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NATIONAL LABORATORY

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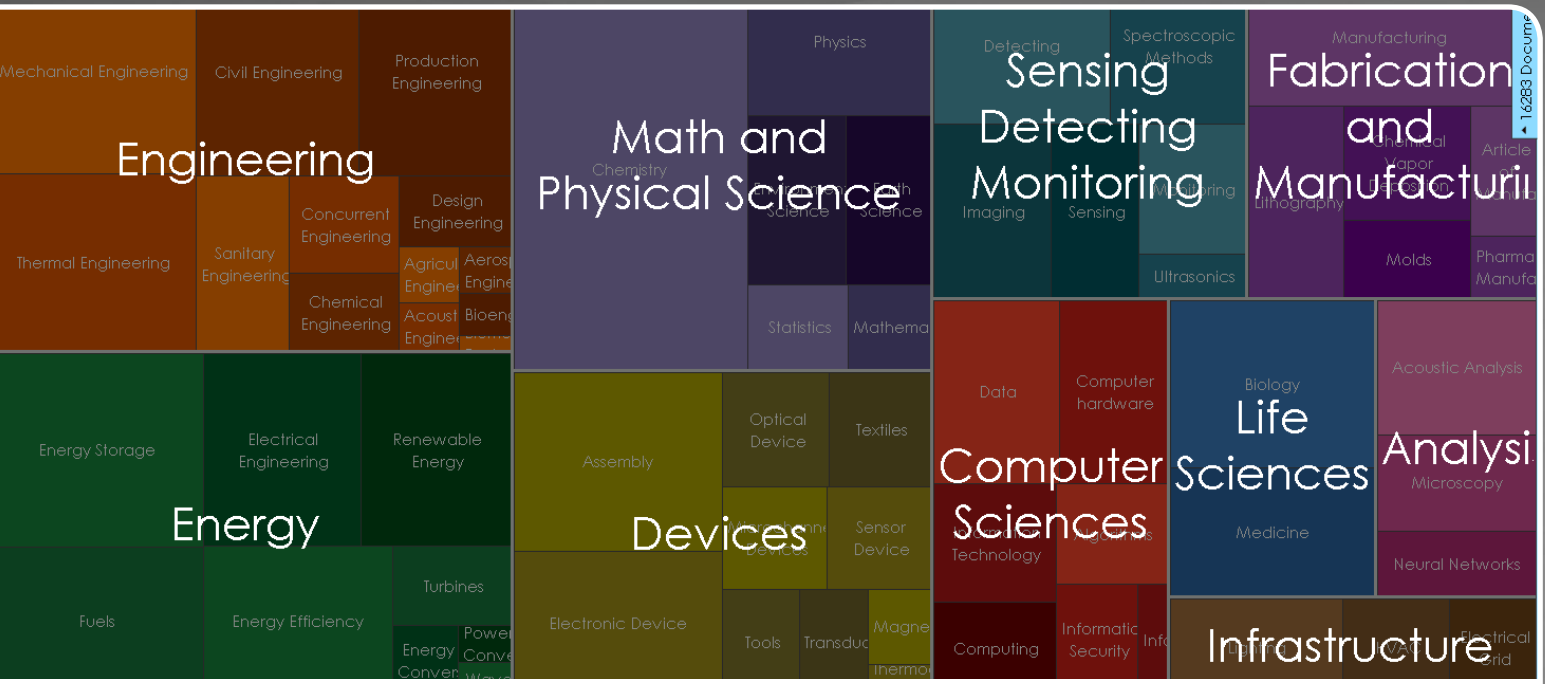


