IBM **Spectrum Discover**

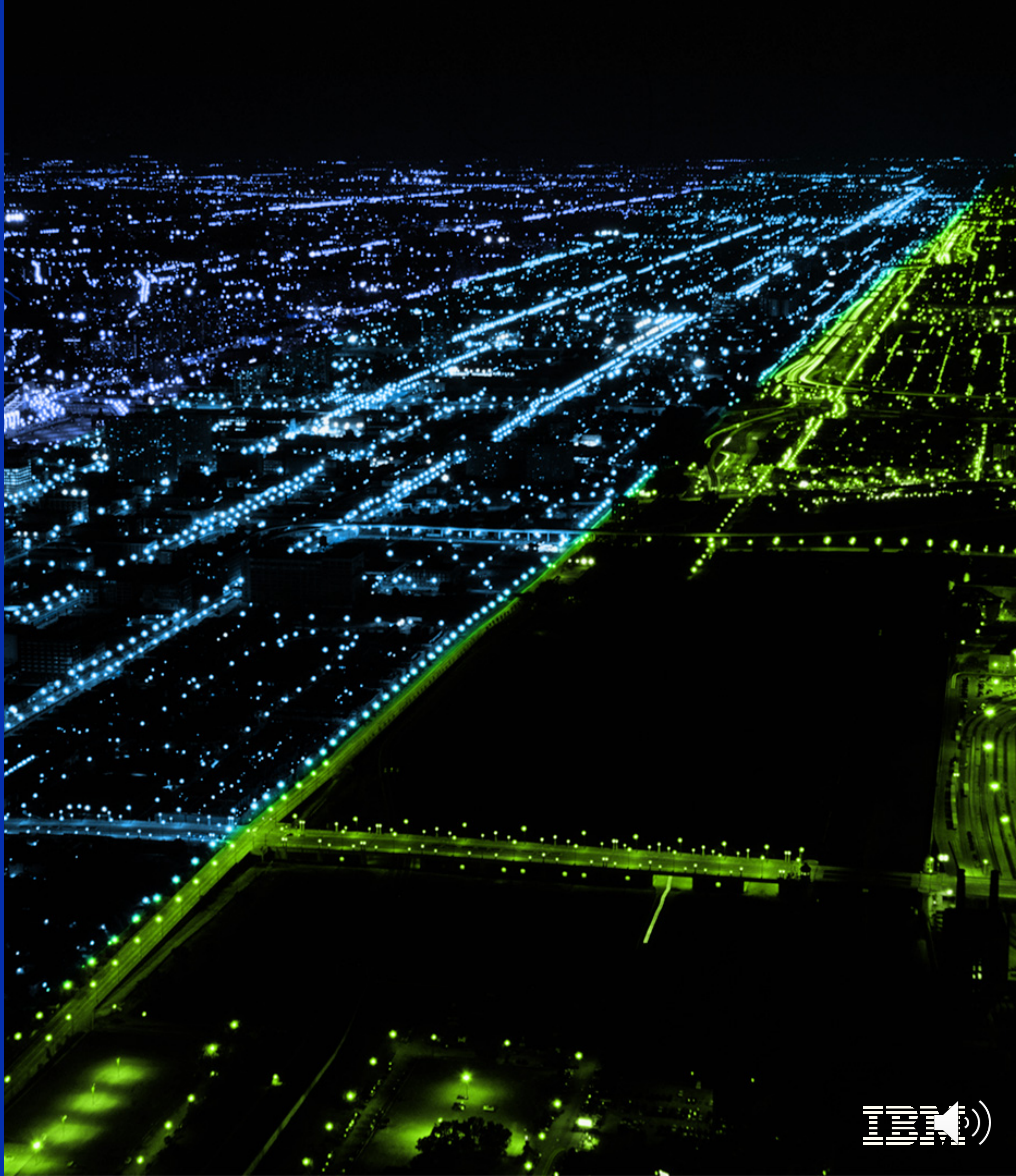
Exceptional Data Insight for Petabyte-Scale Unstructured Data Storage

Harnessing the Value of Data

> “The world’s most valuable resource is no longer oil, but **data**.”
>
> *The Economist, May, 2017*

...how do companies ***harness the value?***

- **Identify**
- **Categorize**
- **Utilize**



Number of enterprises with 1,000 TB+ unstructured data stores grew

3X

from 2016 to 2017

39%

of firms see sourcing, gathering, managing & governing data as their biggest challenges when using systems of insight

Source: Forrester Analytics, Global Business Technographics Data And Analytics Survey, 2017, Global Business Technographics Data And Analytics Survey, 2016 (Enterprises with 1000+ employees)

