



AI TECHNOLOGIES AT CAS

Enhance R&D proprietary information with CAS

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CAS

A division of the
American Chemical Society

About CAS

What we do



Our experts collect, harmonize, organize, and connect the world's scientific information.



Our proprietary ontologies, lexicons, and thesauri enable discovery of insights.

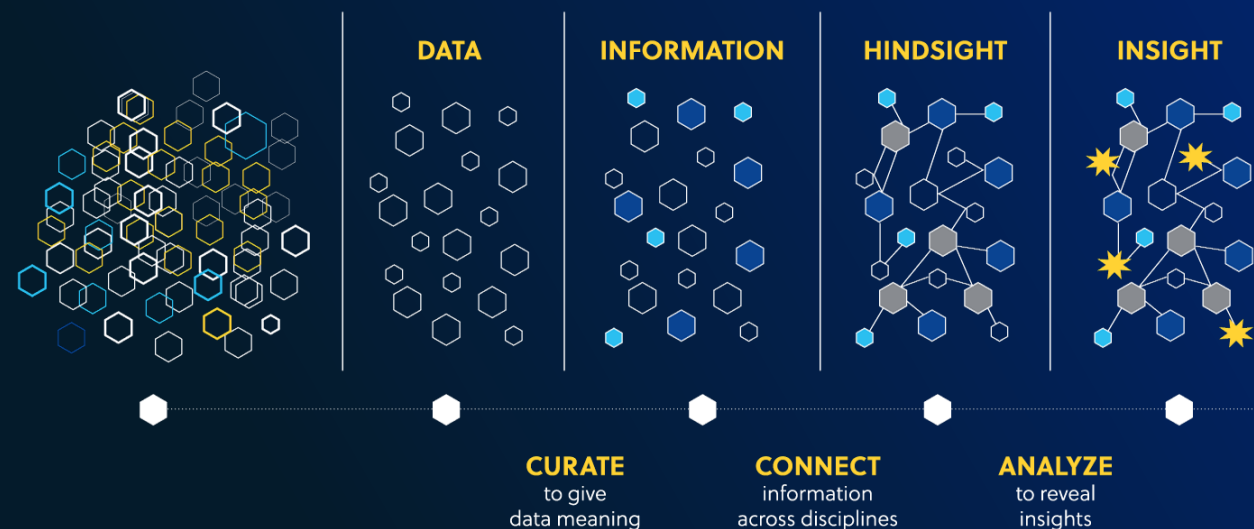


We develop and license technologies to access our content.