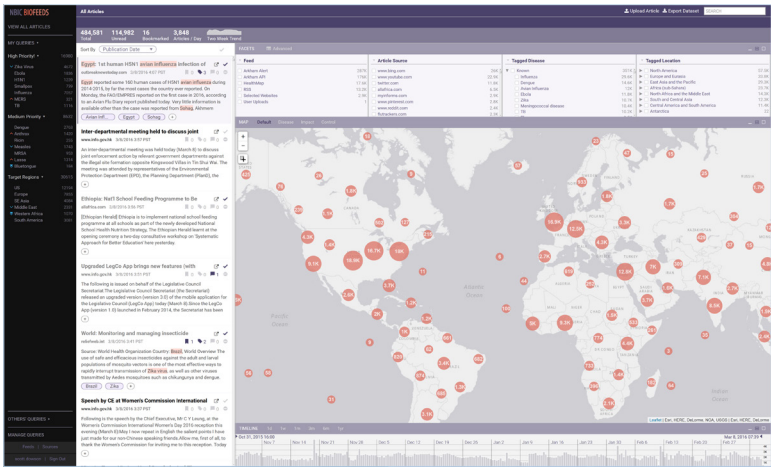
Scalable Reasoning System (SRS)

Managing and making sense of archived or streaming data in near real-time is a constant analytic challenge. The Scalable Reasoning System (SRS) software framework, developed at Pacific Northwest National Laboratory, provides users with highly intuitive, engaging visual analytic capabilities—conveniently accessible through a web browser. SRS provides insights into information collections through rapid modeling, analysis capabilities and interactive visualizations that offer intuitive ways to explore information.

CHALLENGE

A central challenge in visual analytics is the creation of accessible, widely distributable analysis applications that bring the benefits of visual discovery to as broad a user base as possible. Analysts of all levels have increased access to data of all sorts. However, with greater access to data comes greater data overload; queries can return thousands of results, making the task of analyzing the data increasingly difficult. Similarly, data comes through multiple providers, in inconsistent schemas, and in a variety of forms. SRS connects to a wide range of these data sources.

Different levels of analysts require different functionality in analytic software. Traditional users of visual analytic technology typically work on longer-term, strategic analyses whereas other users might have a more immediate analytic need and require the ability to quickly identify trends or related information. Further complicating analysis is the streaming nature of real-time data. Users often need to understand this data as it is happening, especially in time-critical situations. SRS generalizes the core analytic functionality common to all types of users into different interfaces that incorporate the features these users require.



An open source analysis application supporting the management of streaming data based on user's interests and the triage of articles for collaboration and report generation.

SOLUTION

With SRS, information collections can now easily be brought in front of users in forms that are simple to learn and easy to use. Because SRS's user interface runs in a web browser, cumbersome user installations and configurations are not necessary. SRS can be used to develop a complete end-to-end visual analytics solution supporting data access and parsing, interactive visual analysis, and result dissemination. As an alternative, the analytic components of the framework can also be deployed individually and integrated into existing systems. A web service Application Programming Interface allows SRS functionality to be used by other web-based software.

SRS can connect to a wide range of common web or database repositories or, with little effort, new data adapters can be developed for more specialized data sources. After connecting to the data source, the structured and unstructured information is analyzed in computational modules to uncover relationships, patterns, and trends in the data. There is no single schema to which all data must conform.

Custom SRS applications can be assembled by selecting from a library of analytic modules and visualization widgets, meaning that each application is designed to meet the needs of its end users. As a browser-based application framework, the SRS interface can be easily customized to match a customer's workflows and requirements. Whether the information to be analyzed is simply unstructured text or contains temporal, numeric, categorical, hierarchical or geospatial properties, SRS provides a high-level summarization of the information space and enables users to drill down to explore and discover more subtle patterns and relationships.

IMPACT

SRS is positioned to support a community-wide, open library of analytic services. SRS supports rapid deployment of visualization applications to users who need access to a flexible set of analytical capabilities from a variety of locations that can be accessed from a web browser or integrated into standalone applications or service-oriented architectures. Initial application of the system has shown immediate success in open source analysis, cyber security and patent analysis; and has been deployed in support of law enforcement, biosurveillance and asset management.

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