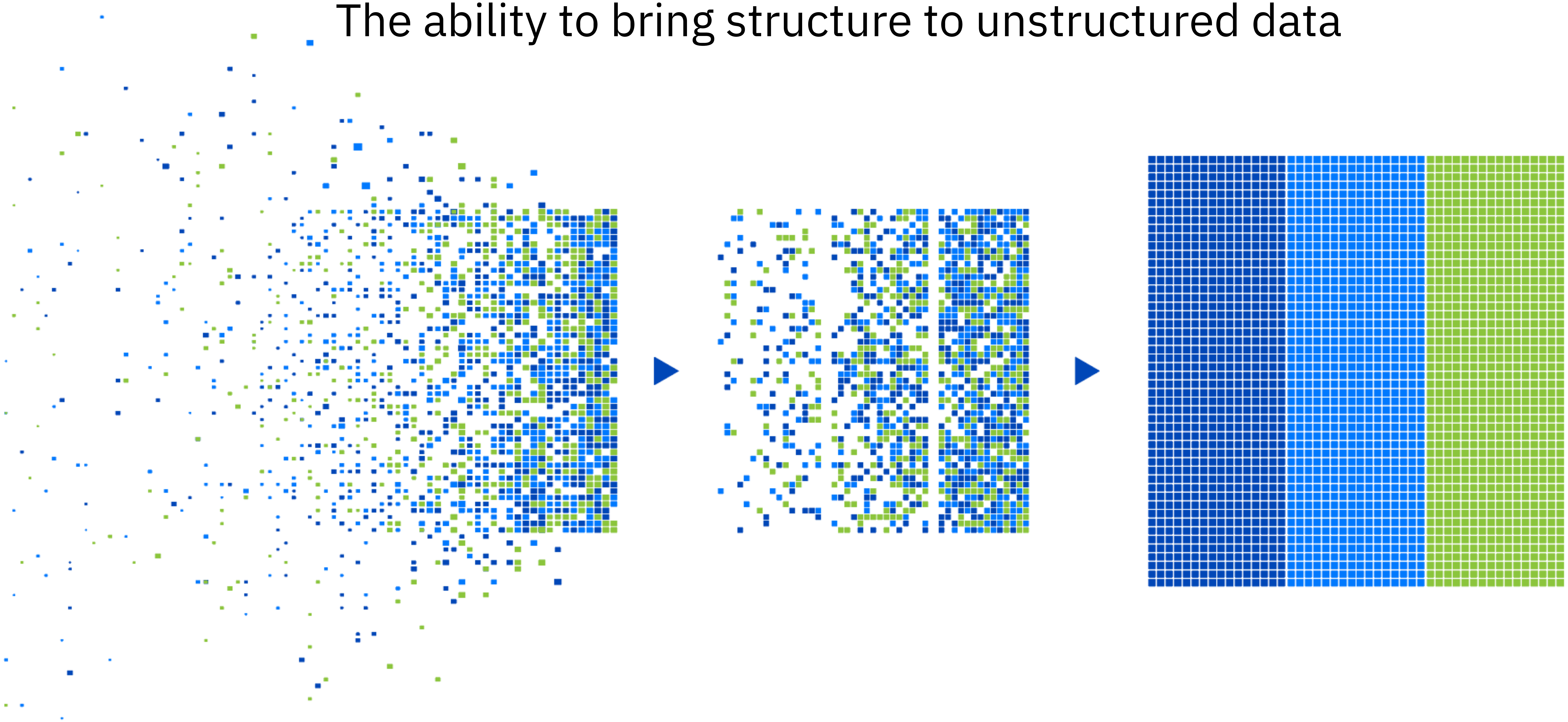
Unstructured Data is Hard to Manage

For exabyte-scale data stores…

- Challenging to pinpoint & activate relevant data for large-scale analytics
- Lack of fine-grained visibility needed to map data to business priorities
- Difficult to remove redundant, trivial & obsolete data
- Tough to identify & classify sensitive data

What is needed?

The ability to bring structure to unstructured data



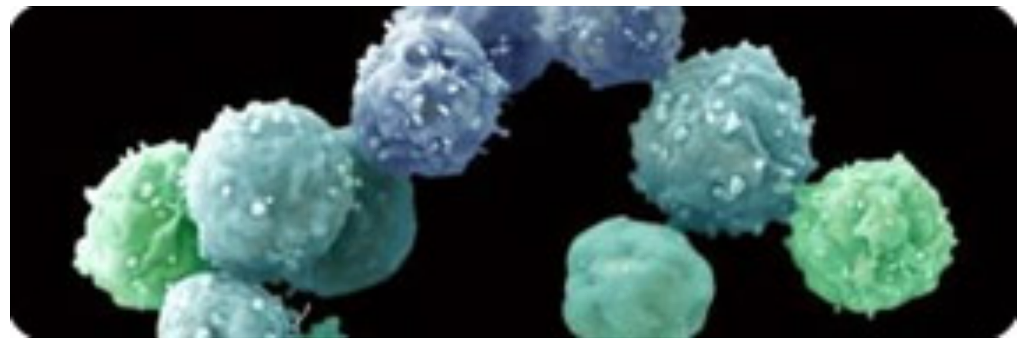
Metadata: Key to Unlocking Data Value & Improving Management

- Metadata is the structured data about the unstructured object
  - Who, what, when, where, and why of account, container, object, stream, dir, file
  - Perfect for indexing and searching
- Metadata may be separate from the data, stored with the data, or derived from the data
  - Posix inode plus extended attributes
  - Standard document headers (doc, ppt, mp3, dicom, pdf, jpeg, GeoTIFF)
  - Custom metadata tags
  - AI derived metadata

