



The Standards People

# IoT Conference 2023

## Why Linked Data Event Streams are key to build the Flanders Smart Data Space

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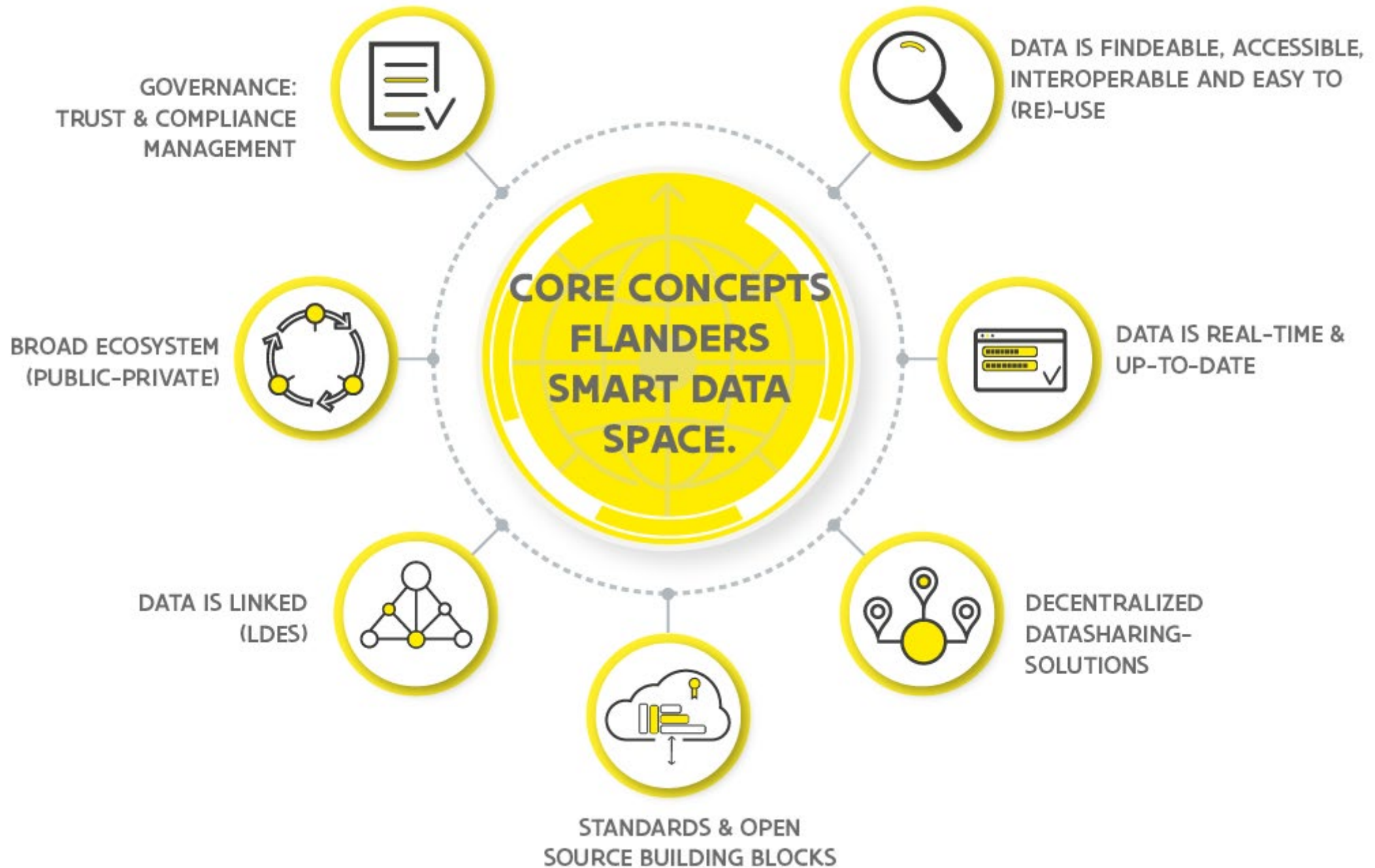
**DIGITAAL  
VLAANDEREN**



**Vlaamse  
overheid**

04/07/2023





# VLAAMSE SMART DATA SPACE



NEW BUSINESS MODELS – PUBLIC & PRIVATE PLAYERS



## INTEROPERABILITY

The ability of different systems to interact and exchange data.



