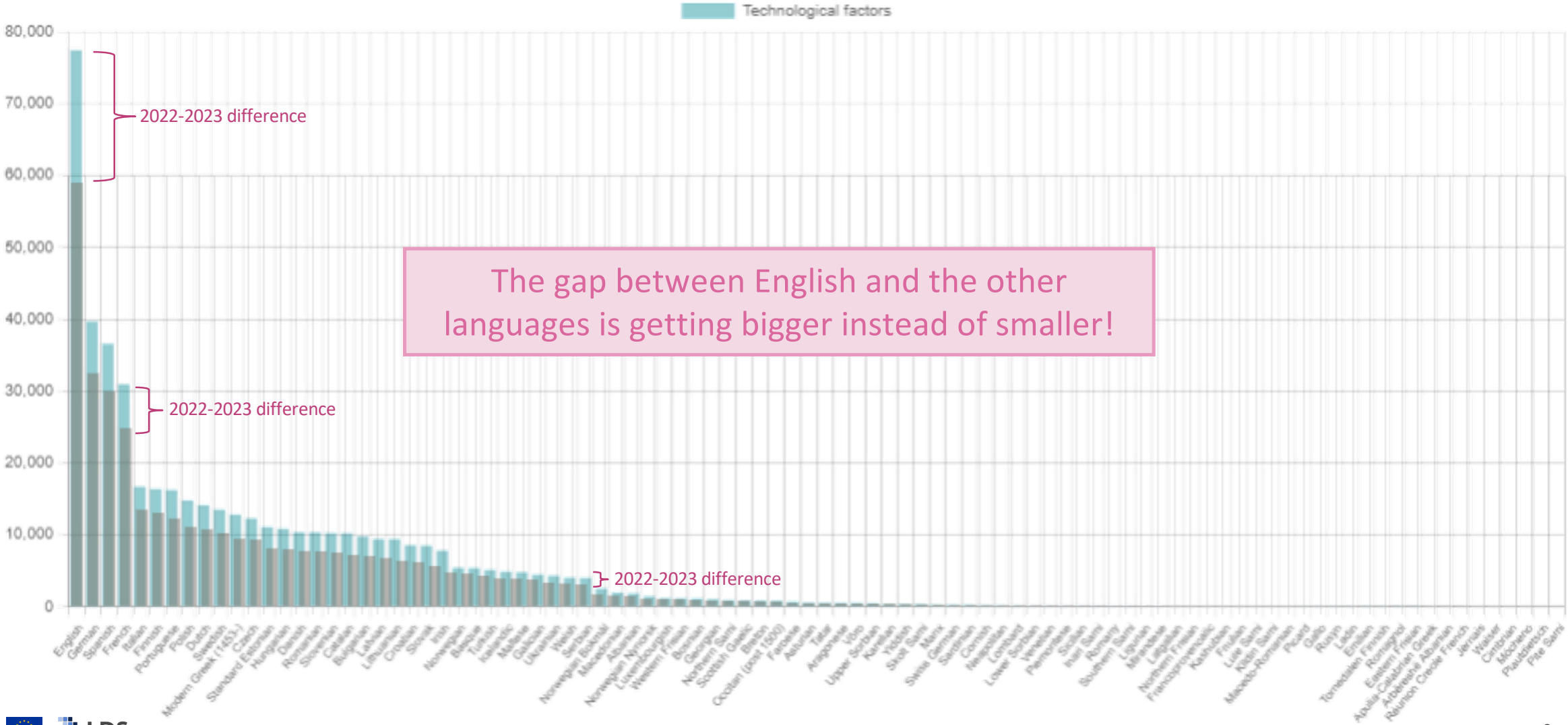


EU Data Strategy & Data Spaces

- Data Spaces are an inherent part of the EU Data Strategy
- Data Spaces will help to establish a data economy in Europe
- Various data economy and data infrastructure initiatives in Europe with slightly different goals and individual positioning but conceptual, technical, legal and operational overlap:
  - Data Spaces Business Alliance (DSBA): Gaia-X, IDSA, FIWARE, BDVA
  - EU: DSSC (incl. DSBA), Simpl, approx. 20 data spaces
- The Common European Language Data Space is one of the 14 official EU data space projects with a strong focus on industry

Common European Language Data Space

EUROPEAN LANGUAGE DATA SPACE

- Type of action: procurement (CNECT/LUX/2022/OP/0026)
- Budget: 6M€ (+ 2M€ if renewed)
- Runtime: 36 months (+ 12 months if renewed)
- Objective: Develop and deploy a European platform and marketplace for the collection, creation, sharing and re-use of multilingual and multimodal language data
- Salient features: governance framework, technical architecture and infrastructure, openness, promotion
- Stakeholders: industry, research, public administration, cultural associations, NGOs and citizens

Consortium and Subcontractors

Lead Partner and Coordinator		
Deutsches Forschungszentrum für Künstliche Intelligenz GmbH	DFKI	DE
Partners and Operation Leads		
R.C. “Athena”, Institute for Language and Speech Processing	ILSP	GR
Evaluations and Language Resources Distribution Agency	ELDA	FR
TILDE	TILDE	LV
Main Subcontractors		
3pc GmbH Neue Kommunikation	3pc	DE
Capgemini Deutschland GmbH	CapG	DE
CLARIN ERIC	CLARIN	NL
Big Data Value Association (Data, AI and Robotics) AISBL	BDVA	BE

Plus legal experts (Delcade, France) and approx. 30 organisations for the logistics of multiple country workshops

Previous Projects and Initiatives

- The four core partners – DFKI, ILSP, ELDA, TILDE – have been involved in many projects, including:
- **META-NET** (FP7, 2010-2013)
  - META-SHARE
- **ELRC** (CEF, 2014-2023)
  - ELRC-SHARE
- **ELG** (H2020, 2019-2022)
  - ELG Cloud Platform
- **ELE** (PP/PA, 2021-2023)

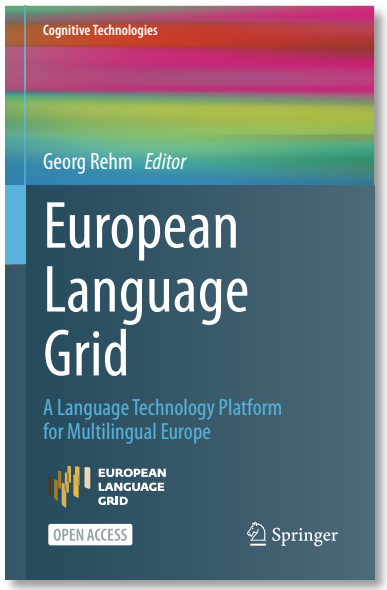
META-NET

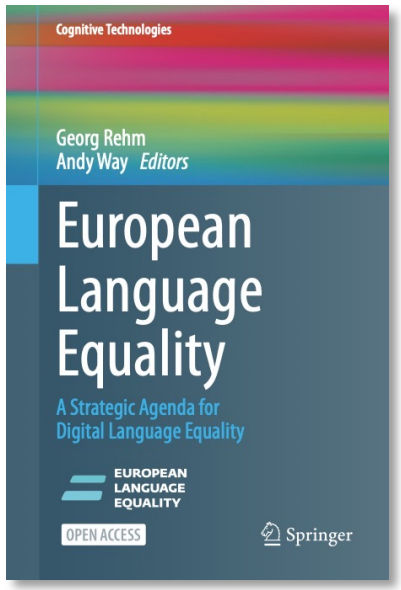
European Language Resource Coordination
Connecting Europe Facility

EUROPEAN LANGUAGE GRID

EUROPEAN LANGUAGE EQUALITY

The **technical development work in LDS** will be informed by ELG, ELRC-SHARE, META-SHARE.