System Metadata

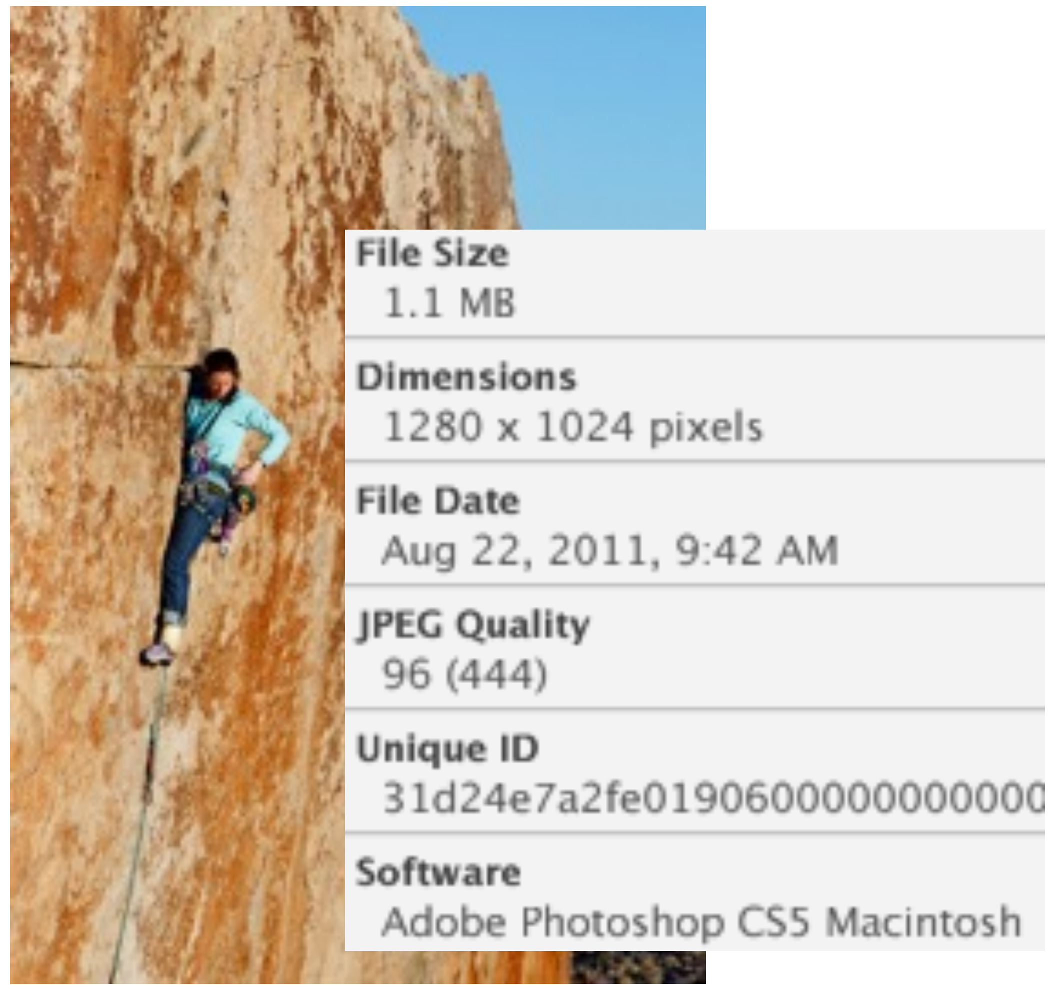
Location
Size
Owner
Group
Permissions
Last-Modified
…

Biomedical



Age, Biomarkers, Developmental Stage, Cell Surface, Markers, Cell Type/Cell Line, Disease State, Extract Molecule, Genetic Characteristics, Immunoprecipitation, antibody, Organism,

Image



File Size
1.1 MB

Dimensions
1280 x 1024 pixels

File Date
Aug 22, 2011, 9:42 AM

JPEG Quality
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Unique ID
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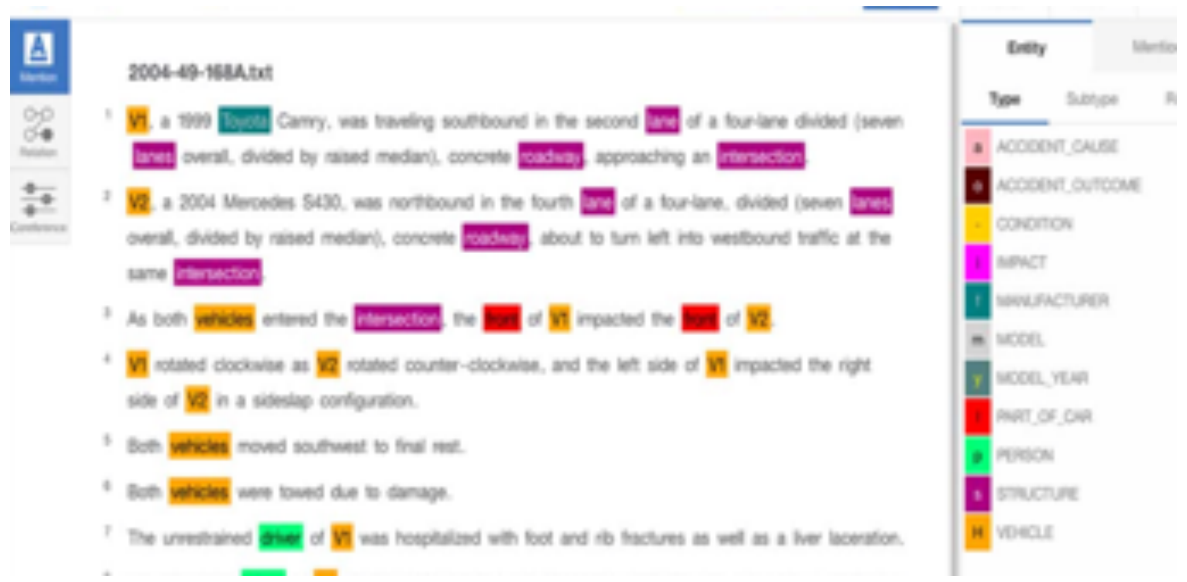
Software
Adobe Photoshop CS5 Macintosh

Natural Language Processing



2004-49-168A.txt

1 V1, a 1999 Toyota Camry, was traveling southbound in the second lane of a four-lane divided (seven lanes overall, divided by raised median), concrete roadway, approaching an intersection.

2 V2, a 2004 Mercedes S430, was northbound in the fourth lane of a four-lane, divided (seven lanes overall, divided by raised median), concrete roadway, about to turn left into westbound traffic at the same intersection.

3 As both vehicles entered the intersection, the front of V1 impacted the front of V2.

4 V1 rotated clockwise as V2 rotated counter-clockwise, and the left side of V1 impacted the right side of V2 in a sideslap configuration.