**SCIFINDER
DISCOVERY
PLATFORM**

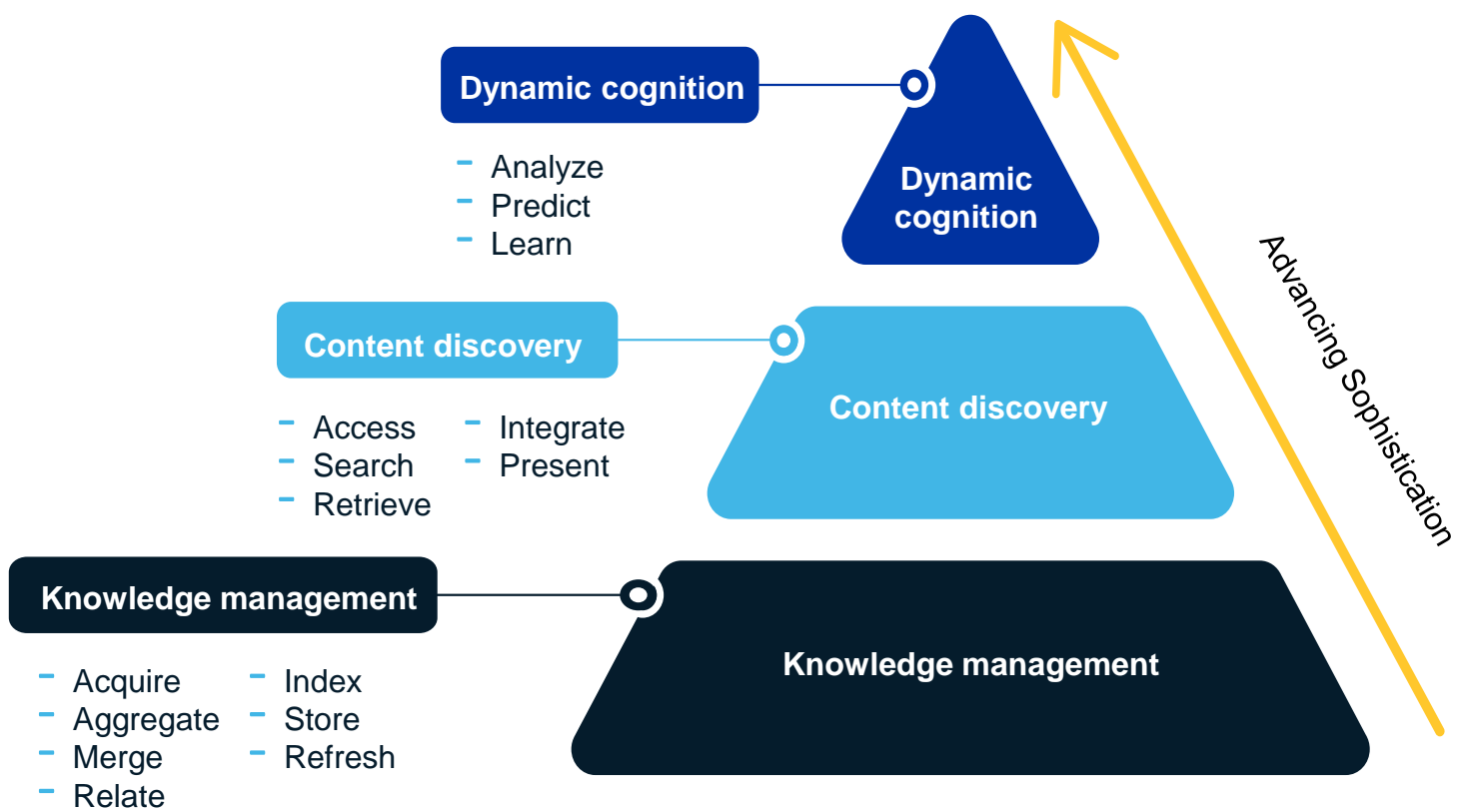
**STN IP PROTECTION
SUITE**

Data is valuable only when it is transformed to insight



Our core competency and unique assets

Enable us to address common information opportunities and challenges hampering innovation