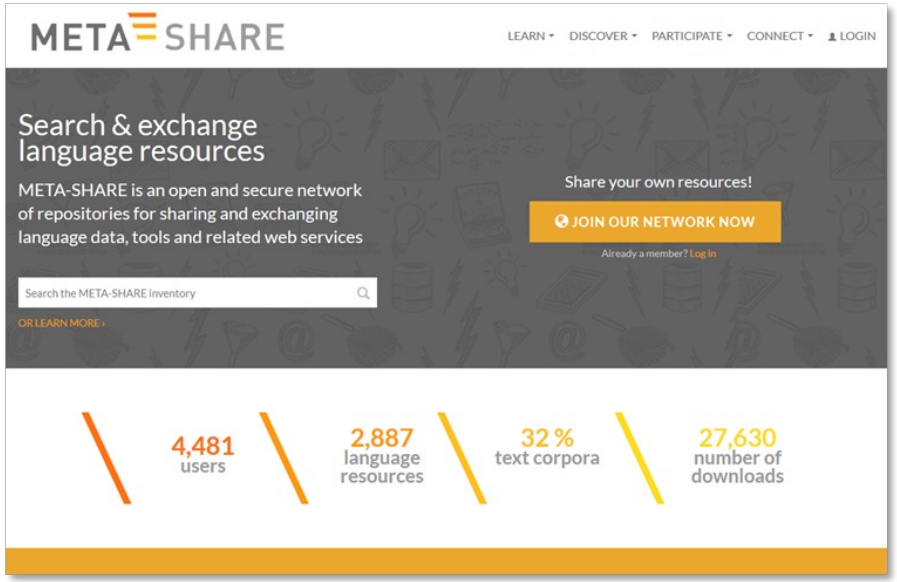
Classes of Data

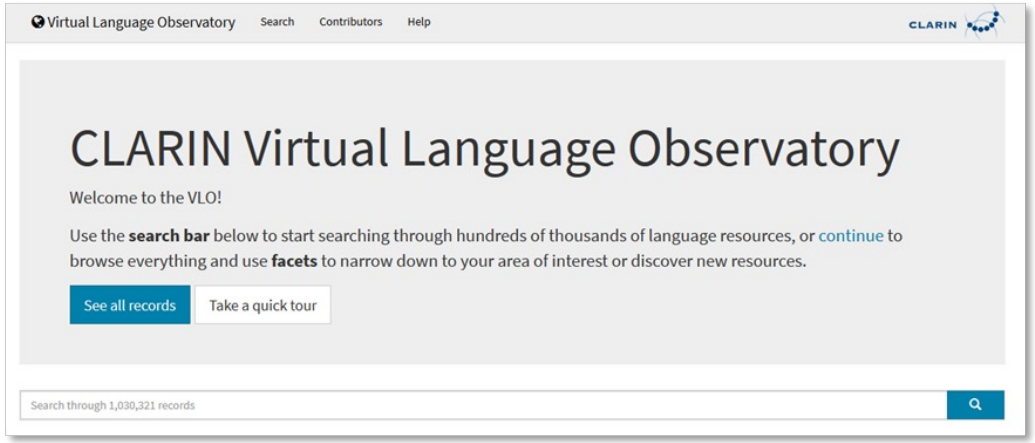
Class of Data	Typical Size	Providers	Integration into LDS	Relevance for LLMs
Regular Corpora and Language Resources	Small (MB, GB)	Primarily NLP/LT research: ELG, META-SHARE, CLARIN, ELRA, ELDA etc.	Can be easily integrated by connecting the repositories to LDS	Usually very high quality data and thus relevant for LLMs but not as base data
Web Crawls	Very big (TB, PB)	Common Crawl (and OSCAR-processed CC dumps), Internet Archive dumps etc.	Challenge due to their size (hard to transfer, hard to preprocess, hard to store; must be close to the HPC)	Indispensable due to their size and coverage – but: high level of noise, massive need for pre-processing
New, fresh data from industry and other organisations	Arbitrary size, ideally as large as possible	Publishing houses, media companies, libraries, call centres, broadcasters etc.; also: Media Data Space	Can be easily integrated by connecting these organisations to LDS	Especially high quality data or domain-specific data or data covering specific languages and thus highly relevant for LLMs

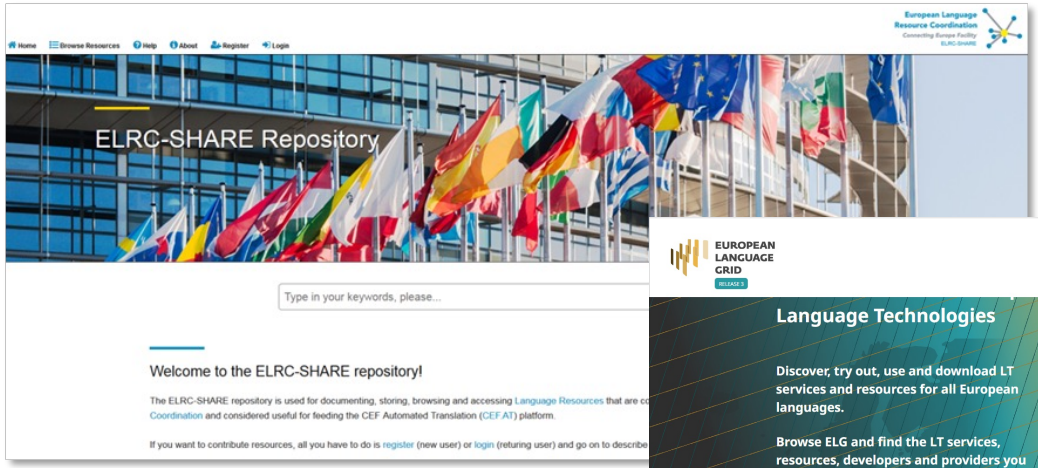
Alliance for Language Technologies EDIC (ALT-EDIC)

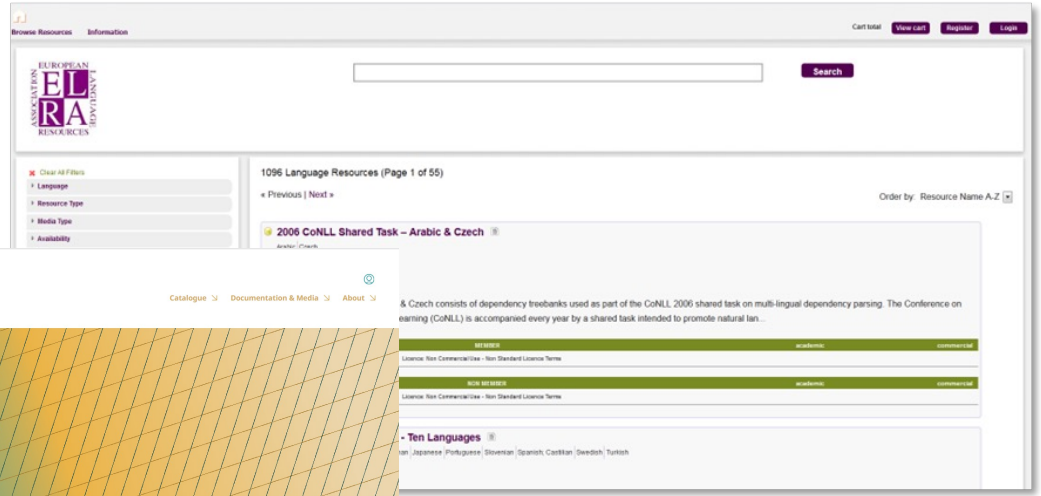
- European Digital Infrastructure Consortium (EDIC): a new legal entity type in the EU
- The first couple of EDICs are currently under development including the ALT-EDIC
- Coordinated by the French Ministry of Culture
- Close collaboration between: ALT-EDIC Working Group, EC, LDS
- ALT-EDIC action plan will concentrate on:
  - 1. Data;
  - 2. Existing language models;
  - 3. New language models;
  - 4. Evaluation, certification, normalization;
  - 5. Ecosystem;
  - 6. EDIC implementation
- We expect many synergies between LDS, ALT-EDIC, DSSC, Simpl, other data spaces and other projects!