## DECENTRAL

We facilitate, responsibility stays with providers and consumers of the data.



DATA CONSUMERS



## WORKBENCH

Re-usable and open source building blocks for publication and consumption of Linked data



DATA PROVIDER



STANDARDS

semantic (OSLO)  
technical (LDES)



ECOSYSTEM



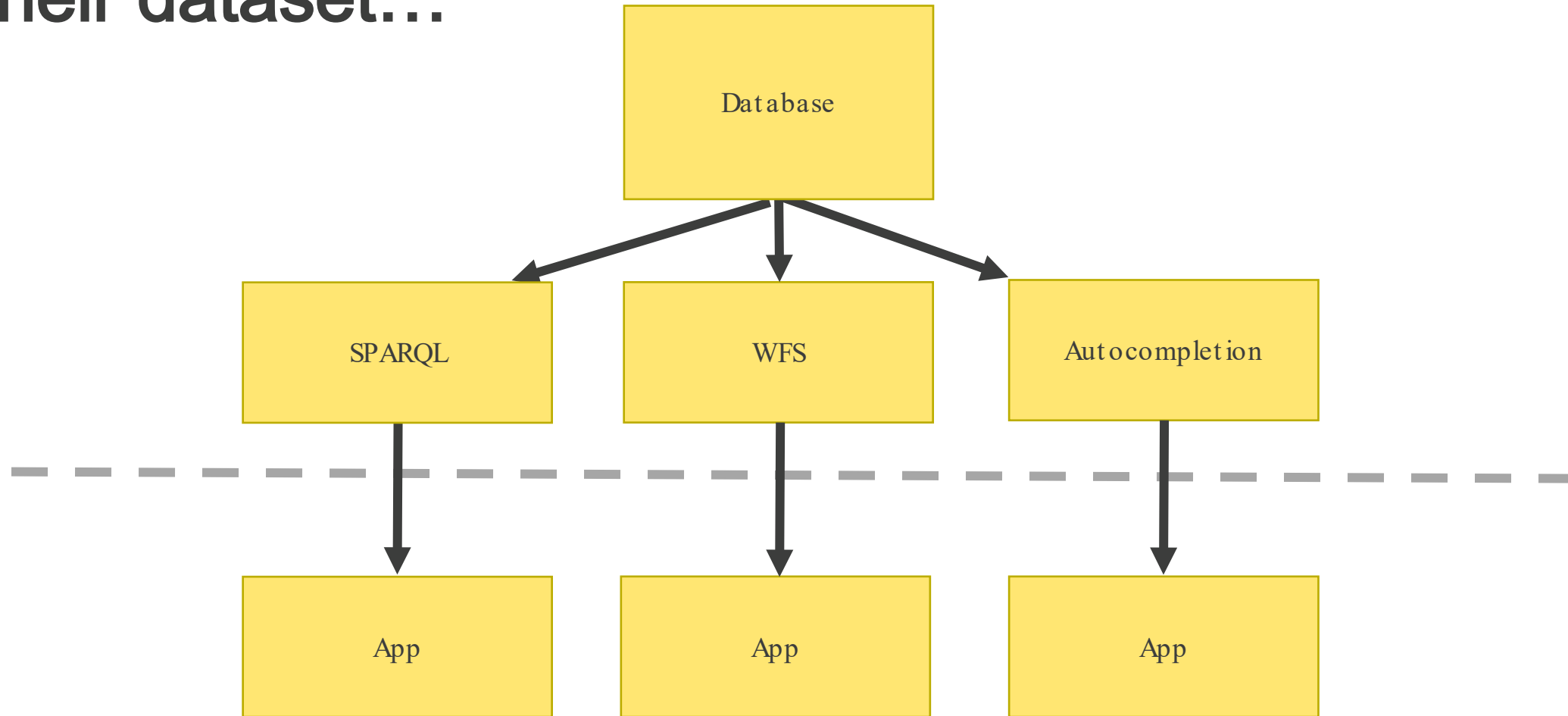
GOVERNANCE

# What is a data space ?

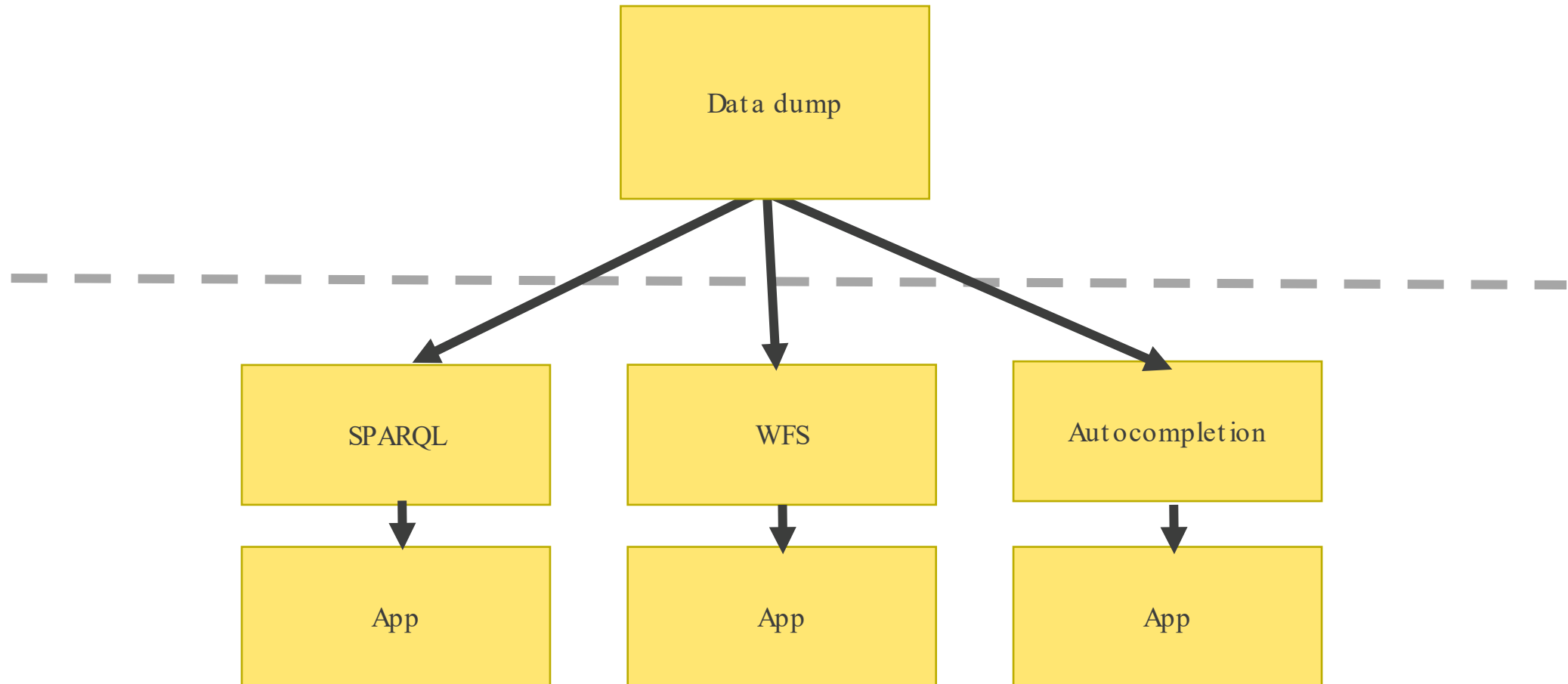
A data ecosystem, defined by a sector or application, whereby decentralized infrastructure enables trustworthy data sharing with commonly agreed capabilities.