Unmatched human expertise



Specialized technology

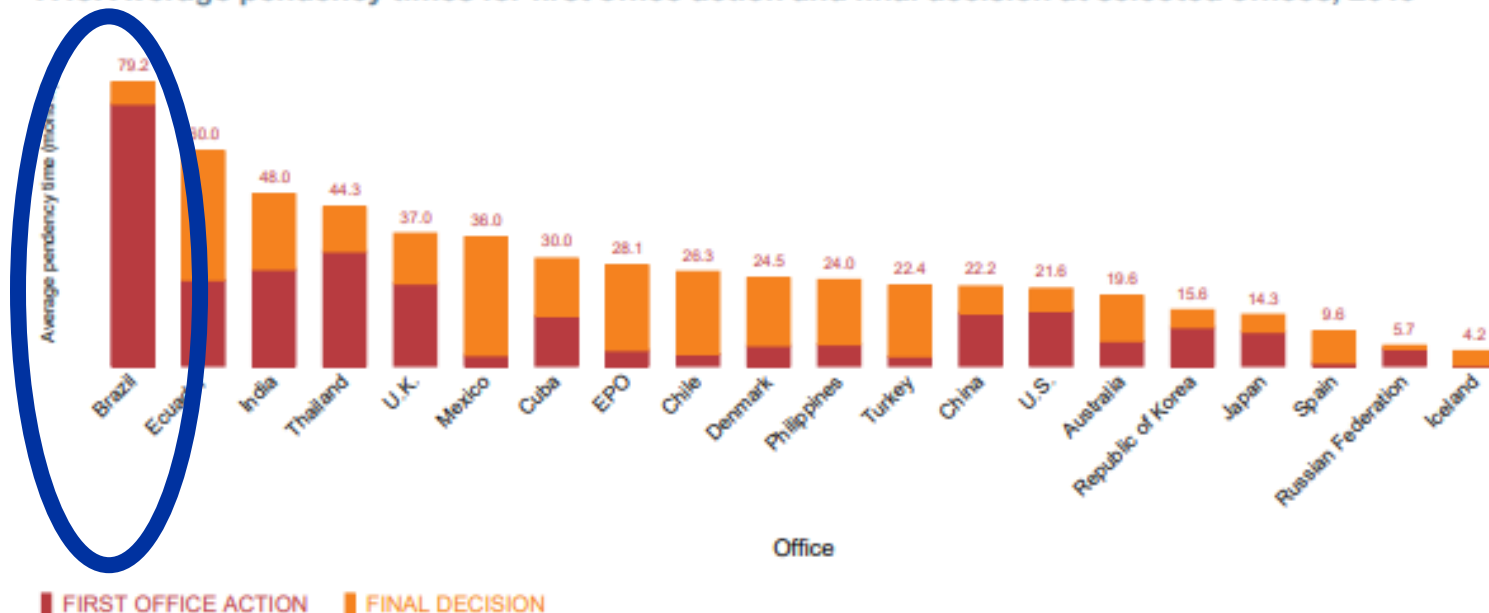


Unparalleled content

Use Case: INPI Brazil

How do you reduce the backlog of pending patents?

A45. Average pendency times for first office action and final decision at selected offices, 2019



Note: EPO is the European Patent Office. WIPO collects data from IP offices using a common questionnaire and methodology. However, due to differences in patent procedures between offices, data cannot be fully harmonized. Therefore, caution should be exercised when making comparisons across offices.

Source: WIPO Statistics Database, September 2020.

Implicit objectives:

- Work at scale, ie process the entire set of world-wide patents ever published
- Be good at chemistry ... and everything else
- High-throughput, ie process 1000's of applications in minutes
- Work in a secure cloud environment
- “Keep the human in the loop”

Process to develop the right similarity search

Using specialized data, tools, approaches and system architecture



- Crash-course from Subject-Matter-Expert

- Exploratory Data Analysis

- Set a “gold-standard” for quality

- Watch out for data-leakage

- Only need to identify one prior-art in conflict.

