![SIWEL Data Smart logo]

Big Data Services

Today, organizations of all sizes in all industries are able to collect a flood of new data from customers, vendors, the factory floor and the point of service delivery. The volume and variety of data are growing each day – especially from social media and from sensors embedded in devices that we use every day. This proliferation of machine-generated data resulting from increased interconnection of embedded devices with existing Internet infrastructure provides the greatest "big data" challenge. The companies that are the first to figure out how to use this new data most effectively will become the leaders in their markets – and those that don't will lag behind.

Significant, Measurable Benefits

A comprehensive "big data" solution results in more effective, lower cost applications, new metrics and capabilities, and an exponential increase in actionable information about your markets and customers. The benefits are significant:

- New and unique insights about the markets you serve
- Better business decisions
- New sources of competitive advantage
- Lower costs
- New streams of revenue

The future of almost every business will be determined by how well they capitalize on big data to create new knowledge upon which future business direction, strategy and tactics will be based.
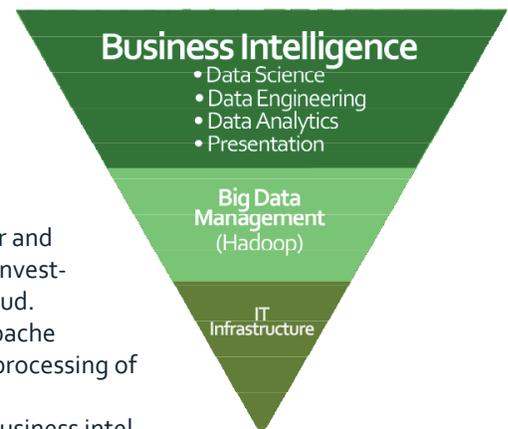
Siwel's Big Data Services

Siwel has successfully delivered big data solutions for forward-thinking clients, bringing to every big data project:

- **A proven skill set and framework** to customize a solution for any organization
- **End-to-end services** required for discovery, delivery, implementation, administration and maintenance for every big data solution
- **Data scientists, engineers and analysts** to ensure that your organization takes maximum advantage of big data to support better business decisions, create new sources of competitive advantage and create new and sustainable revenue streams.

Big Data Framework and Building Blocks

A complete big data framework that delivers a new, deeper level of actionable information for business decisions consists of 3 layers, each with its own sub-layers of building blocks and decisions:

Business Intelligence
- Data Science
- Data Engineering
- Data Analytics
- Presentation

Big Data Management (Hadoop)

IT Infrastructure

- *IT Infrastructure*: Big data usually requires additional computing power and data storage capacity. Organizations may choose to host internally by investing in additional equipment, or transition big data processing to the cloud.
- *Big Data Management*: Most big data infrastructures are built using Apache Hadoop, an open source software project that enables the distributed processing of large data sets across clusters of commodity servers.
- *Business Intelligence*: The most complex layer in the big data stack is business intelligence – the data scientists, engineers and analysts that ensure that the massive amount of data collected is ingested, organized, maintained and presented as actionable information for decision-making. Many firms are able to build the hardware infrastructure layer; a few can tune and optimize Hadoop; but very few have the proven expertise to turn mountains of data into valuable, difference-making information.

Siwel's Big Data Services Model

Siwel's end-to-end big data services model provides our clients with access to valuable new information about their markets and customers – high quality information, well before their competitors. Siwel data scientists, engineers and analysts are involved in solution development from the beginning, mapping out your data needs at the same time your hardware and software infrastructure is determined.

Siwel's 6-phased big data services model ensures that Siwel experts are involved at every step along the way. We can execute the entire project, or assist with any phase.

- Phase 1: System Infrastructure: Servers, Storage, Network, OS
- Phase 2: Big Data Software Platform
- Phase 3: Optimize Environment, Plan & Connect Data Sources
- Phase 4: Performance Testing
- Phase 5: Steady State Monitoring & Maintenance
- Phase 6: Data Science / Engineering / Analytics
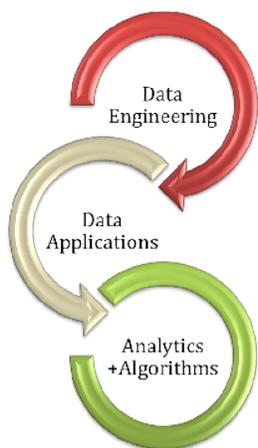   - Data capture analytics layer
    - Data presentation layer

The Internet of Things

An explosion of machine-generated data from high-tech updates to every-day devices has created big data challenges and opportunities, including:

- Heart monitoring implants
- Built-in highway sensors
- Biochip transponders in animals
- Automobiles with built-in sensors
- Search & rescue field devices
- Electric clams in coastal waters
- Smart thermostats
- WiFi-connected appliances

Siwel's Big Data Difference: Data Analytics

The biggest challenge of delivering a big data solution that achieves your organization's business objectives is the ability to provide the data engineering, applications and analytics needed to create actionable information. Siwel is one of a select few solution pro-viders that has successfully delivered an end-to-end big data solution, because we have expertise across the entire data lifecycle. We bring technology experts, data scientists and quantitative researchers to every big data engagement to build the powerful data visualizations, algorithms and models necessary for a solution that delivers fully on the big data promise.

Data Engineering
Siwel's engineering team selects the right hardware for your solution from a diverse group of leading OEMs. Our experts stand at the forefront of big data engineering, automated data matching, robust ETL systems and end-to-end set-up, tuning and testing of your hardware and software.

Data Applications
Siwel's privacy experts are certified in current data privacy and PII scrubbing techniques, and can link your business intelligence (BI environment with any external source. We build dashboards and BI reporting environments with a variety of tools. Our experts work directly with your team on data strategy and governance to ensure long-term success while keeping ongoing maintenance costs low.

Data Analytics and Algorithms
Siwel's data scientists produce actionable insights and powerful predictive models across a wide variety of industries. Results:

- Uncovering key, highly engaged market segments
- Building automated cross-system health monitoring on a high-traffic travel website
- Uncovering fraudulent patterns in banking activity.

Big Data + Data Analytics = Big Results

Harnessing the power of big data is the new key that will enable some companies to leapfrog others and become leaders in their competitive space. Highly trained data scientists are required to successfully organize and analyze the mass of new data to discern patterns and present it clearly to decision-makers to support better business decisions.

The Siwel Big Data team possesses unique expertise across the entire data lifecycle – data engineering, applications, analytics and algorithms - and includes data lifecycle planning from the beginning of the project planning process. We have delivered both the infrastructure and the results that fulfill the big data promise: exponentially more actionable information for competitive advantage and better big decisions.