<https://design-principles-for-data-spaces.org/>

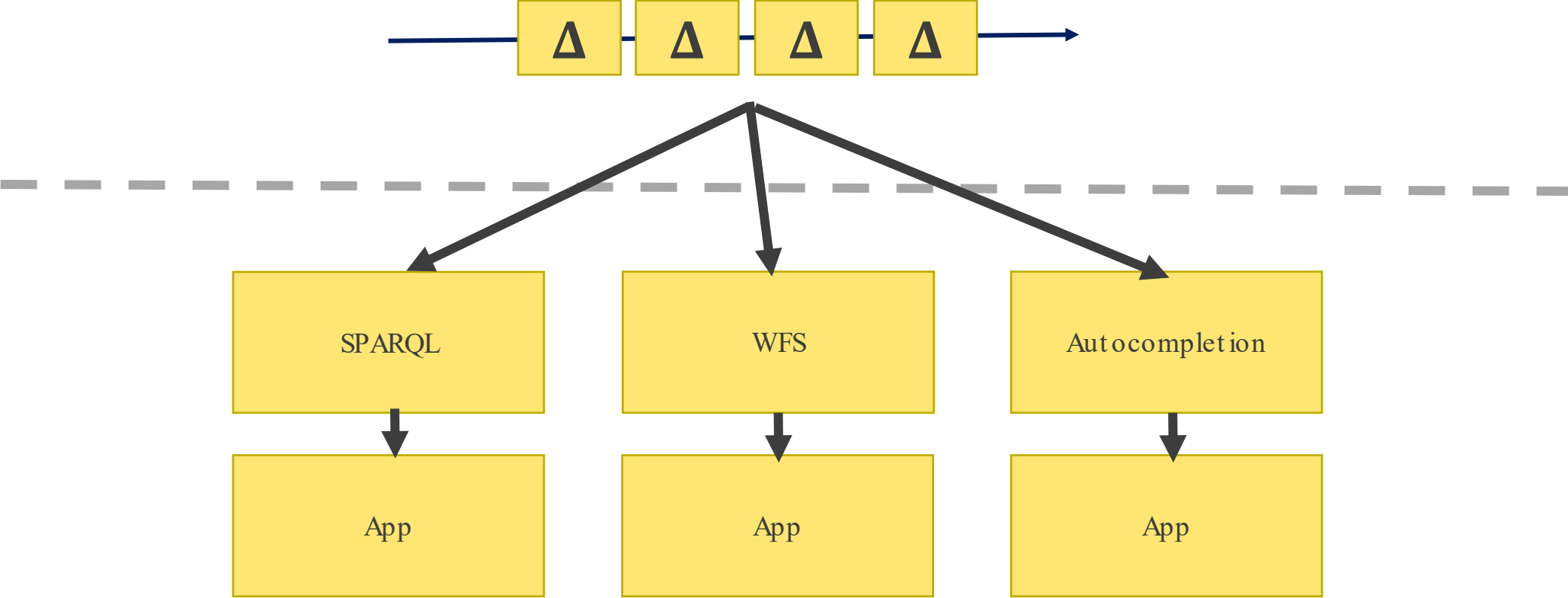
# Data publisher often provide multiple APIs on top of their dataset...



Or just provide a data dump of their dataset



# We needed a way to better balance the efforts between data publisher and data consumer: Linked Data Event Streams



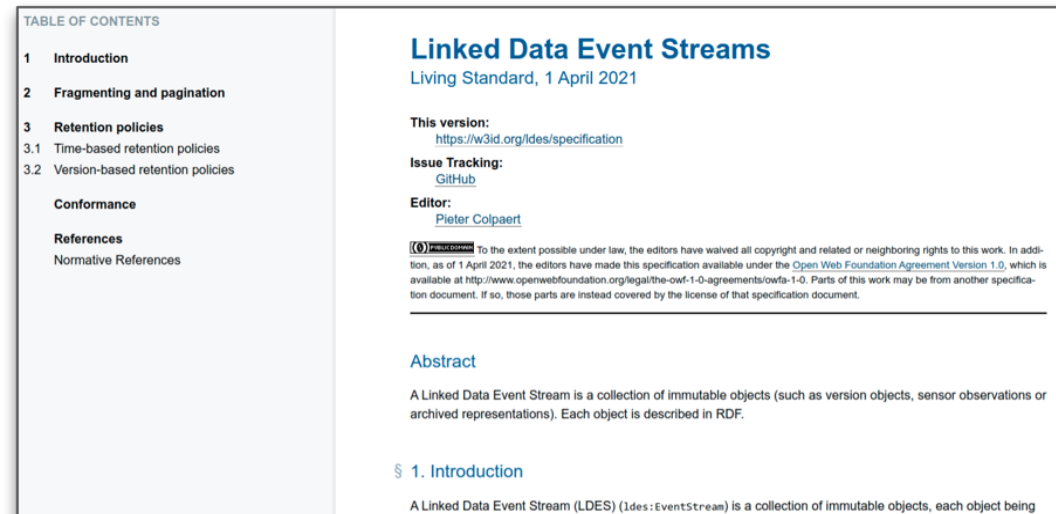
# What is a

# Linked Data Event Stream ?

A Linked Data Event Stream is a collection of immutable objects (such as version objects, sensor observations).

Each object is described in RDF.