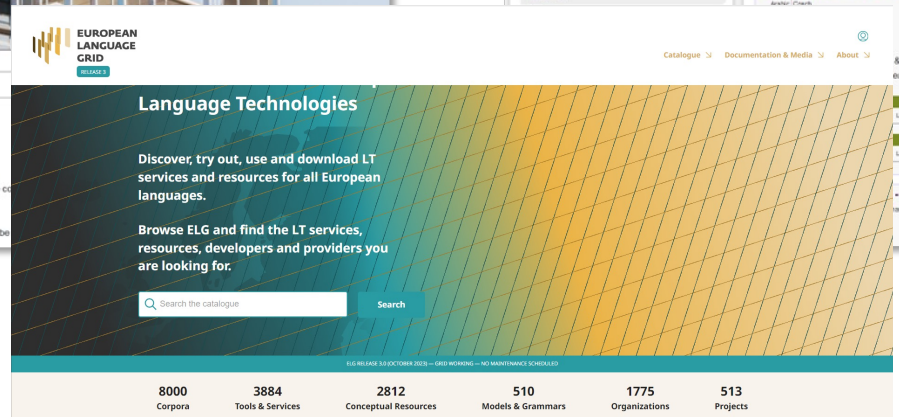
Long History of Language Data Sharing









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Language Data Space Connector
Language Data Space Participants Registry
Language Data Space Connector
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Language Data Space Connector
Language Data Space Connector
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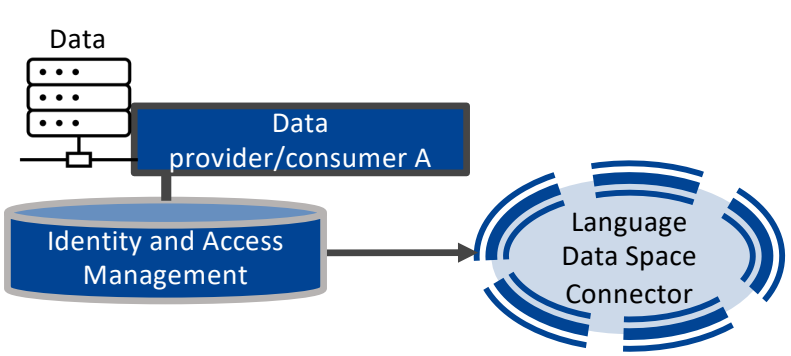
Data provider/consumer D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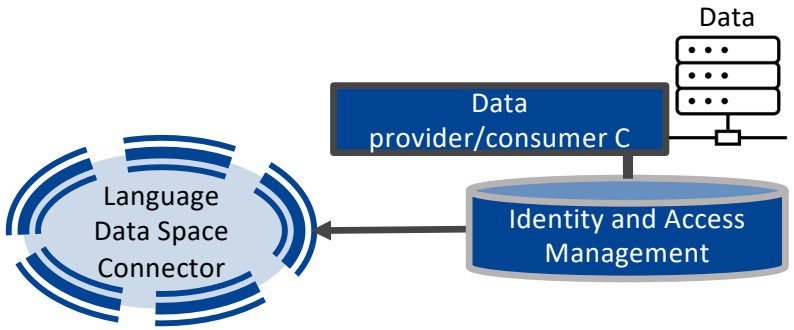