- Key metric: rank of first positive answer

- Traditional Information-Retrieval

- Cheminformatics

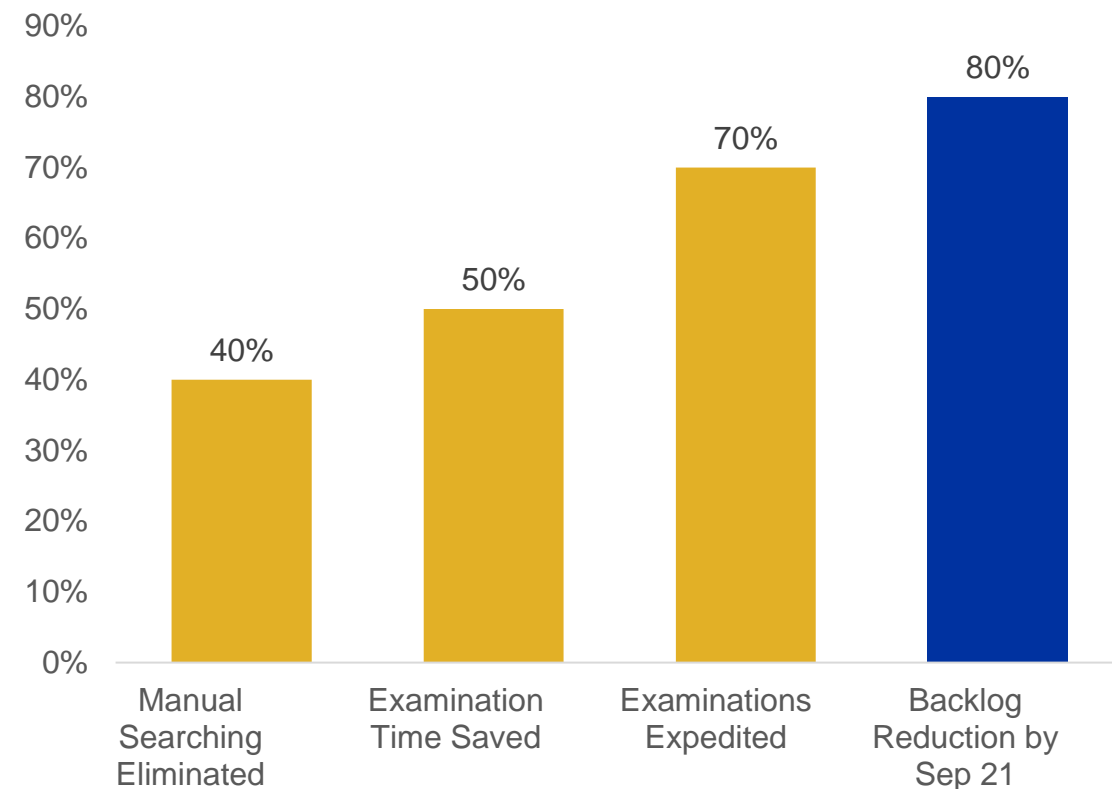
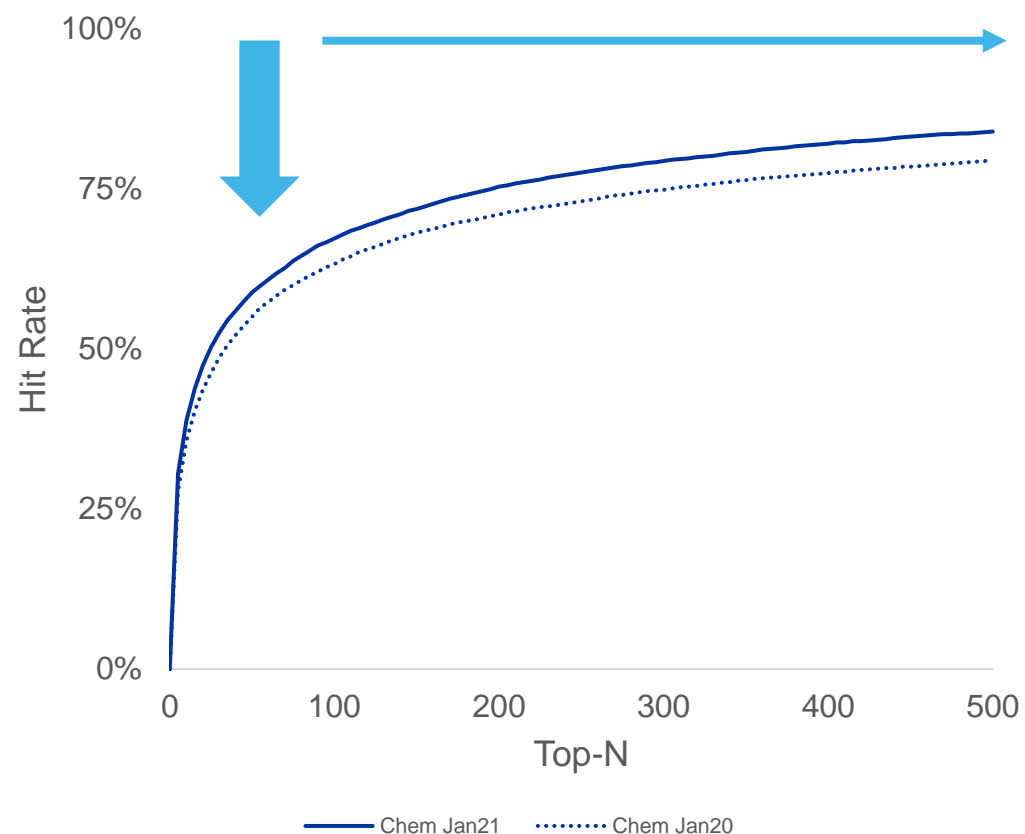
- Deep-Learning (same ML technique as GPT)