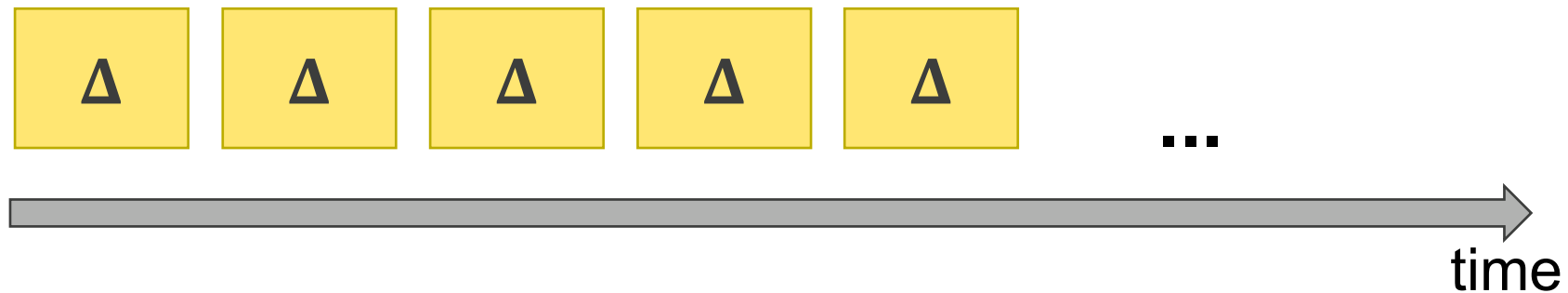
<https://w3id.org/ldes/specification>



The screenshot shows the top portion of the 'Linked Data Event Streams' specification page. On the left is a 'TABLE OF CONTENTS' sidebar with the following items: 1 Introduction, 2 Fragmenting and pagination, 3 Retention policies (with sub-items 3.1 Time-based retention policies and 3.2 Version-based retention policies), Conformance, References, and Normative References. The main content area on the right features the title 'Linked Data Event Streams' in blue, followed by 'Living Standard, 1 April 2021'. Below this, it lists 'This version:' with a URL, 'Issue Tracking:' with a GitHub link, and 'Editor:' with the name Pieter Colpaert. A Creative Commons license notice is present, followed by an 'Abstract' section which defines a Linked Data Event Stream as a collection of immutable objects described in RDF. The '§ 1. Introduction' section is partially visible at the bottom.