5 Both vehicles moved southwest to final rest.

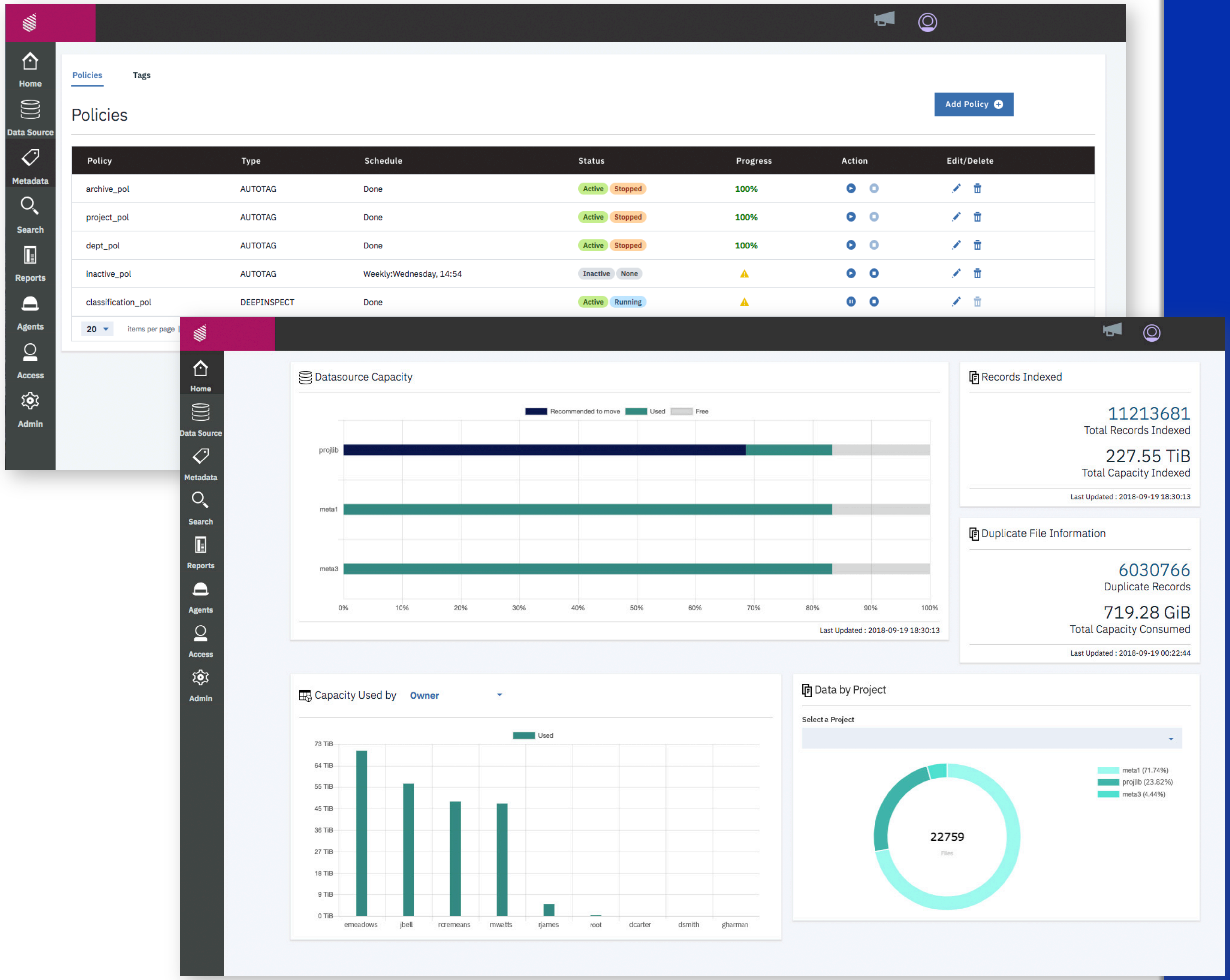
6 Both vehicles were towed due to damage.

7 The unrestrained driver of V1 was hospitalized with foot and rib fractures as well as a liver laceration.

PYTORCH

TensorFlow

IBM Spectrum Discover



Policies

Policy	Type	Schedule	Status	Progress	Action	Edit/Delete
archive_pol	AUTOTAG	Done	Active Stopped	100%		
project_pol	AUTOTAG	Done	Active Stopped	100%		
dept_pol	AUTOTAG	Done	Active Stopped	100%		
inactive_pol	AUTOTAG	Weekly:Wednesday, 14:54	Inactive None	⚠		
classification_pol	DEEPINSPECT	Done	Active Running	⚠		

20 items per page

Datasource Capacity

Last Updated : 2018-09-19 18:30:13

Records Indexed

11213681
Total Records Indexed

227.55 TiB
Total Capacity Indexed

Last Updated : 2018-09-19 18:30:13

Duplicate File Information

6030766
Duplicate Records

719.28 GiB
Total Capacity Consumed

Last Updated : 2018-09-19 00:22:44

Capacity Used by Owner

Data by Project

Select a Project

Data Insight for Analytics, Governance & Optimization

- **Automate cataloging of unstructured data** by capturing metadata as it is created
- **Enable comprehensive insight by combining system metadata with custom tags** to increase storage admin & data consumer productivity
- **Leverage extensibility using the API,** custom tags and policy-based workflows to orchestrate content inspection & activate data in AI, ML & analytics workflows