- Knowledge-Graph

- Machine-Learning

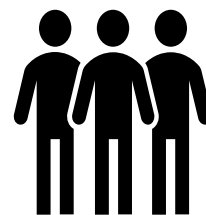
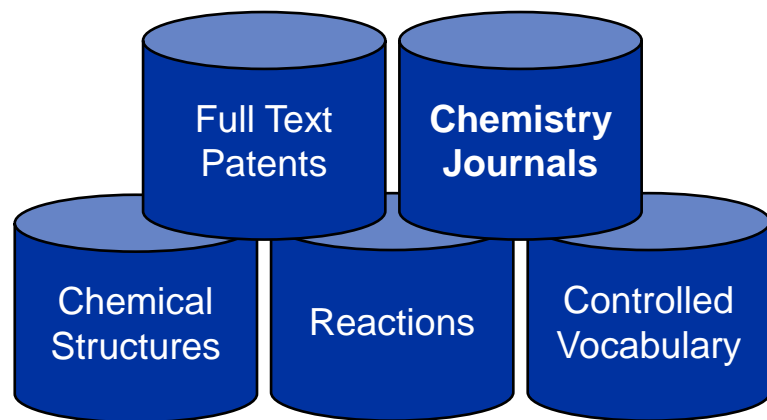
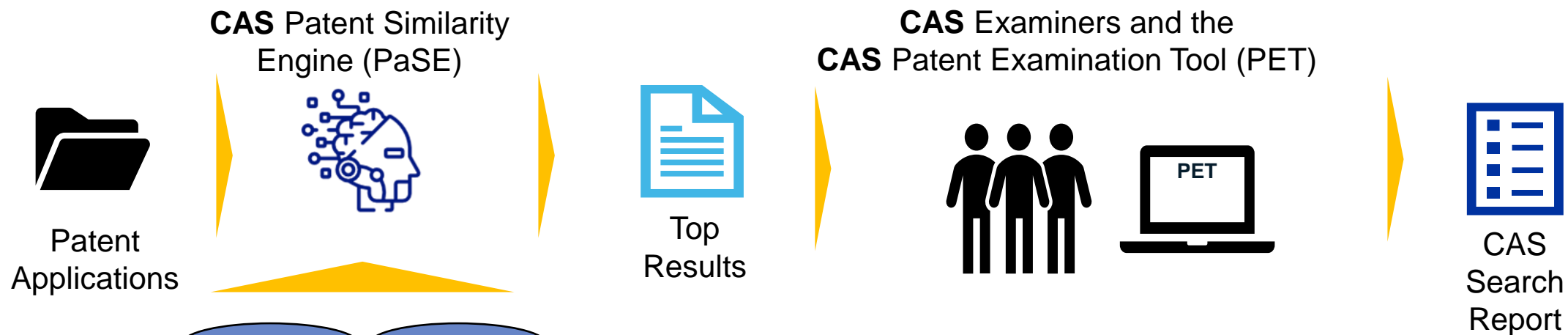
The algorithms are finding “prior art” faster

While the “improvement” rate appears to be minimal – the time saving is massive



Each examiner is now reviewing 100 instead of 500 entries

Outcome



A screenshot of the Patent Information Users Group, Inc. (PIUG) website. The header includes the PIUG logo and navigation links for 'Home' and 'About'. The main content area features a banner for the 'Stu Kaback Business Impact Award' with the text: 'The Stu Kaback Business Impact Award' and 'As the PIUG's mission is to "support, assist, improve and enhance the success of patent info important functions the PIUG should serve is to highlight the importance of patent informa to take a more active role in promoting and encouraging the growth of our profession.'

CAS investments in AI and ML

Advanced technologies are at the core of CAS Solutions and Operations

Continuum of Approach Complexity in AI



Content Aggregation and Machine Assisted Curation

Document Selection, Categorization, Harmonization, Authority Application
Summarization, Conception Extraction, Triple Extraction