An LDES let's you rethink your dataset as a living collection of members

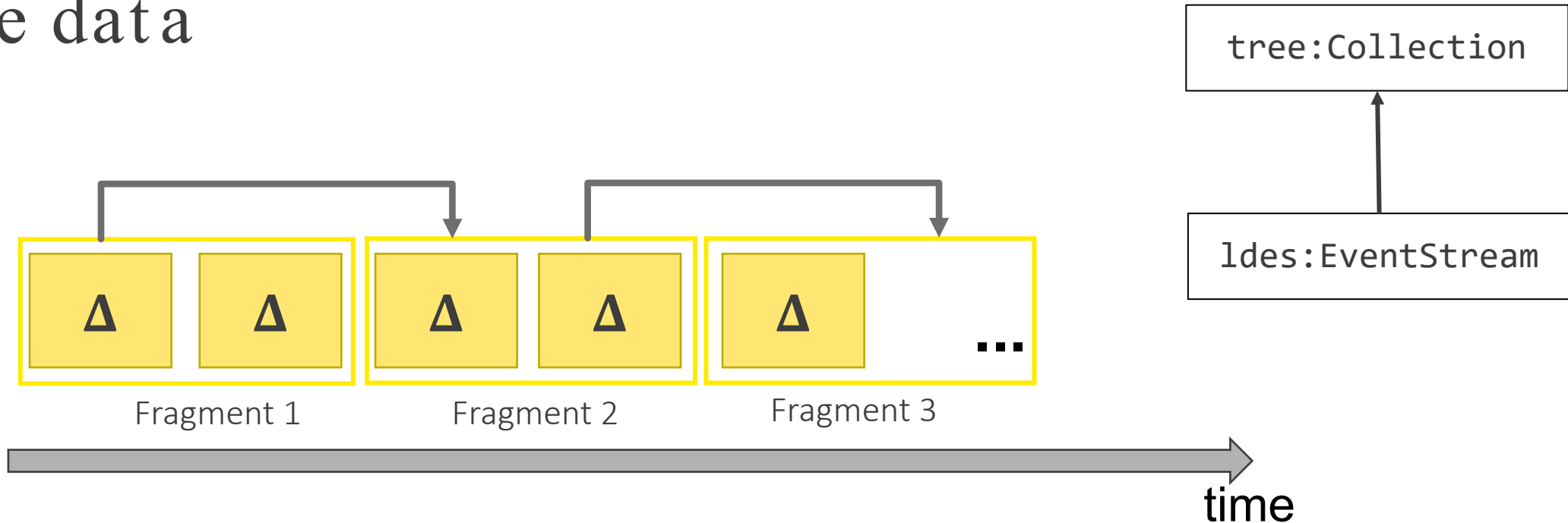


Implications:

✓ An LDES only grows in size

✓ Consumers need to process each member only once

# LDES uses the TREE Hypermedia specification to find the data

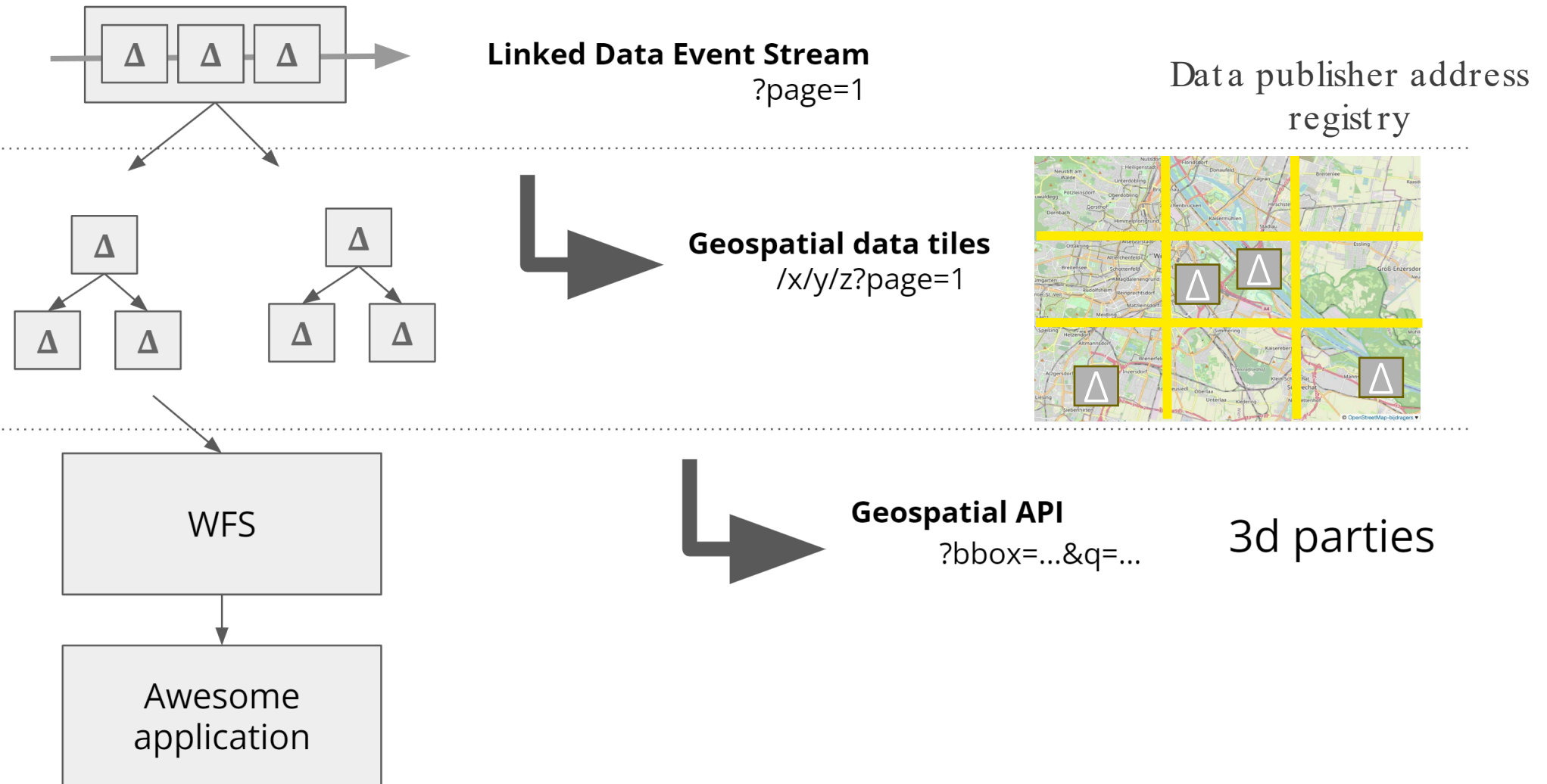


- Reusable, lowcost fragments (HTTP caching) of data can be published
- The core focus of an LDES should be replication and synchronization using pagination
- An LDES Client understands the TREE specification and is able to follow the links to other pages to discover more data