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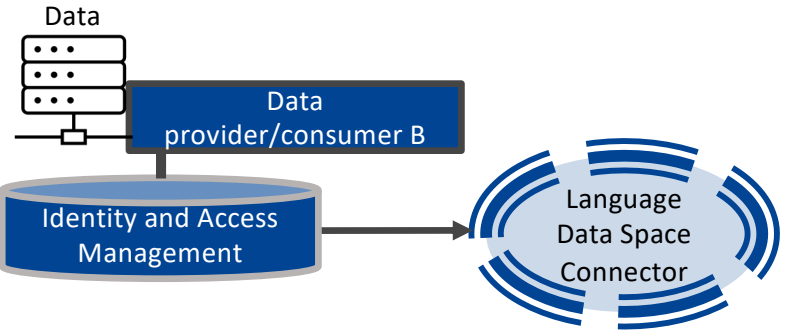
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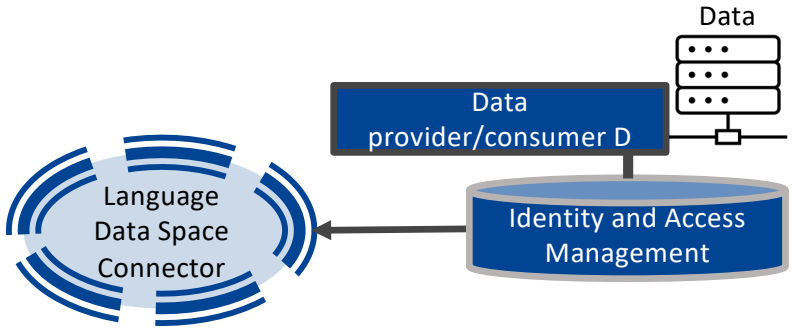
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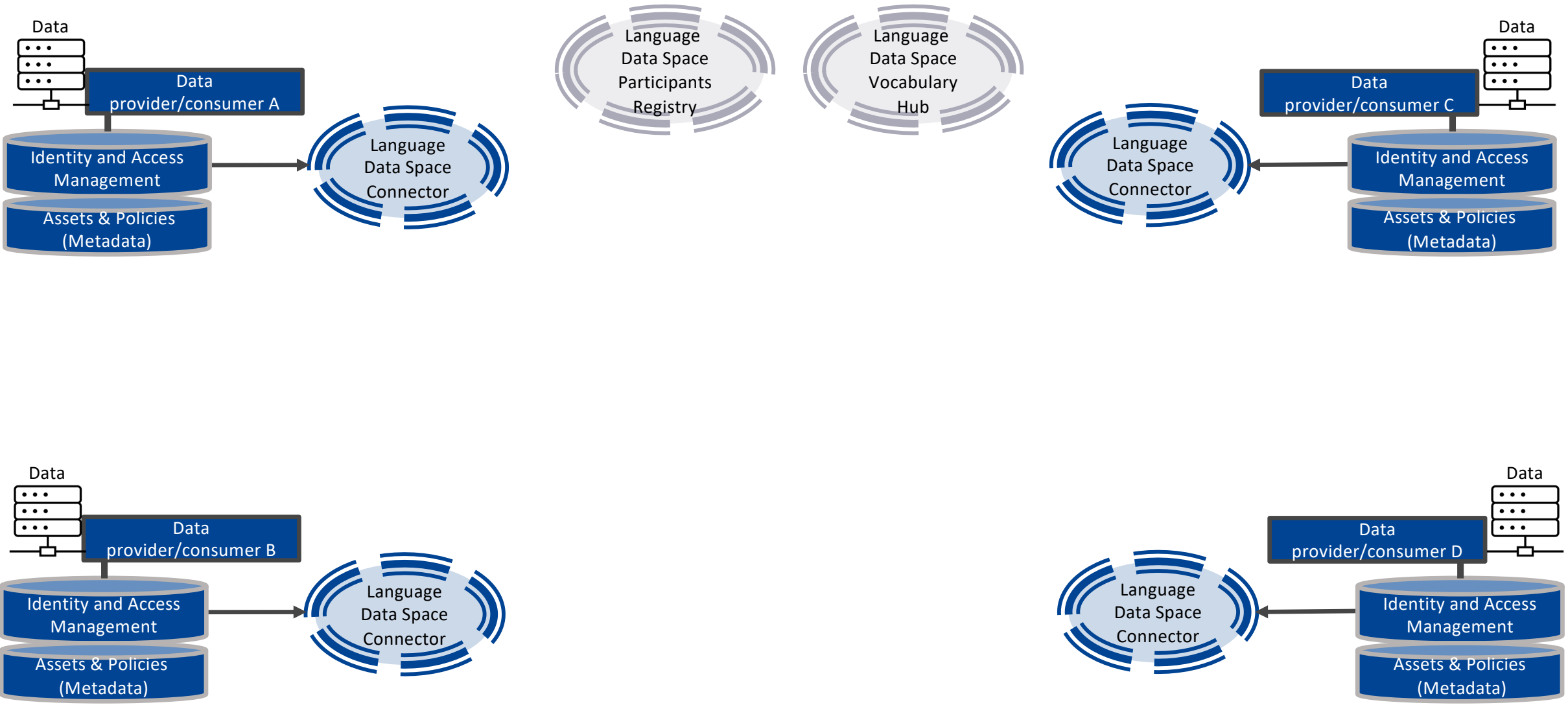
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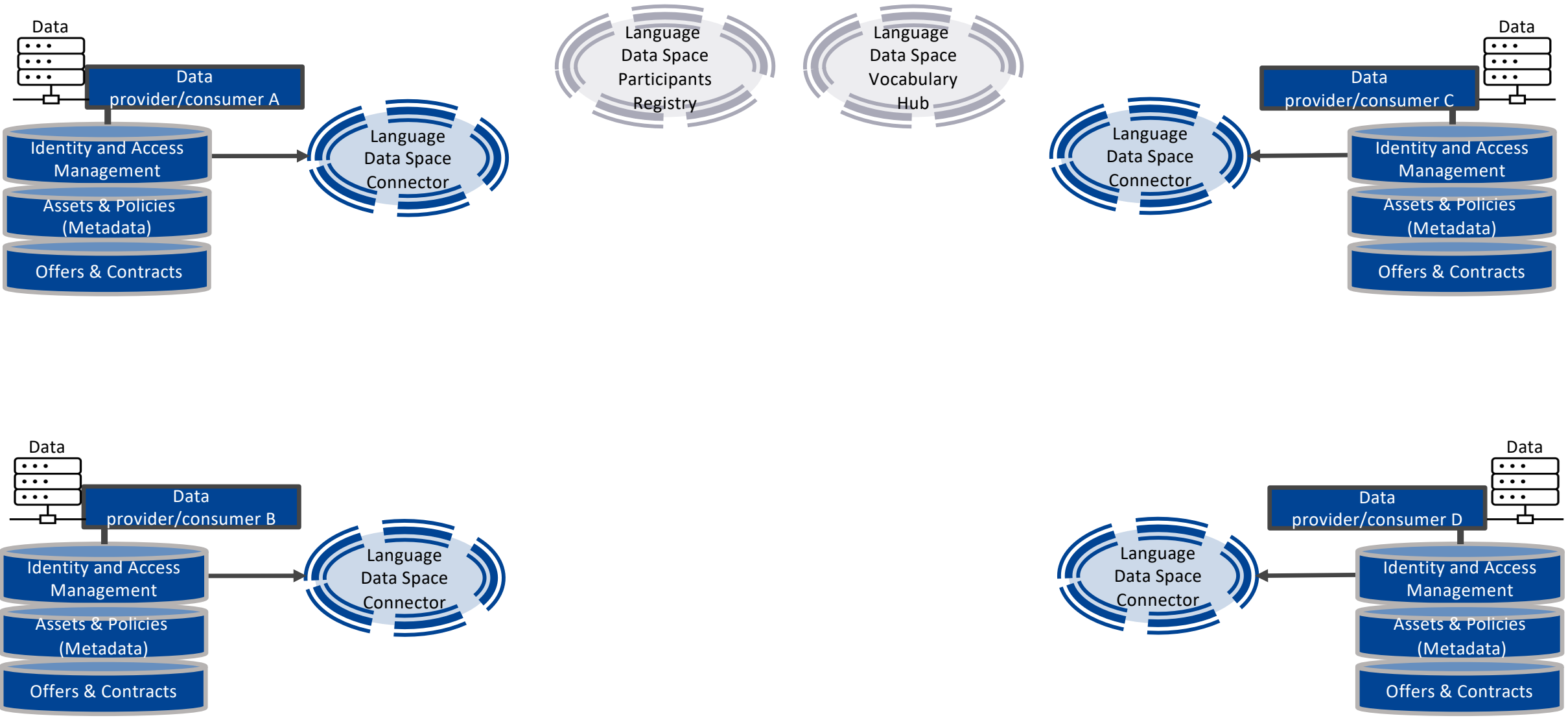
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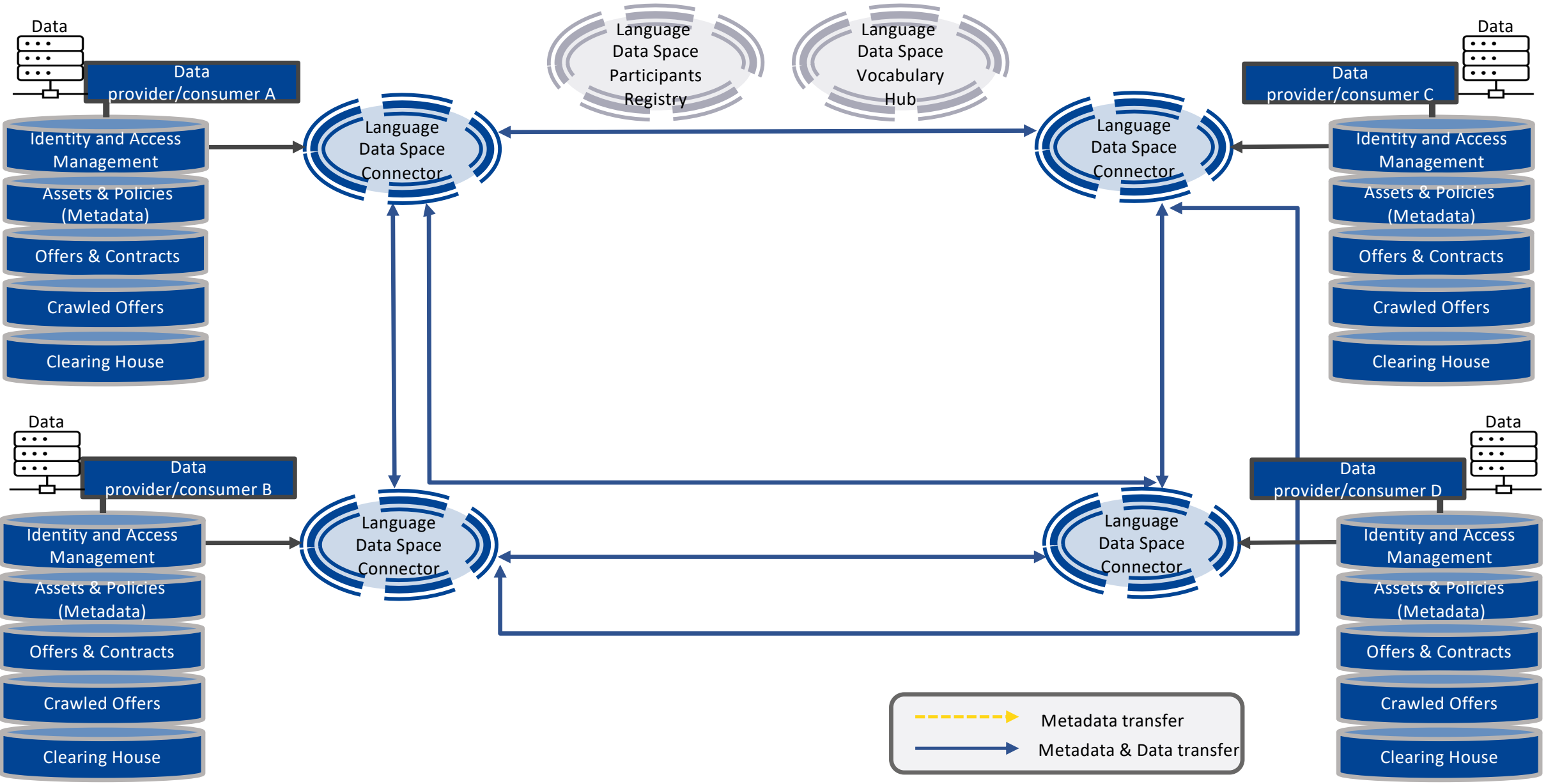
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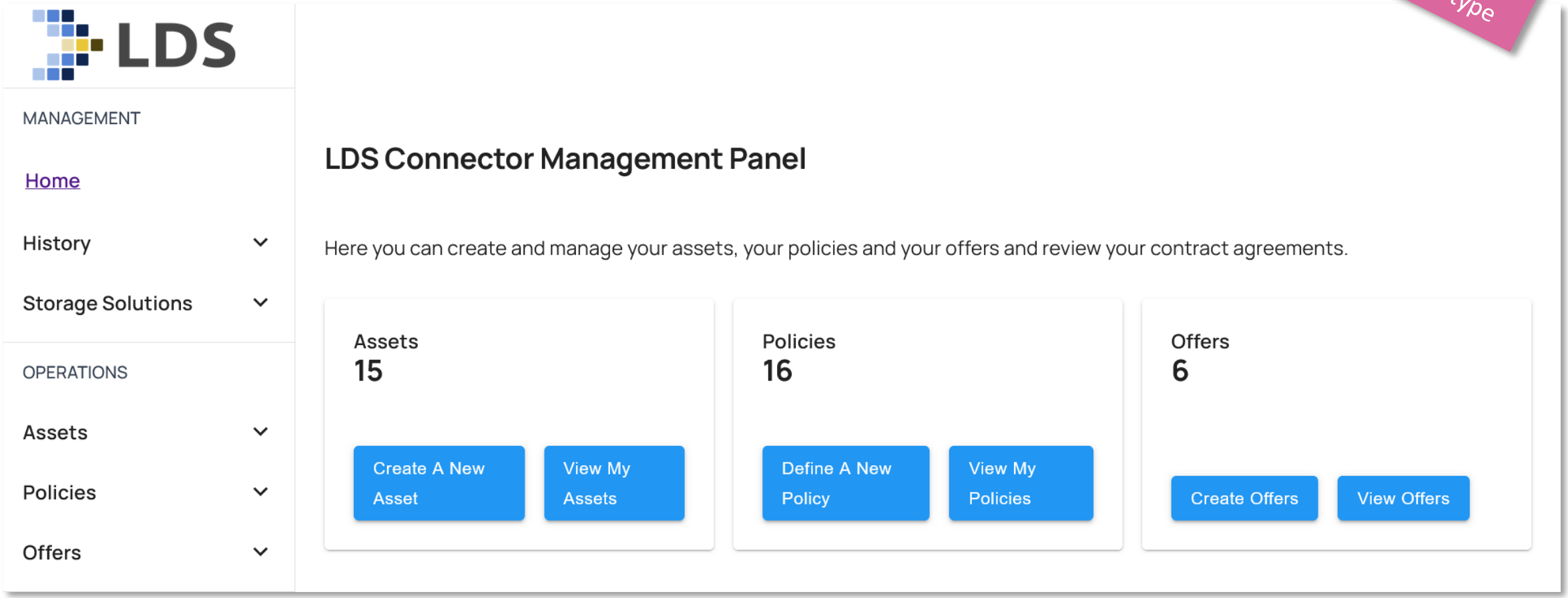
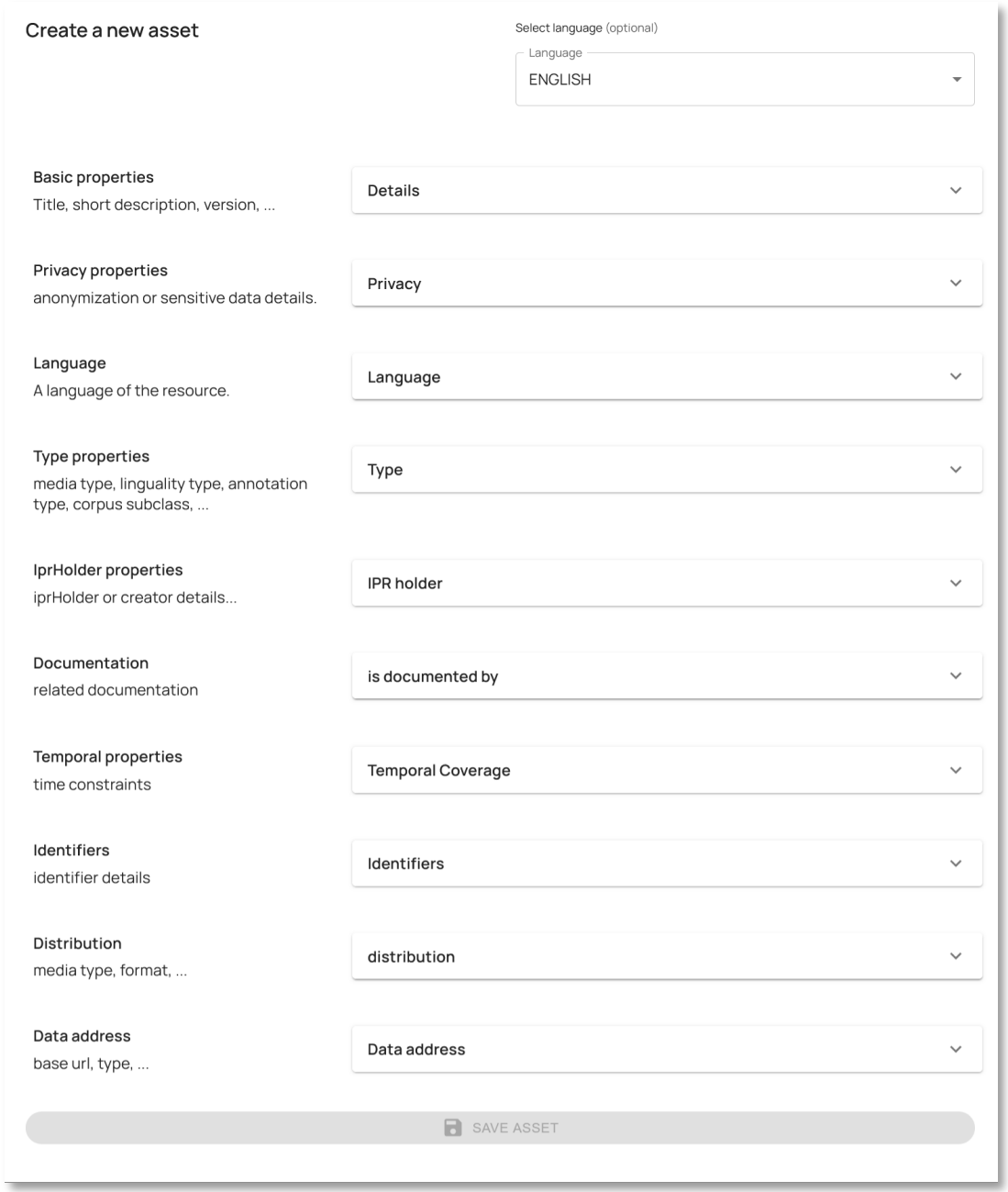
Metadata transfer
Metadata & Data transfer