Product Features and Architecture

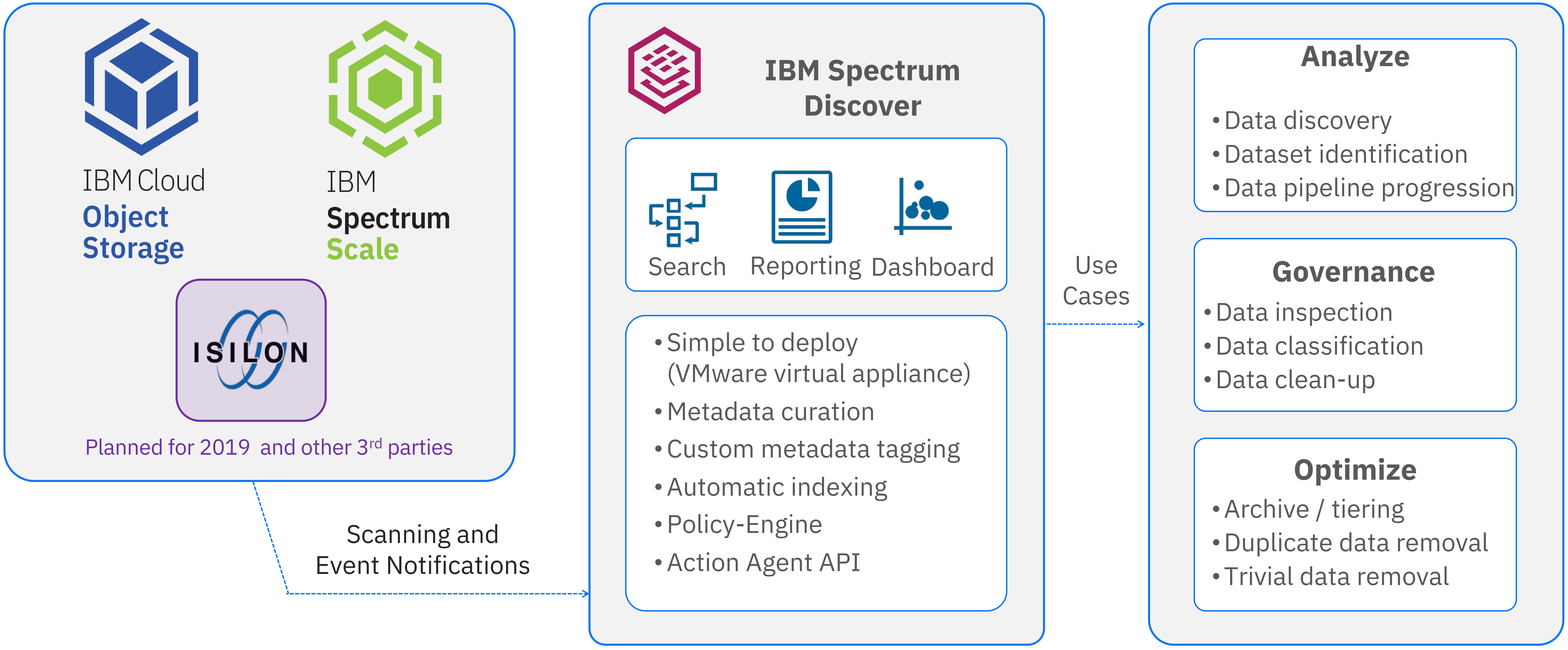
IBM Spectrum Discover Architecture

IBM Spectrum Discover

File and Object Storage

Data Insight

Data Activation/Optimization



IBM Cloud **Object Storage**

IBM **Spectrum Scale**

ISILON

Planned for 2019 and other 3rd parties

Scanning and Event Notifications

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Search Reporting Dashboard

- Simple to deploy (VMware virtual appliance)
- Metadata curation
- Custom metadata tagging
- Automatic indexing
- Policy-Engine
- Action Agent API

Use Cases

Analyze

- Data discovery
- Dataset identification
- Data pipeline progression

Governance

- Data inspection
- Data classification
- Data clean-up

Optimize

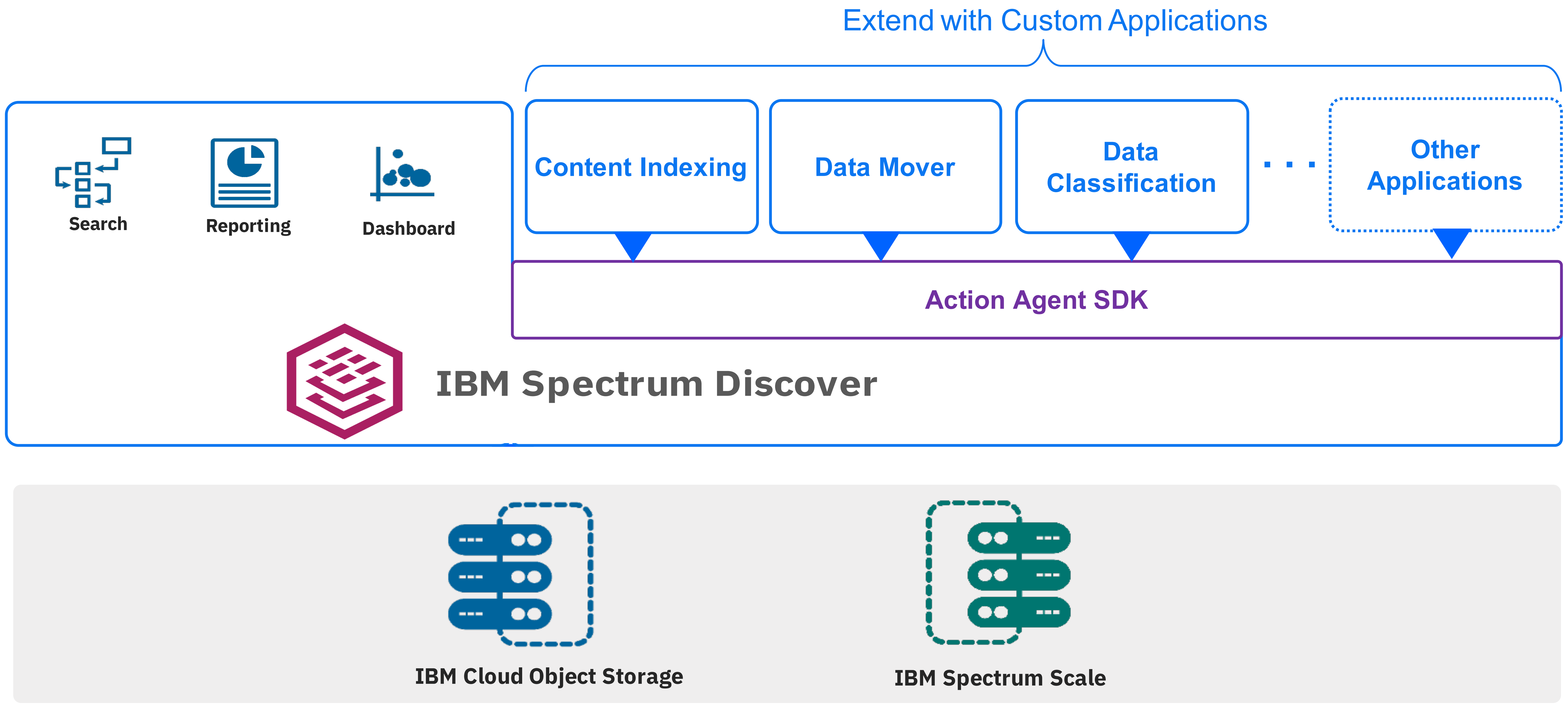
- Archive / tiering
- Duplicate data removal
- Trivial data removal

