Making your search SIMPLE, even when your ideas are complex

The opportunity

If mined with the right tools, big data presents a unique opportunity to alter our lives. The rate of our ability to gather data is outpacing our ability to mine it. Swoop Search unveils the right approach to address this challenge. Swoop Search is an intelligent union between software and hardware, dancing perfectly in tune with human intuition to untangle and present unique insights buried deep within the data set. Swoop Search users will make a quantum leap in analyzing information, discovering trends, and drawing connections between dimensions in data.

The application challenge

While big data represents an unprecedented opportunity, two challenges plague its wide spread adoption.

Usability is the first challenge. Big data constructs typically consist of variably structured and unstructured schema. Effectively navigating and understanding these constructs requires skills to theorize possible relationships based on acquired experience and domain knowledge. Testing the theorized relationship requires skills to generate both configurable queries and multidimensional queries, as well as being able to implement them. Unfortunately, these two skills are orthogonal to each other as users with intuition and experience do not possess programmatic skills, while programmers do not possess the experience and intuition required to make sense of the data.

The second challenge is scalability. Today's compute infrastructure is not able to scale at the rate of big data growth. While estimates vary by source, it is an accepted fact that general-purpose compute servers will not be able to scale to meet the required compute, networking and storage requirements to effectively manage big data growth.

The solution

Swoop Search has looked at these big data challenges from a fresh perspective and has developed a solution in collaboration with Hewlett Packard and Texas Instruments.

Swoop Search has invented and patented the concept of Swoop Space shown in Figure 1 below; enabling intuition-based relationship building, providing a response to the usability requirements of big data. Swoop Space allows the user to start with simple intuition based on user experience, and build complex relationships iteratively without needing any programmatic skills for query generation.
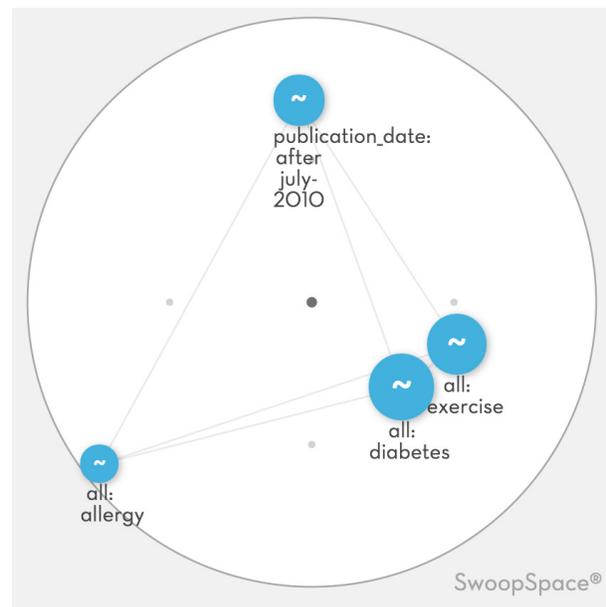

Figure 1: The patented Swoop Space represents a query consisting of allergy, publication date, diabetes and exercise, where a contextual relationship between exercise and diabetes in any field is emphasized over publication dates, which, in turn, are emphasized over allergy.

To solve the scalability challenge; behind the scene Swoop Space uses the HP Moonshot platform to harness the parallel compute capability of TI's C66AK2H DSP SoC architecture to provide balanced compute resources for big data.

The HP Moonshot platform, with up to 45 HP ProLiant m800 servers in a 4.2 Ru form factor

Figure 2: HP Moonshot System

(Figure 2), can deliver greater compute density and configuration simplicity even as you grow—simply add more server cartridges or an additional chassis with minimal cabling.

Value proposition

Without writing a single line of code, using Swoop Search's unique graphical search capabilities, users can create and manipulate multi-dimensional weighted visual queries to gain valuable insights into a variety of relationships within the data set connected to Swoop Space using concurrent connectors to a wide range of data sources.

Swoop Search's graphical interface yields an iterative process of query generation and result analytics. Query results, collections of results, or components of analytics may become valid query parameters as investigation evolves. Queries may be saved for future investigation, streaming data filtering or collaboration.

With this patented concept of Swoop Space implemented on an HP Moonshot-based server

backend, query performance is linearly related to the size of the big data. A twenty-node cluster yields two second query and analytic times on a 0.5 GigaByte dataset, representing 350,000 text records. Three twenty-node clusters, linked with High Availability Proxy support up to twenty users generating one query per second.

Conclusion

Swoop Search, with HP Moonshot utilizing TI DSP technology, has redefined the way people search and present unique solutions to solve complex big data problems. Swoop Search will provide its users with an intuitive user interface, scaling to manage terabytes of data with a response time that is unmatched in the industry.

More information

Swoop Search
http://www.swoopsrch.com/

HP Moonshot system
http://www8.hp.com/us/en/products/servers/moonshot/index.html

HP ProLiant m800 Cartridge
http://www8.hp.com/us/en/products/proliant-servers/product-detail.html?oid=6532018

Texas Instruments Incorporated 66AK2H SoC
http://www.ti.com/product/66ak2h14

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have *not* been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products		**Applications**	
Audio	www.ti.com/audio	Automotive and Transportation	www.ti.com/automotive
Amplifiers	amplifier.ti.com	Communications and Telecom	www.ti.com/communications
Data Converters	dataconverter.ti.com	Computers and Peripherals	www.ti.com/computers
DLP® Products	www.dlp.com	Consumer Electronics	www.ti.com/consumer-apps
DSP	dsp.ti.com	Energy and Lighting	www.ti.com/energy
Clocks and Timers	www.ti.com/clocks	Industrial	www.ti.com/industrial
Interface	interface.ti.com	Medical	www.ti.com/medical
Logic	logic.ti.com	Security	www.ti.com/security
Power Mgmt	power.ti.com	Space, Avionics and Defense	www.ti.com/space-avionics-defense
Microcontrollers	microcontroller.ti.com	Video and Imaging	www.ti.com/video
RFID	www.ti-rfid.com		
OMAP Applications Processors	www.ti.com/omap	**TI E2E Community**	e2e.ti.com
Wireless Connectivity	www.ti.com/wirelessconnectivity		