Current LDS Prototype

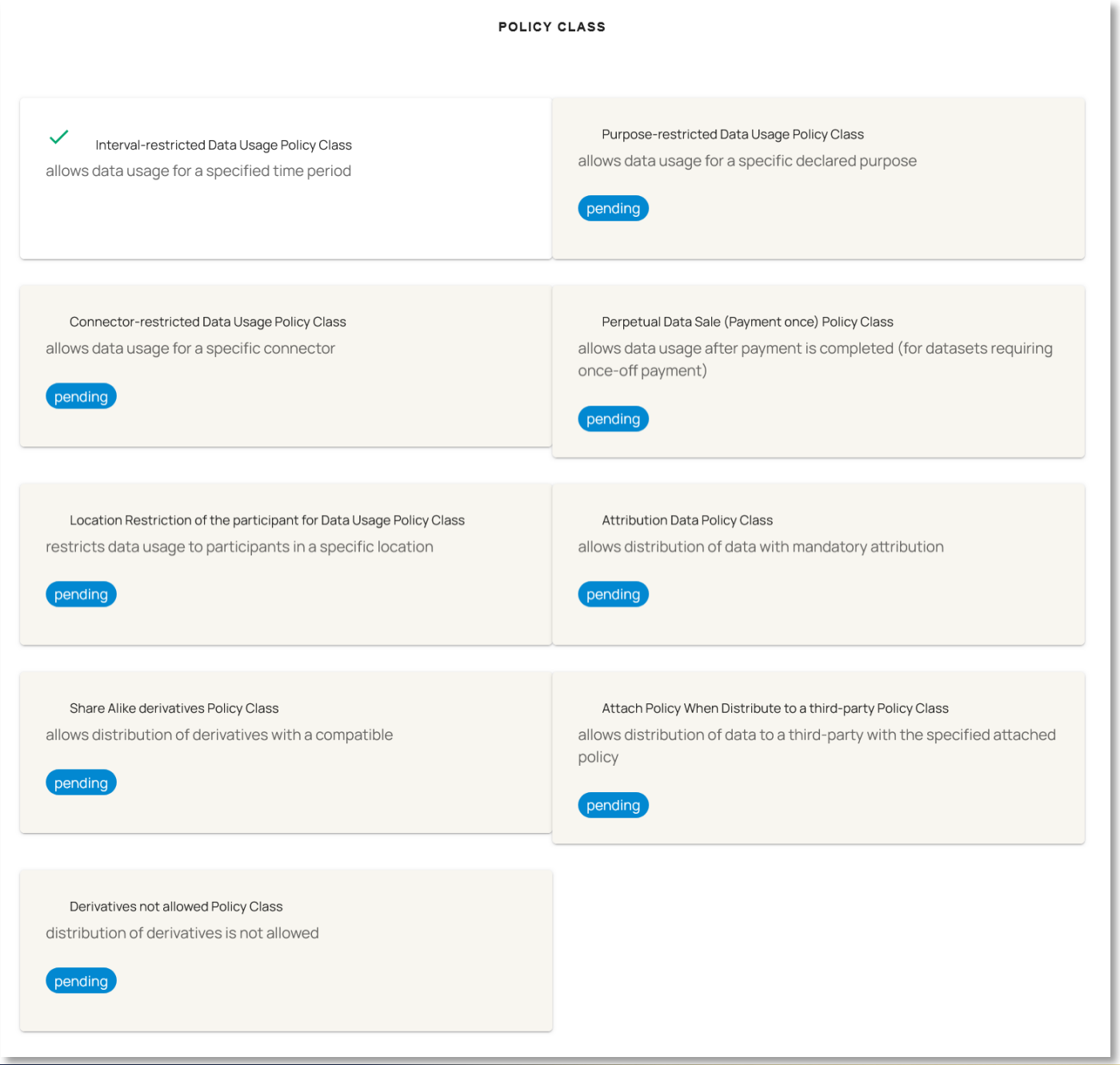


Create new data asset



Current LDS Prototype

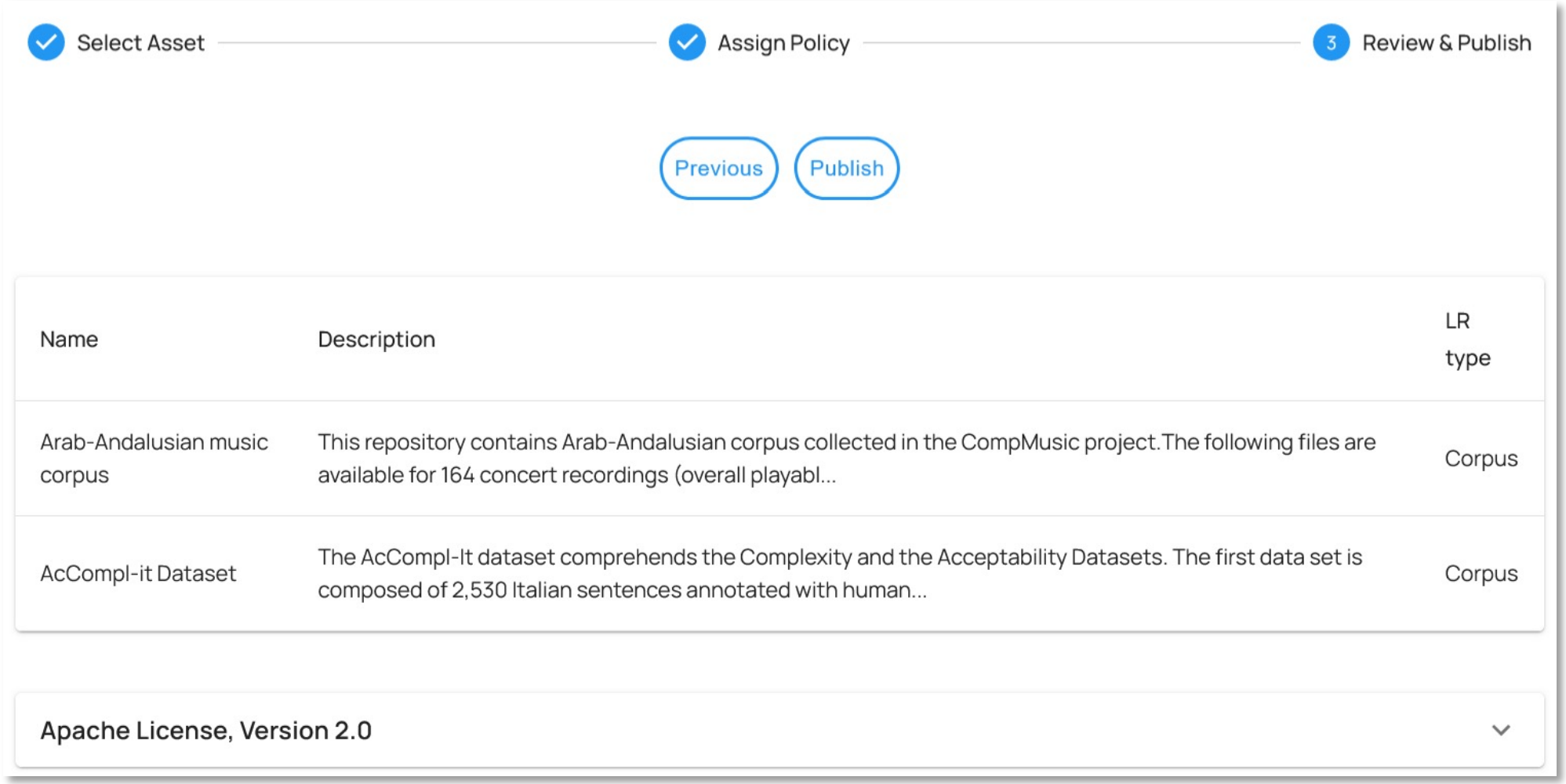
Create and adjust policy

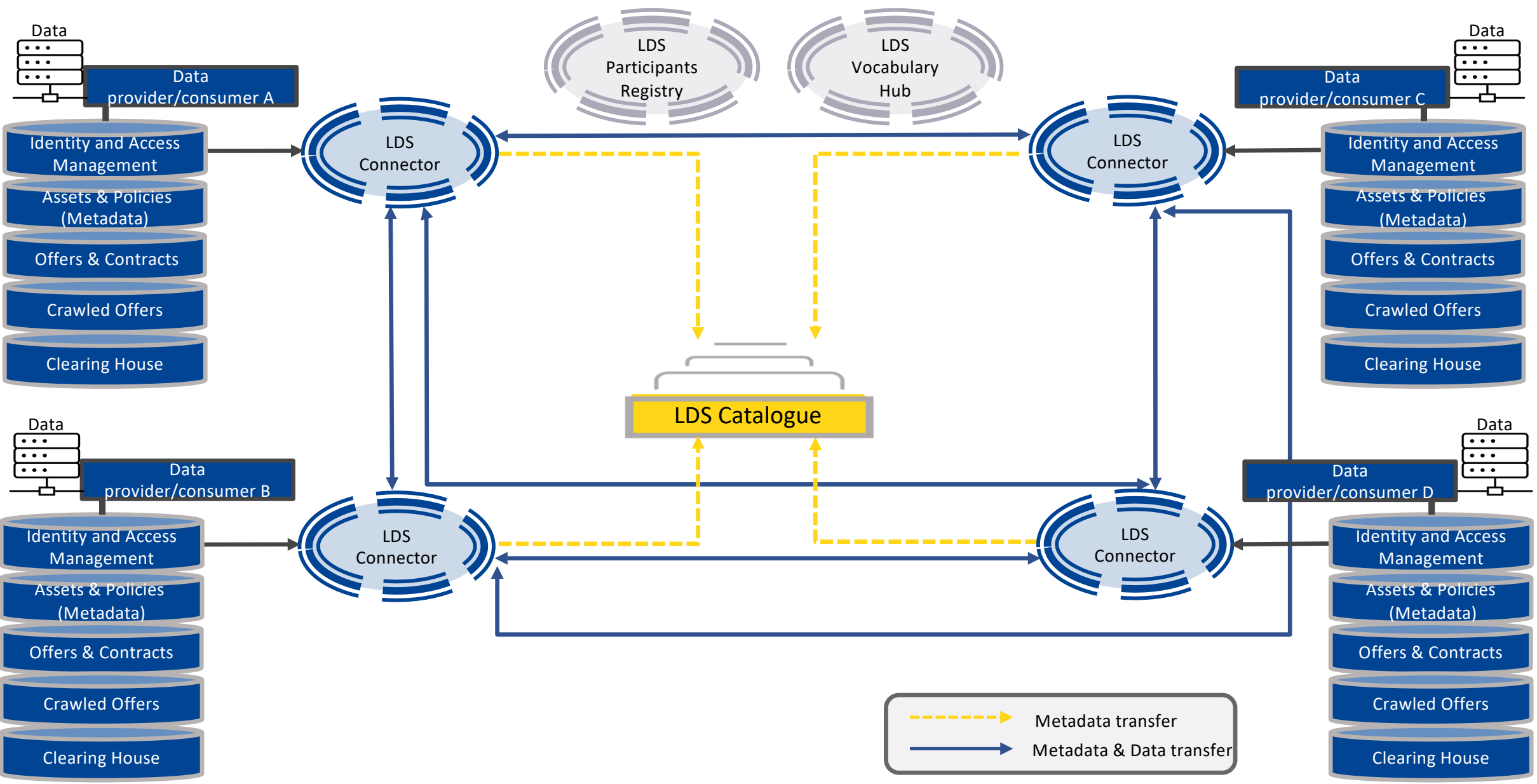