Extensible Foundation for Data Insight

- Action Agent SDK extends capabilities via well defined API

- Customize actions taken based on Discover metadata
  - ❖ Content indexing
  - ❖ Data movement (tiering)
  - ❖ Classification
  - ❖ Sensitive data identification
  - ❖ ROT Detection/Disposal
  - ❖ Etc…

- Integrate with upstream information management applications



Use Case: Identifying relevant data based on content enrichments

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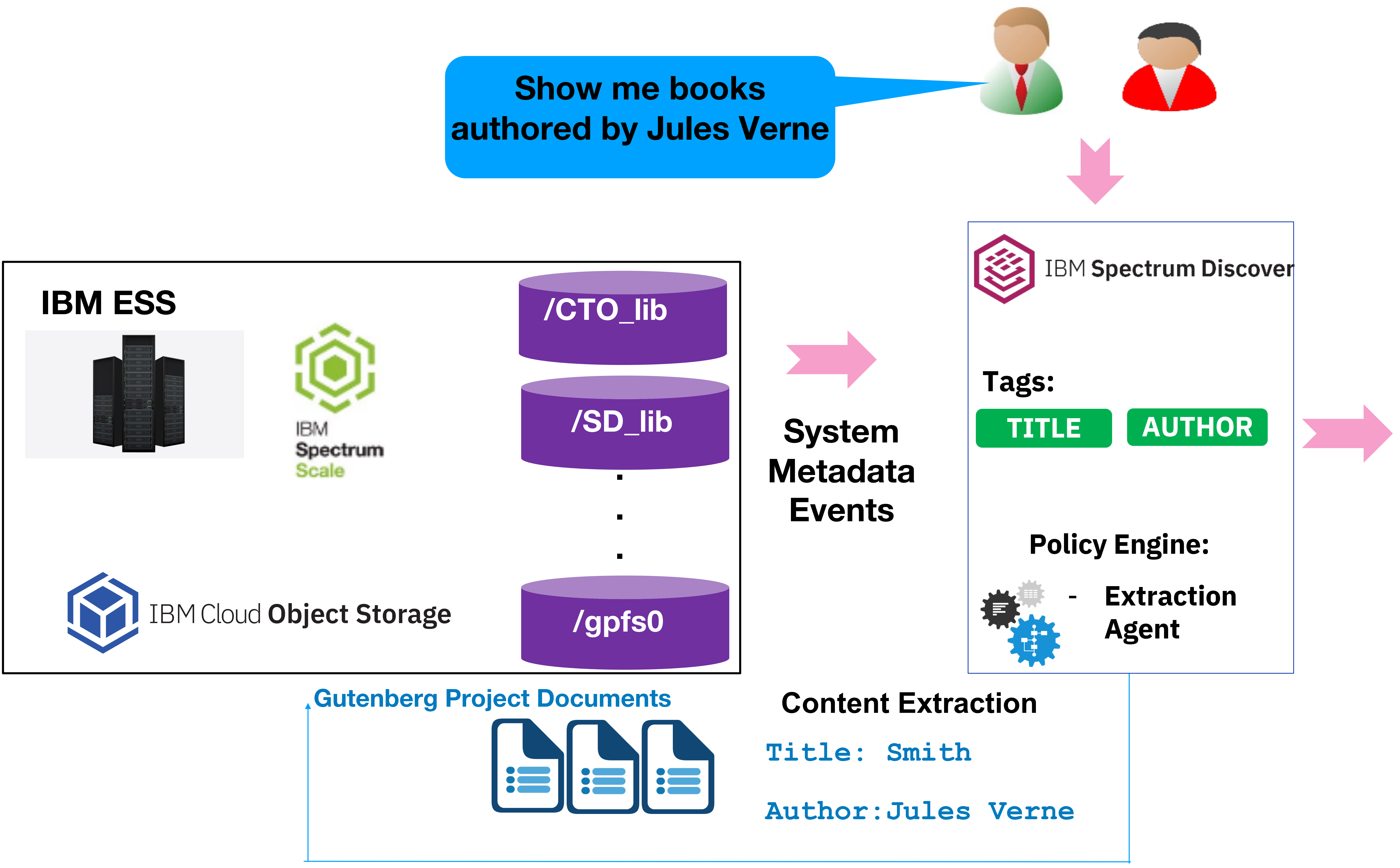

Show me books authored by Jules Verne

IBM ESS

IBM Spectrum Scale

/CTO_lib

/SD_lib

. . .

/gpfs0

IBM Cloud Object Storage

System Metadata Events

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Tags:

TITLE AUTHOR

Policy Engine:

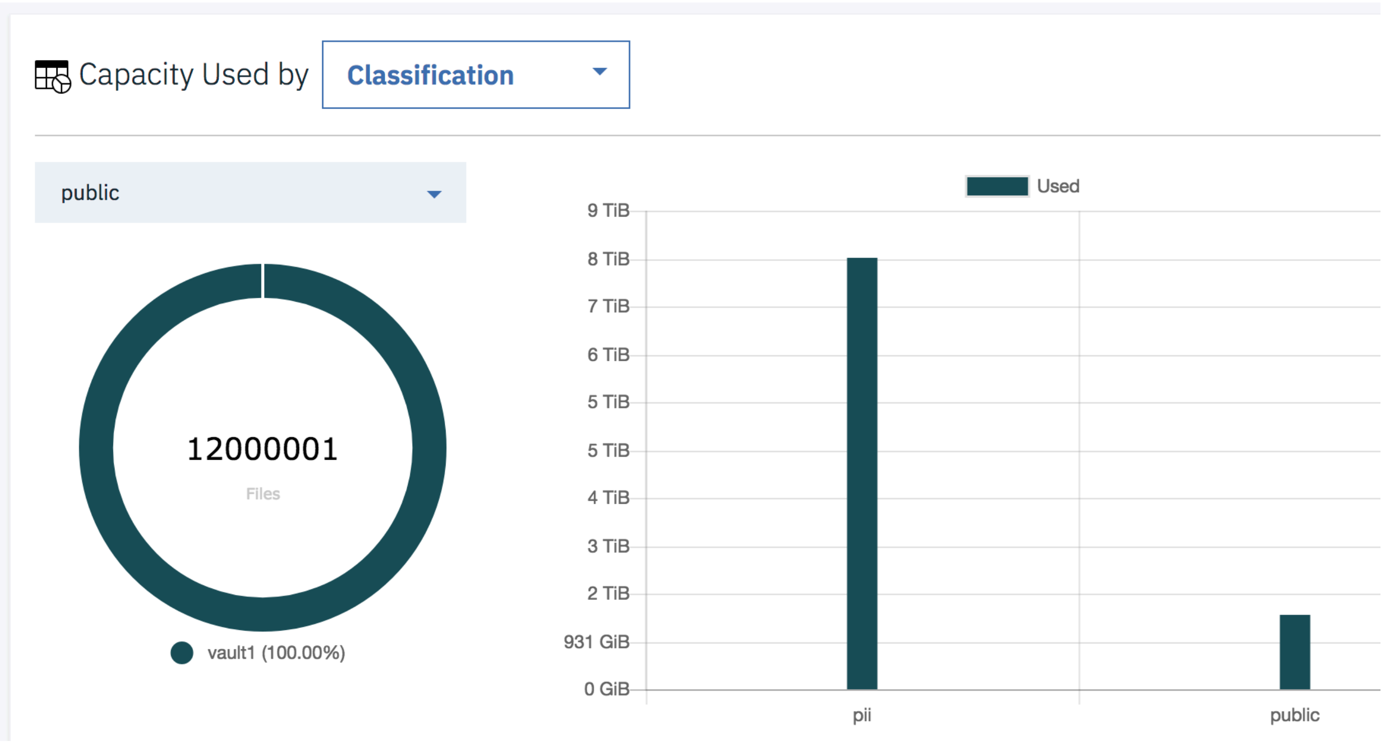
- Extraction Agent

Gutenberg Project Documents

Content Extraction

```
Title:  Smith

Author:Jules Verne
```



Capacity Used by Classification

public

Use Case: Curating the Research Data for Placement Optimization

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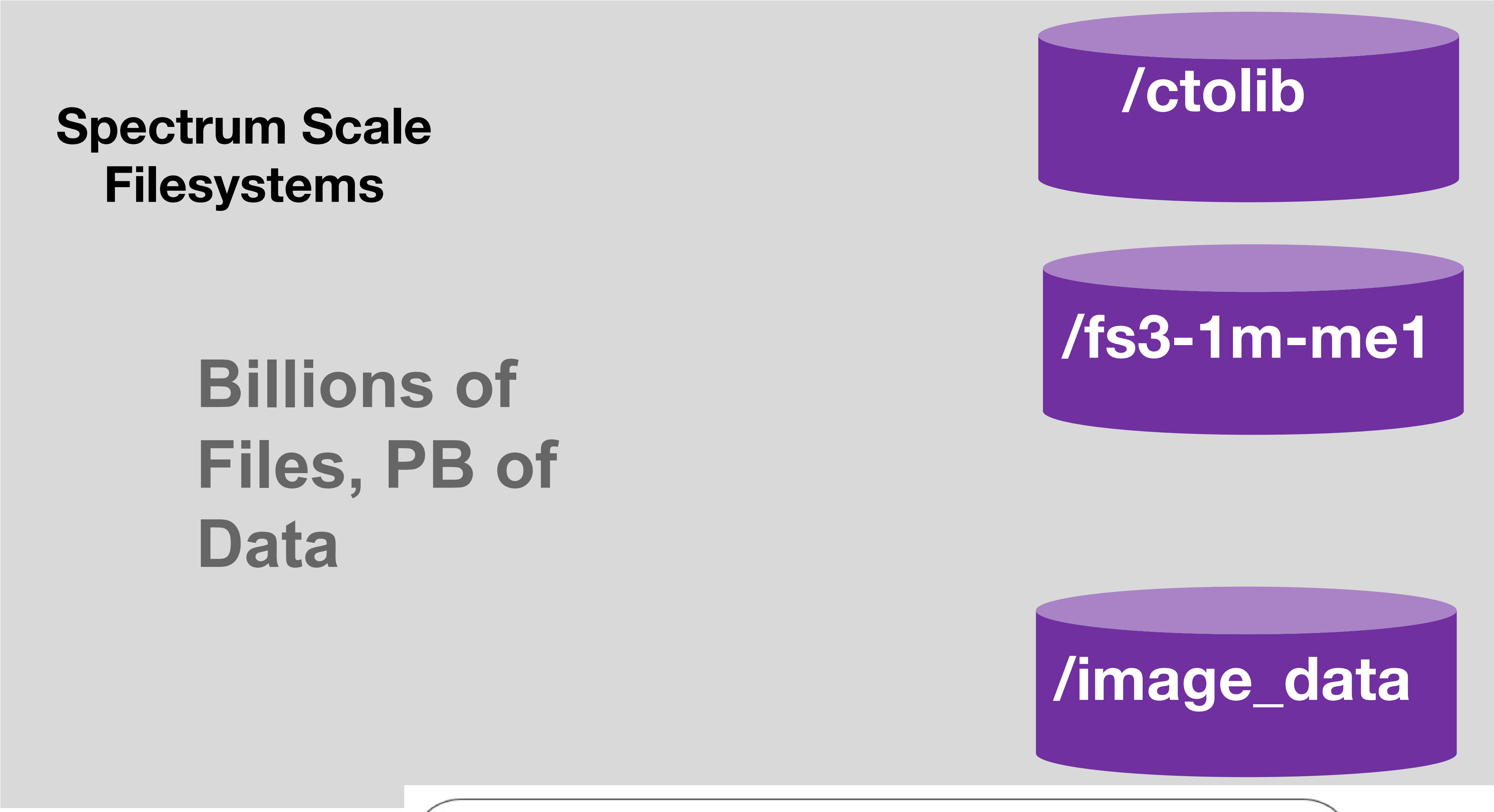
User	Department	Project	Project State	Spectrum Scale Fileset / Base Directory
ibmuser1	staff	phase1	active	/whole_cell
ibmuser2	postdoctoral	phase2	inactive	/nucleus
ibmuser3		phase3	active	/polysomes