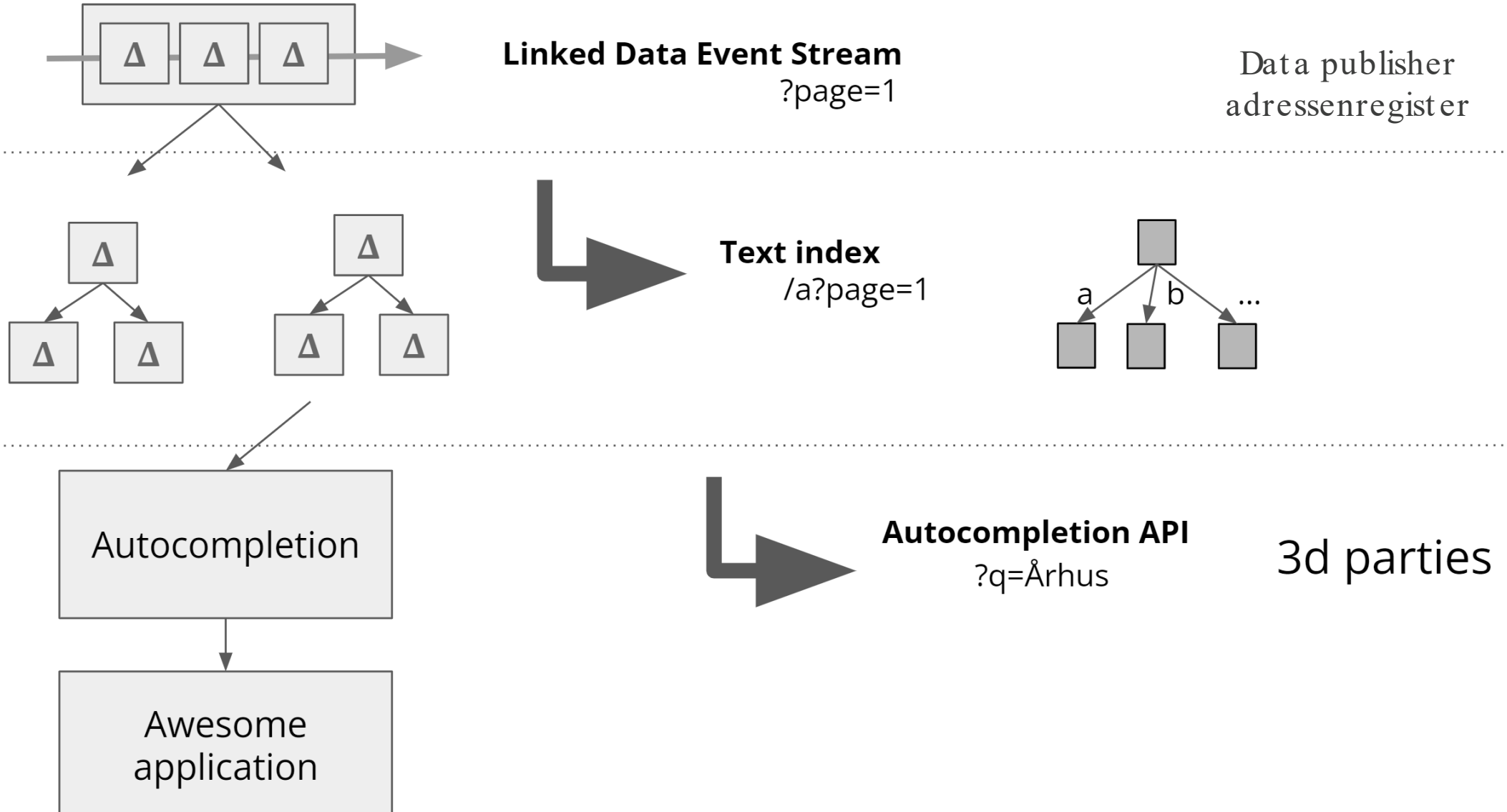


**We are able to create other fragmentations as well**

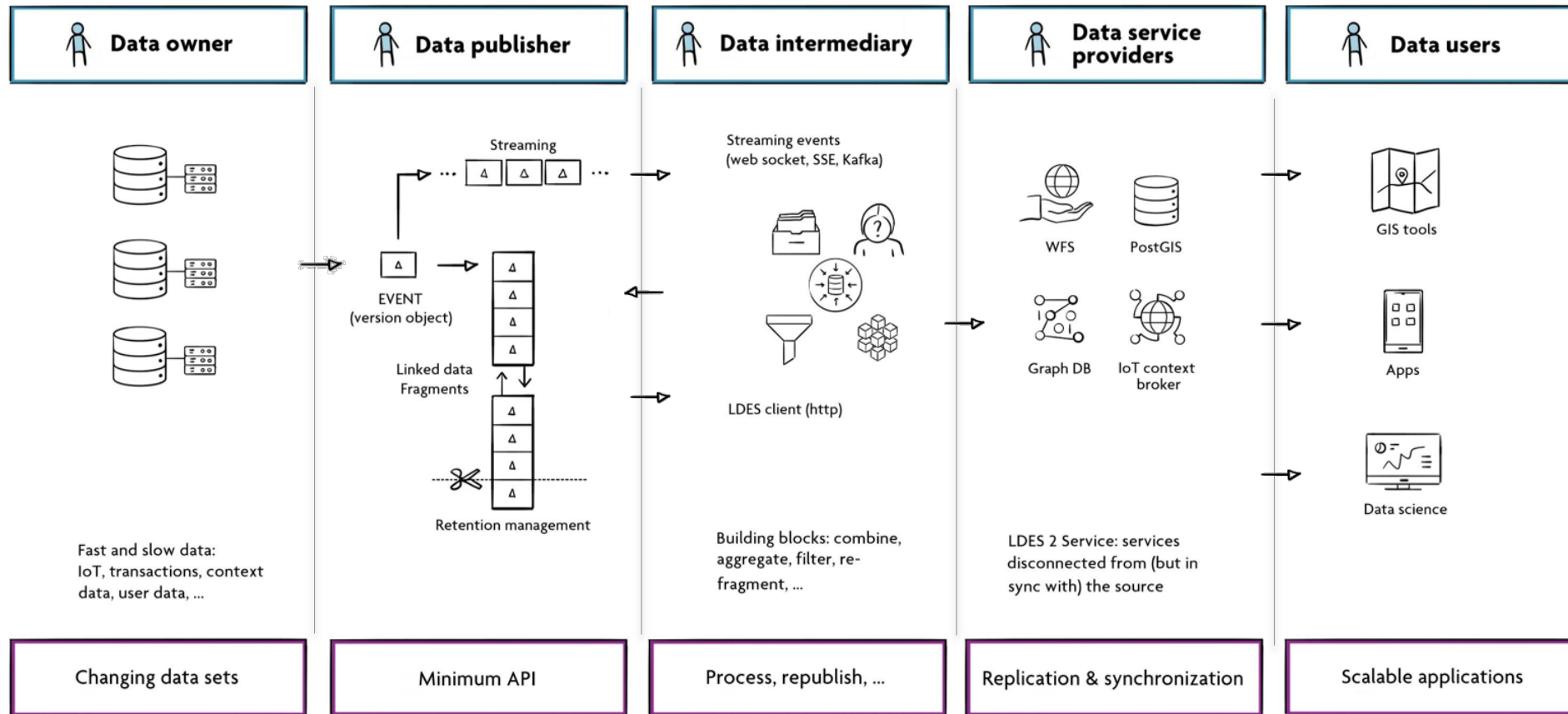
# Allowing consumers to only replicate and sync with a subset of the data



# And increase the query performance of query agents



# Data services can automagically integrate the history and latest changes of context sources



# Next steps for the Flanders Smart Data Space

- Continue the onboarding of data publishers in the Flanders Smart Data Space
- Expand to other eco systems, e.g. FIWARE



**Thanks!**