Current LDS Prototype

Create and publish offer

Current LDS Prototype

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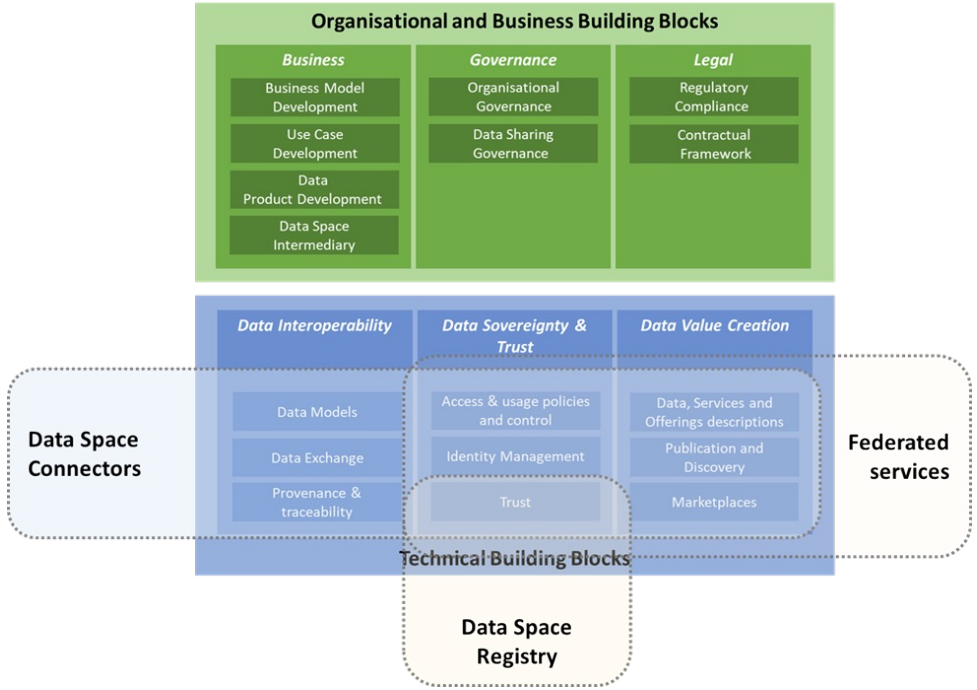
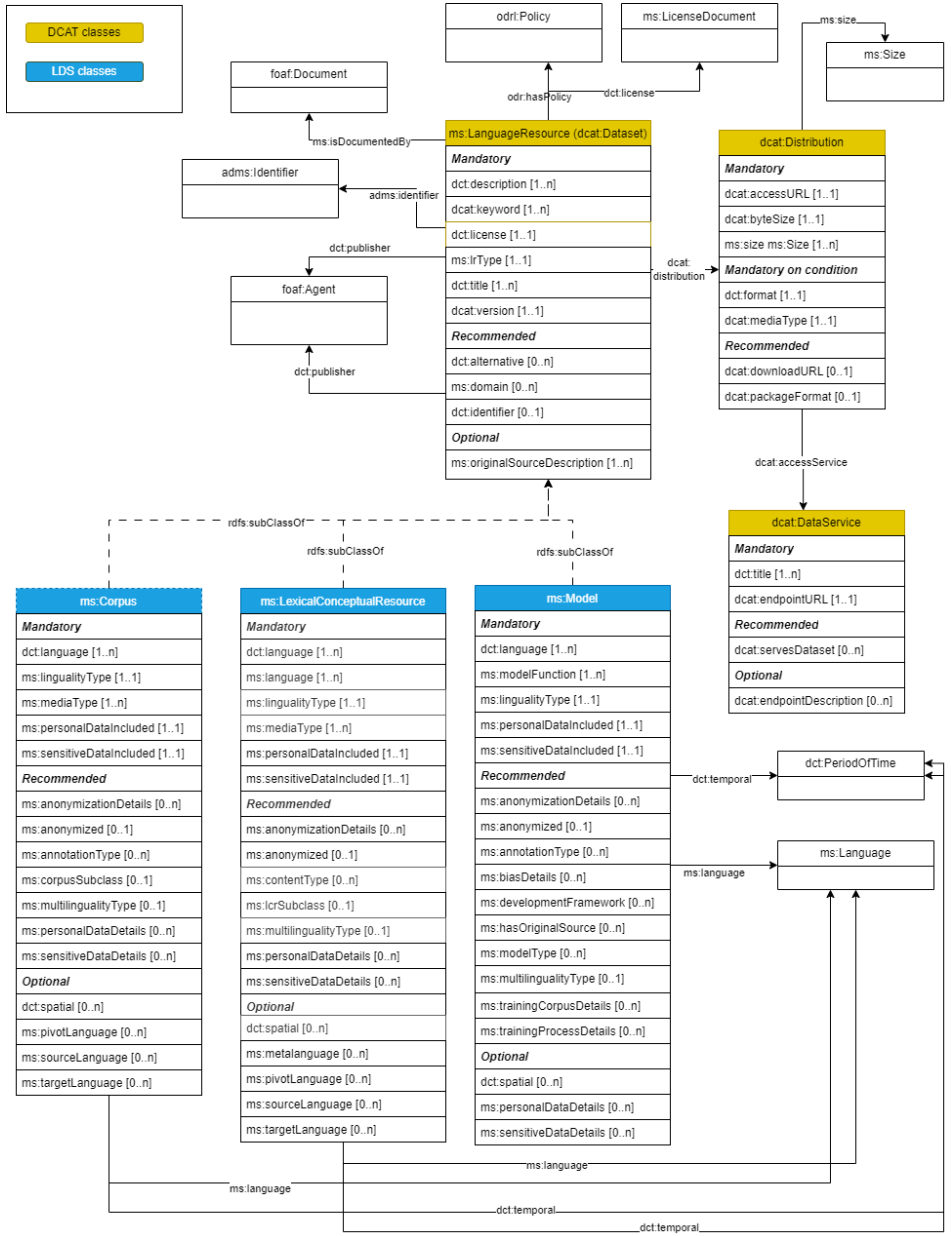