Capacity Reporting

4. Generate reports (Capacity showback)



1. Collect technical metadata (file name, size, etc)

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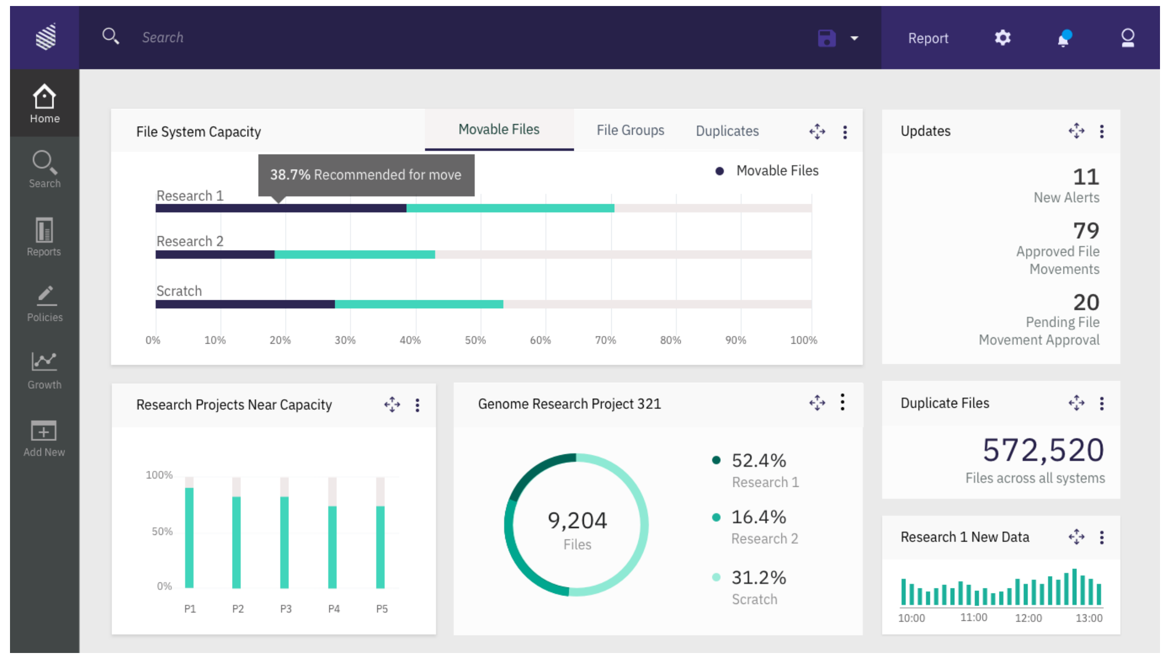
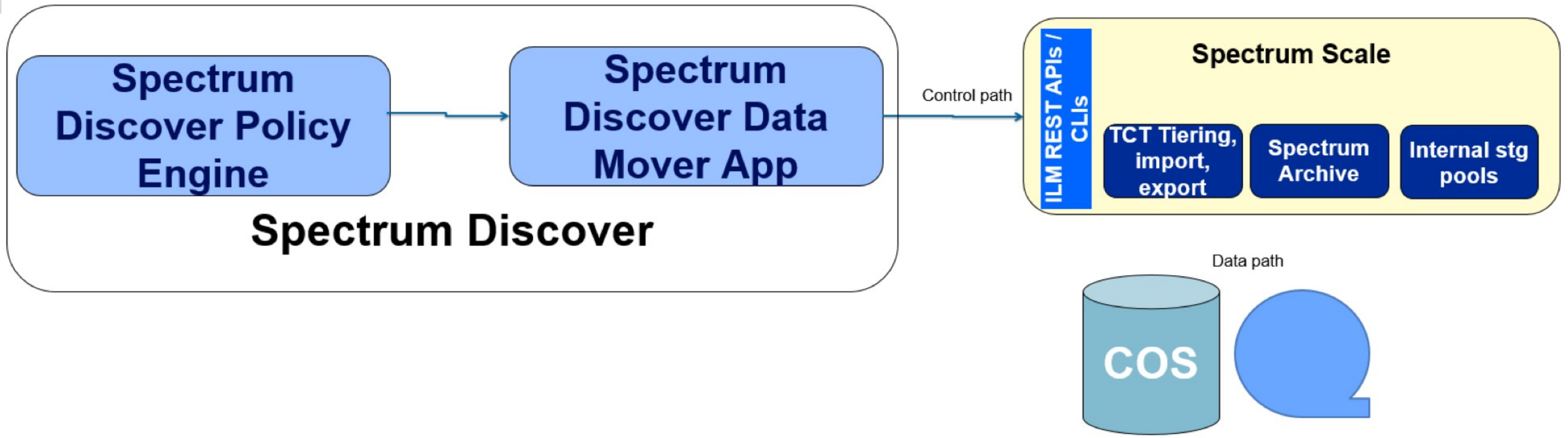
3. Ad-hoc filtered search



2. Policy-based auto-tag (enriching data with customer specific tags)

5. Move to tape

Spectrum Archive



Free Trial Software Download

IBM
Spectrum
Discover

- 90 Day Free Trial
  - At end of 90 days, code no longer accessible by client w/o approved extension or purchase of full license
- Full function version of code
  - Not limited scale or function set
  - At termination of trial, access terminates
- Restriction(s)
  - Cannot upgrade from single node trial to multi-node production
- Support for trial: spdiscov@us.ibm.com

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