

Data Science

Delivering the Insights and Analysis that Drive a Safer World

At the heart of every UL Technical Committee (TC) is data. The UL Standards & Engagement Data Science team provides the vital intelligence and analysis that committee members rely upon to develop safety standards that are relevant, fact-based and impactful.

Harnessing a World of Information

The UL Standards & Engagement Data Science team supports the organization's work to develop standards that are informed by solid, timely and accurate information.

The team uses analytical, statistical and predictive modeling to enhance strategy, drive research and deliver powerful insights and solutions to support standards development and safety science research with worldwide impact.

Through an array of tools and techniques, the UL Standards & Engagement Data Science team helps solve complex safety, sustainability and security issues. The team accelerates UL Standards & Engagement's mission with the vital knowledge safety experts seek. This includes applying safety incident data, reviewing standards and regulatory text, and recognizing patterns in product failures and near misses.

Empowering the UL Standards & Engagement Community

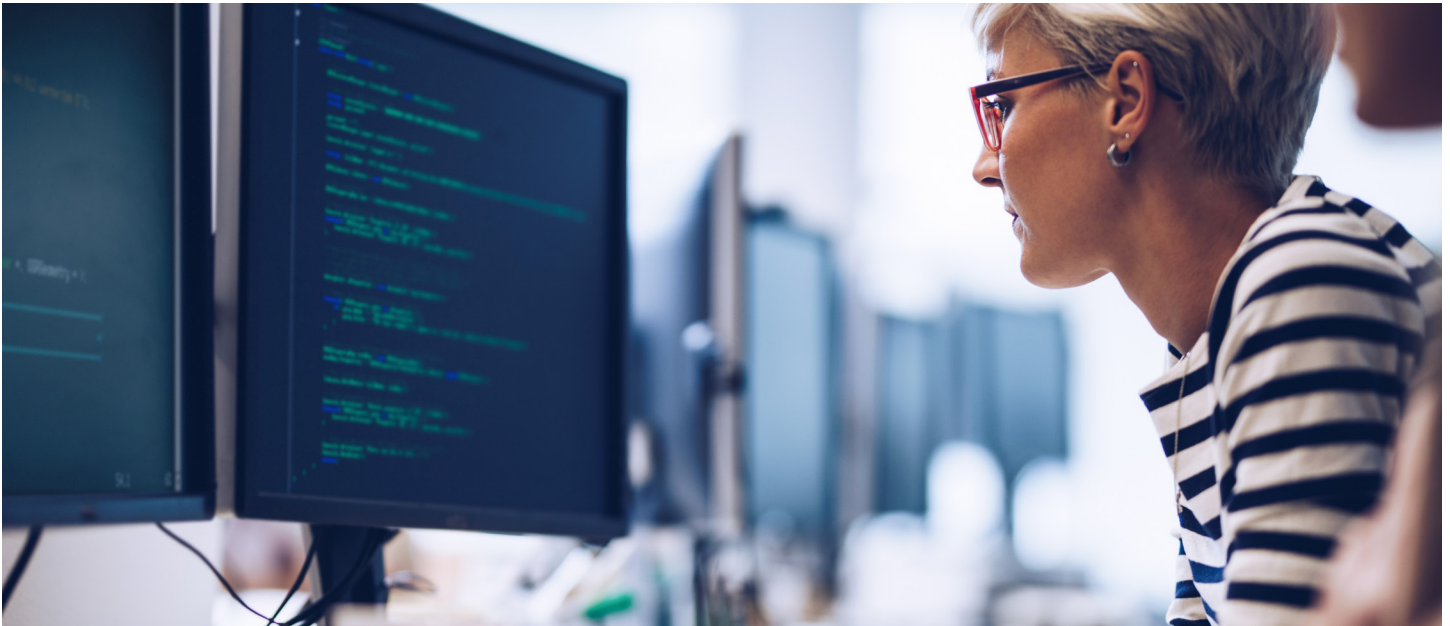
The UL Standards & Engagement Data Science team works to support the overall UL mission in a variety of ways, including the following:

- Creation and management of the UL Standards & Engagement Safety Data Lake, a user-driven repository of global safety information (see page 2)
- Delivery of vital data to understand revisions/creation of a standard and its effectiveness once published
- Management of content consistency in standards, ensuring cross-referenced materials are identical and easily searchable
- Categorization, organization and segmentation of the more than 1,800 documents in the portfolio of UL standards

Multidimensional Approach to Data

The UL Standards & Engagement Data Science team applies many types of tools to serve the information needs of stakeholders:

- **Unstructured and Structured Data**
Management of disparate data sets
- **Big Data**
Processing of large volumes of data in seconds
- **Cloud Infrastructure**
Employment of flexible, scalable tools
- **Advanced Visualization**
Securing meaningful insights at a glance
- **Machine Learning**
Driving decisions through pattern discovery & predictive analytics



The UL Standards & Engagement Data Lake

In July 2018, the UL Standards & Engagement Data Science team introduced the UL Standards & Engagement Data Lake (<https://opendata.ul.org>). This unique portal consolidates open-source data from multiple safety-focused databases into a single environment with simplified access.

Unlike a traditional, highly structured data warehouse, this resource helps machine-learning algorithms to work on the whole set versus limited subsets. It is fluid, flexible and driven by user needs, even allowing data display via Excel, Power BI or Tableau. And the resource is curated continuously for content and quality to support product safety analysis and research.

Information and insights related to safety are derived from multiple countries, agencies and websites. Some data sets in the Data Lake are updated in real time, while others are updated periodically.

In this single source, users within UL Standards & Engagement, external

stakeholders and consumers in the public space can conduct research and market surveillance, and track safety and recall trends.

Natural Language Processing

The UL Standards & Engagement Data Lake uses natural language-processing algorithms to understand human language and distinguish phrase meanings. The ability to use the context of an initial search query to identify potential data goes beyond traditional related search features to deliver relevant results from across all possible data sets, saving time and making searches more productive.

Safety Marks Detection

Another tool offered by the UL Standards & Engagement Data Science team scans images using an object detection engine. This leading-edge feature uses a neural network and significantly reduces time in identifying the presence of safety marks on consumer product failure reports. By detecting safety certification marks with more than 85% accuracy, users can streamline this time-consuming process.

Making a Difference Worldwide

The UL Standards & Engagement Data Lake contains more than 18 million records from six international data providers:

- U.S. Consumer Product Safety Commission
- U.S. Food and Drug Administration
- European Commission
- Organisation for Economic Co-operation and Development
- U.S. Department of Transportation
- Health Canada

To learn more, visit ULSE.org or contact us via ULSE.org/contact.