Build on Existing Solutions

- Following DSSC (see above)
- Eclipse Data Space Components (EDC)
- DCAT-AP, Language DCAT-AP (see right), ODRL
- Mappers from existing platforms



Language Data Space – Value Proposition

Data Providers

- Additional revenue – LDS as a marketplace
  - Sell data products
  - Find new customers
  - Extend or enrich datasets using AI/NLP services offered in the wider LDS ecosystem
- Legal compliance by design
  - Stay in control over use and access of data
  - Compliance with EU regulation and standards
- Limited effort
  - Keep existing infrastructure and workflows
  - Interoperability with other data spaces
  - Legal and technical helpdesks available
- Contribute to European LLMs: *from* and *for* Europe

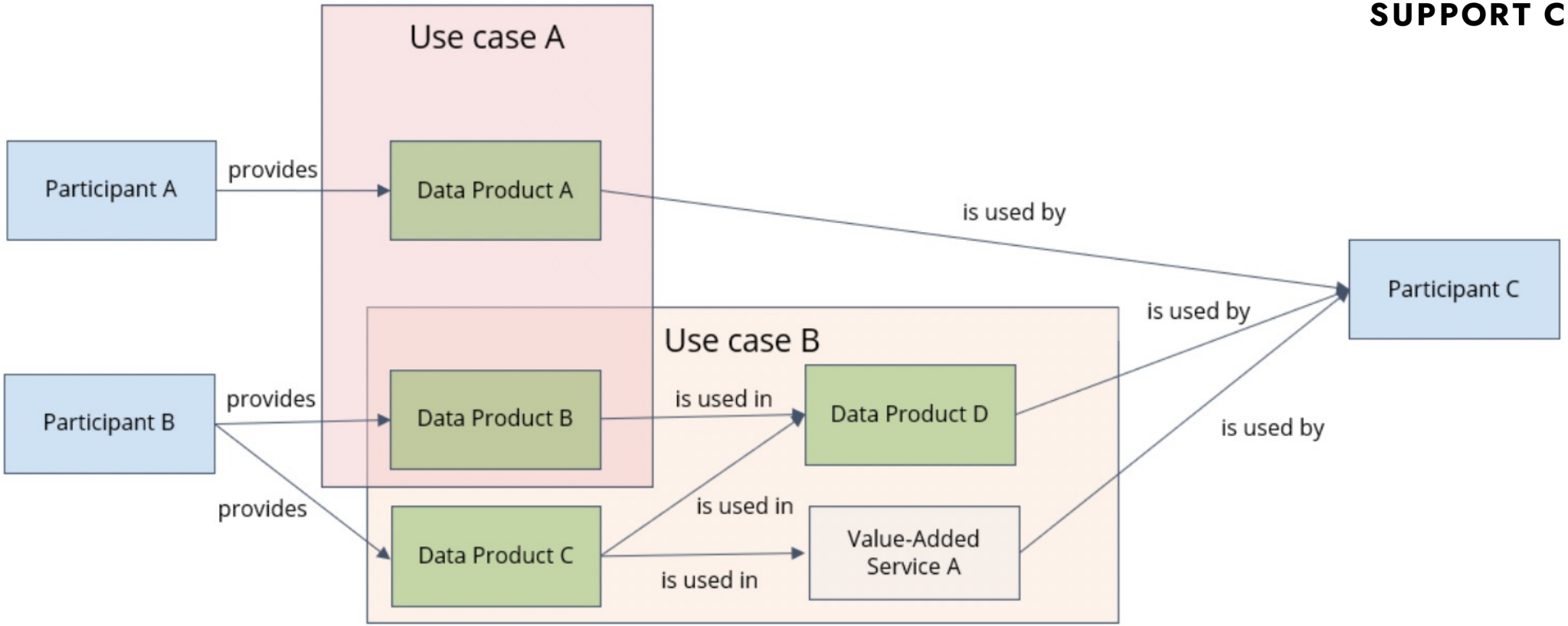
Data Consumers

- Buy or access data products to develop better services (including LLMs)
  - Multilingual data
  - Multimodal data
  - Domain-specific data
  - All European languages
  - Easy discoverability and access
- Limited effort: keep existing infrastructure
- Legal compliance by design
  - Compliance with EU regulation and standards
  - Transparency: emphasis on data provenance
- Find new customers for services and products

Data Products

DSSC Blueprint 1.0 – Data Product Development

DATA SPACES SUPPORT CENTRE



Language Data – Language Resources – Data Products

- The NLP and Computational Linguistics community has been sharing language data since the 1990s
- Back then: annotated corpora, treebanks, grammars, lexicons, smaller language models
- The term “language resource” (LR) was established (data, documentation, evaluation, metrics etc.)
- A *language resource* corresponds to a *data product*
- Of utmost importance now: large amounts of language data to pre-train large language models
- LRs were typically available for research purposes free of charge
- LRs were sometimes available for commercial use for a certain fee
- Many unique LRs developed by European research organisations were licensed by various European but also large US tech companies, e.g., for online NLP services (Machine Translation)

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Exclusive: Reddit in AI content licensing deal with Google

By **Anna Tong**, **Echo Wang** and **Martin Coulter**

February 22, 2024 5:10 AM GMT+1 · Updated 2 months ago

Reddit logo is seen in this illustration taken November 7, 2022. REUTERS/Dado Ruvic/Illustration/File Photo *Purchase Licensing Rights*

Feedback

ARTIFICIAL INTELLIGENCE / TECH

OpenAI's news publisher deals reportedly top out at $5 million a year

Image: OpenAI

/ The ChatGPT company has been trying to get more news organizations to sign licensing deals to train AI models.

By Emilia David, a reporter who covers AI. Prior to joining The Verge, she covered the intersection between technology, finance, and the economy.

Jan 4, 2024, 8:39 PM GMT+1

1 Comment (1 New)

As news publishers ink deals with AI companies to train their models with news stories, the price businesses like OpenAI are willing to pay for copyrighted information is coming to light.

The Information reports that OpenAI offers between $1 million and $5 million a year to license copyrighted news articles to train its AI models. That's one of the first indications of how much AI companies

APPLE / TECH / ARTIFICIAL INTELLIGENCE

Apple reportedly wants to use the news to help train its AI models

Illustration: The Verge

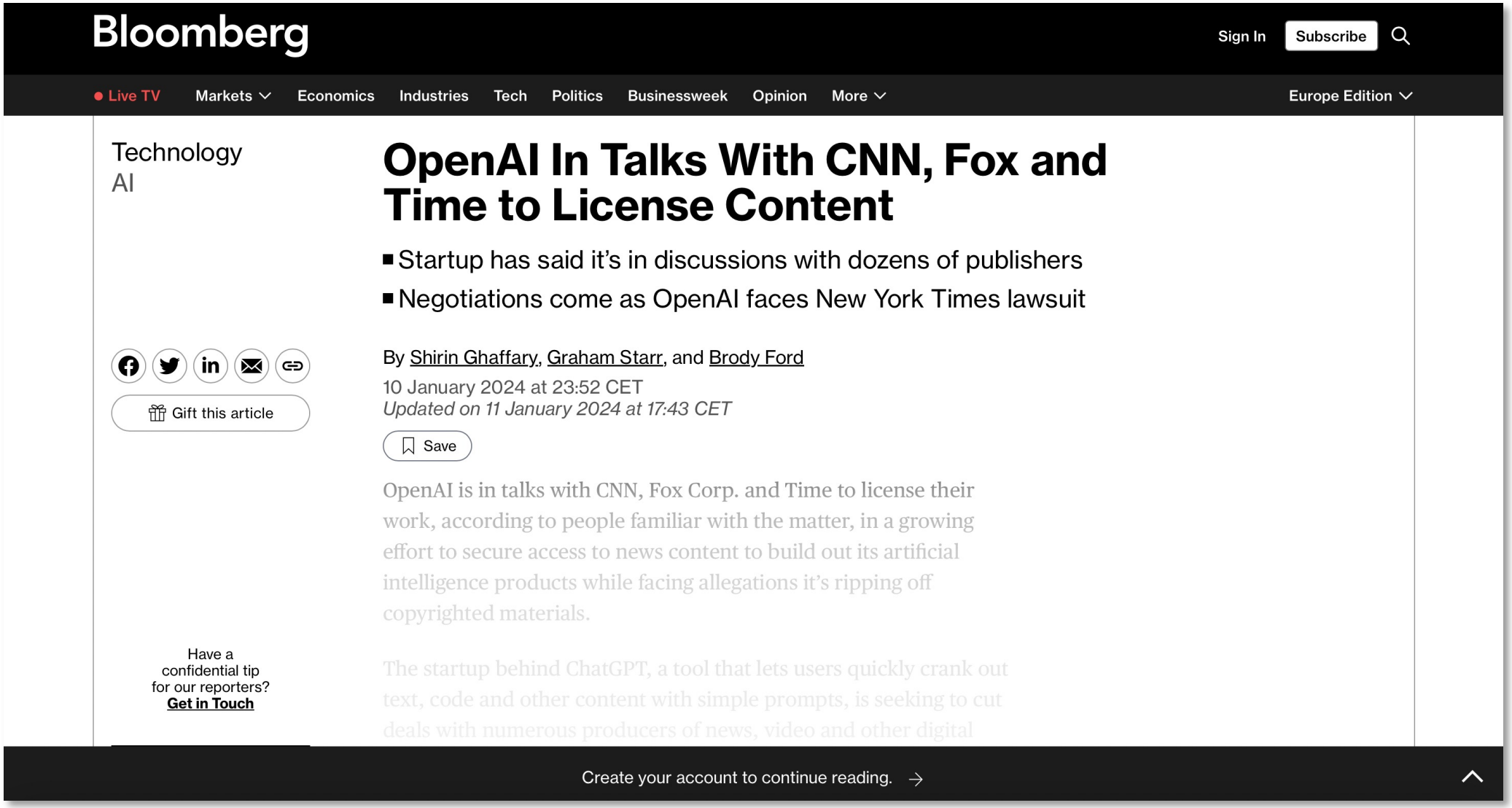
/ The company is reportedly exploring major deals with companies like Condé Nast and NBC News.