Search and Visualization

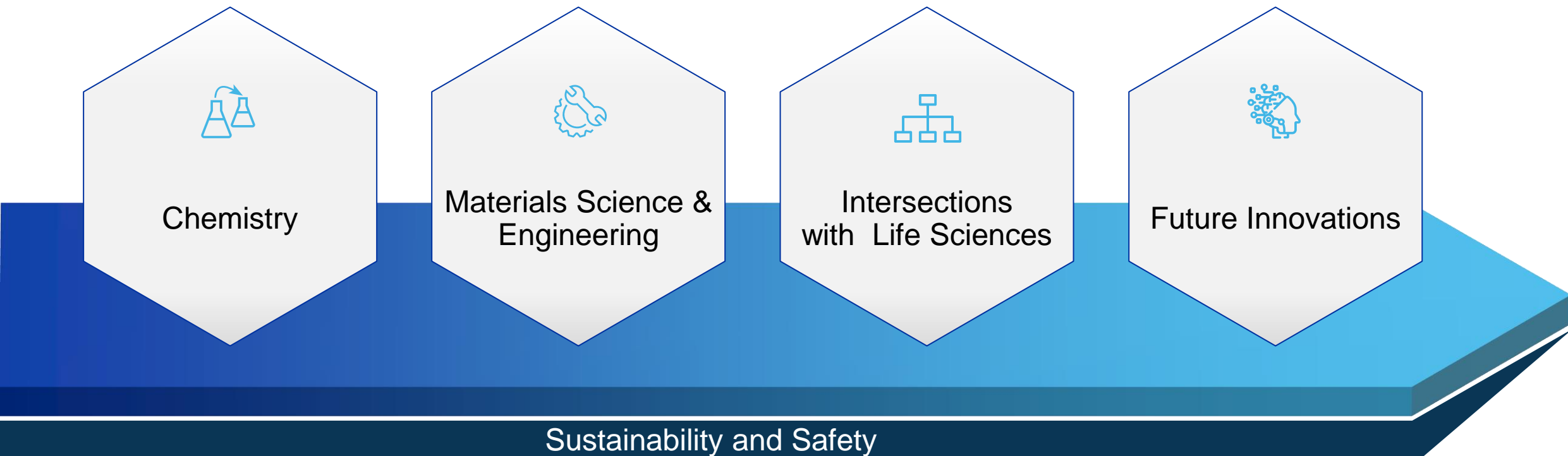
Query Pattern Recognition, Query Optimization, Relevance Ranking, Knowledge Graph Visualization
Query Interpretation, Landscape Visualization, Drug-Target-Disease Visualization, Biological Pathways, Personalization

Prediction

Reference Recommendation, Formulation Designer, Predictive Retrosynthesis, IP Novelty/Prior Art, Concept Relationships
Forward Synthesis, Scaffold Hopping/Repurposing, Drug-Target, Metabolite, PK, Toxicity, Materials Properties

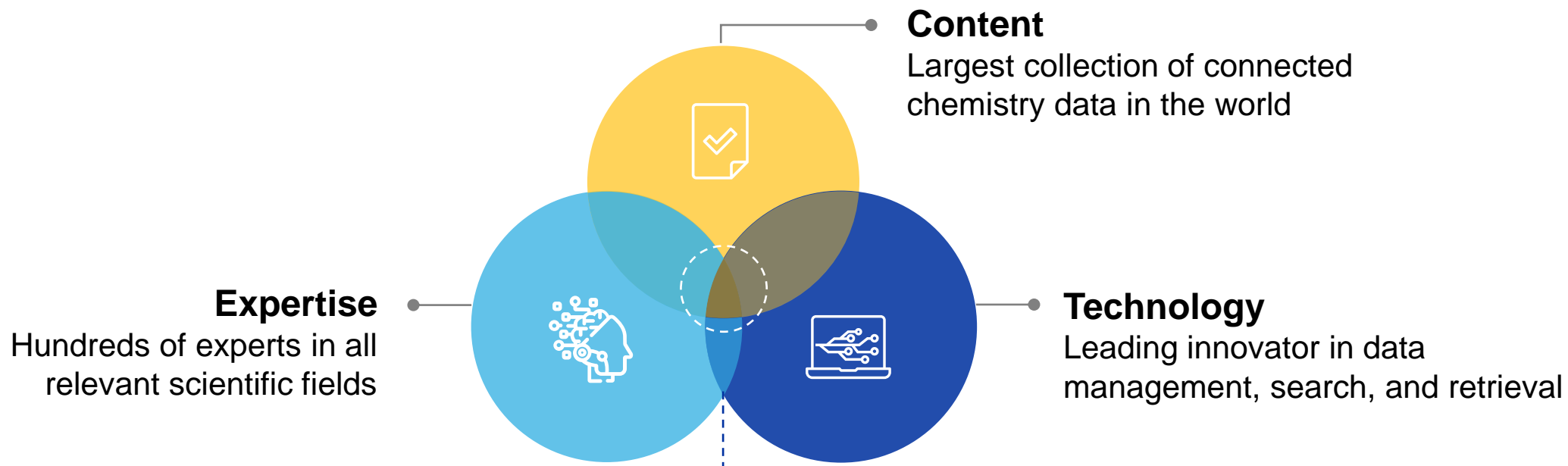
CAS investing to broaden scientific scope

Providing more comprehensive, fit-for-purpose solutions



CAS Custom Services

Our capabilities



We transform scientific data into actionable, evidence-based insights.

Thank you



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