By Jay Peters, a news editor who writes about technology, video games, and virtual worlds. He's submitted several accepted emoji proposals to the Unicode Consortium.

Dec 22, 2023, 10:32 PM GMT+1

5 Comments (5 New)

Apple is talking with some big news publishers about licensing their news archives and using that information to help train its generative AI systems, *The New York Times* reports. The company is apparently discussing "multiyear deals worth at least $50 million," the *NYT* says, and has been in touch with publications like Condé Nast, NBC News, and IAC.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Businessweek
Opinion
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AI
OpenAI In Talks With CNN, Fox and Time to License Content
Startup has said it's in discussions with dozens of publishers
Negotiations come as OpenAI faces New York Times lawsuit
By Shirin Ghaffary, Graham Starr, and Brody Ford
10 January 2024 at 23:52 CET
Updated on 11 January 2024 at 17:43 CET
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OpenAI is in talks with CNN, Fox Corp. and Time to license their work, according to people familiar with the matter, in a growing effort to secure access to news content to build out its artificial intelligence products while facing allegations it's ripping off copyrighted materials.
The startup behind ChatGPT, a tool that lets users quickly crank out text, code and other content with simple prompts, is seeking to cut deals with numerous producers of news, video and other digital
Have a confidential tip for our reporters? Get in Touch
Create your account to continue reading.

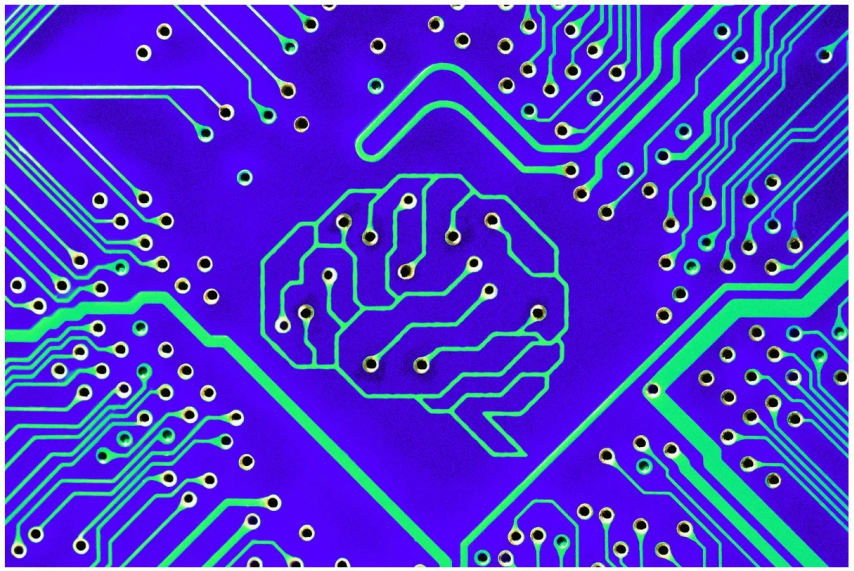
OpenAI Research API ChatGPT Safety Company Search Log in ↗ Try ChatGPT ↗

Partnership with Axel Springer to deepen beneficial use of AI in journalism

Axel Springer is the first publishing house globally to partner with us on a deeper integration of journalism in AI technologies.

ARTIFICIAL INTELLIGENCE / TECH / GOOGLE

OpenAI transcribed over a million hours of YouTube videos to train GPT-4



Cath Virginia / The Verge | Photos from Getty Images

/ A New York Times report details the ways big players in AI have tried to expand their data access.

By Wes Davis, a weekend editor who covers the latest in tech and entertainment. He has written news, reviews, and more as a tech journalist since 2020.

Apr 6, 2024, 10:29 PM GMT+2

45 Comments (45 New)

If you buy something from a Verge link, Vox Media may earn a commission. ***See our ethics statement.***

Earlier this week, *The Wall Street Journal* reported that AI companies were running into a wall when it comes to gathering high-quality training data. Today, *The New York Times* detailed some of the ways companies have dealt with this. Unsurprisingly, it involves doing things that fall into the hazy gray area of AI copyright law.

EDITORIAL

Louis Dreyfus
Chief Executive Officer of Le Monde

Jérôme Fenoglio
Director of Le Monde

Le Monde and Open AI sign partnership agreement on artificial intelligence

This multi-year agreement, the first between a French media organization and a major AI player, will enable OpenAI to draw on our newspaper's corpus to establish and enhance the reliability of the answers of its ChatGPT tool, in return for a significant source of additional revenue.

Published on March 13, 2024, at 6:31 pm (Paris), updated on March 13, 2024, at 9:05 pm | 5 min.
Lire en français

As part of its discussions with major players in the field of artificial intelligence, *Le Monde* has just signed a multi-year agreement with OpenAI, the company known for its ChatGPT tool. This agreement is historic as it is the first signed between a French media organization and a major player in this nascent industry. It covers both the training of artificial intelligence models developed by the American company and answer engine services such as ChatGPT. It will benefit users of this tool by improving its relevance thanks to recent, authoritative content on a wide range of current topics, while explicitly highlighting our news organization's contribution to OpenAI's services.

Futurism

TAP RUNNETH DRY | 11.13.23, 4:05 PM EST *by* MAGGIE HARRISON DUPRÉ

AI Companies Are Running Out of Training Data

The well is running dry.

/ Artificial Intelligence / Ai / Ai Industry / Ai Training

Data Products in LDS – Training Data for Generative AI and LLMs

- A few examples of recent agreements:
  - Reddit: $60 million per year (Google)
  - Shutterstock: $25-50 million (Apple)
  - Springer: Tens of millions (Open AI)
  - Offer for news publishers: $1-5 million per year (Open AI)
  - Offer for owners of large datasets: $50 million (Apple)
- Global market is enormous – owners/providers of large amounts of content are paid large sums by the US technology enterprises that currently dominate the AI product landscape for data licenses
- This is LDS's baseline!
- It's up to the data providers to establish offers and prices that make sense for them
- Our ambition: to establish LDS as a marketplace for European language data

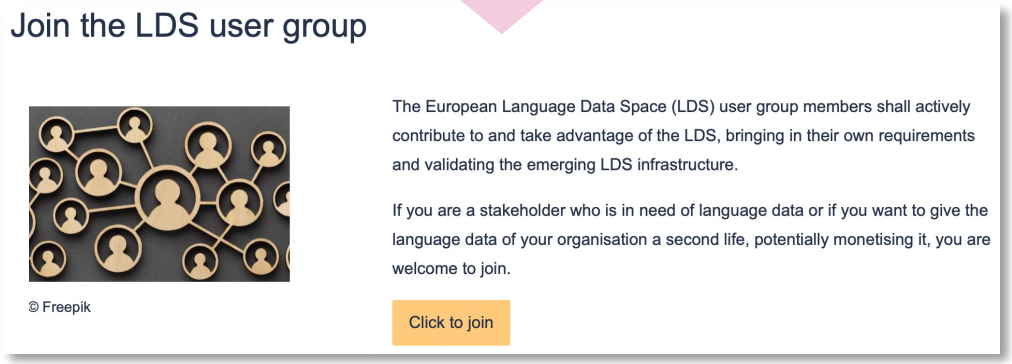
Next Steps

Next Steps

- LDS is in full swing: technical development, promotion, dissemination, governance etc.
  - Collaboration with DSSC, Simpl and ALT-EDIC
  - Collaboration with European projects, e.g., HPLT, OpenGPT-X, OpenWebSearch
  - Collaboration with data spaces, especially Media and Cultural Heritage
  - Collaboration with EuroHPC
  - Adoption of LDS by industry and other organisations → grow the LDS User Group
  - Identify and make available new and fresh language data, especially from industry and covering all European languages and modalities

LDS User Group

https://language-data-space.ec.europa.eu



- **Meetings and Conferences**
  - Inaugural meeting in March 2024
  - Next meeting in June 2024
  - LDS Launch Conference: October 2024
- **Communication**
  - Established a mailing list for the LDS user group
  - The LDS user group will grow – new members will be added to the mailing list
- **If you're interested, please get actively involved and join the LDS User Group!**
  - Validation of concepts, ideas, software; first test installations of the LDS connector (foreseen for Q3 2024); first trial exchanges of data; surveys etc.
  - You can also help on a more substantial, in-depth level – please approach us if you're interested.

Common European Language Data Space

Thank you!

A Common European Language Data Space – funded under contract LC-01936389 with the European Union.

Prof. Dr. Georg Rehm (DFKI GmbH, Germany) – LDS Coordinator
georg.rehm@dfki.de

16-05-2024 LDS Country Workshop Sweden
https://language-data-space.ec.europa.eu