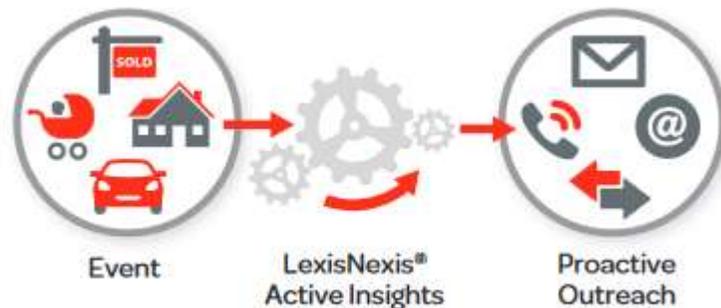


LexisNexis Active Insights: Evolving the Insurance Industry with the HPCC Systems Open Source Big Data Platform



LexisNexis Active Insights in a Nutshell

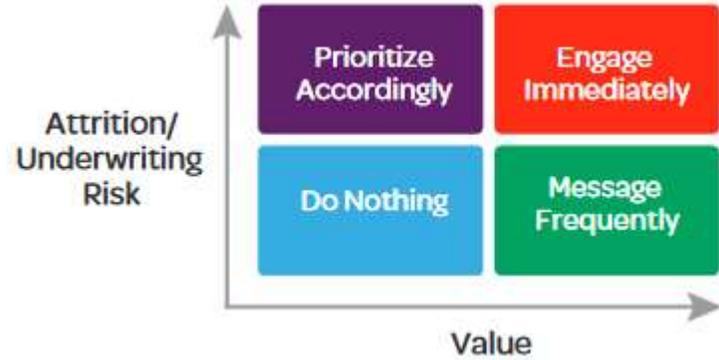
- 10,000 data sources updated regularly
- Generate scores, attributes and insights
- Match events to policies in the monitored book of business *as data updates*
- Proactively notify customers



Implementing LexisNexis® Active Insights in 4 easy steps

1. Contribute to the applicable LexisNexis Current Carrier contributory database.
2. Let us know the insights that are most important for achieving your business objectives. We'll help by generating a report showing how your specific book is being impacted by these events.
3. Pick the 1-2 most important events that you know your organization is ready to take action on.
4. Expand into new insights over time as you see returns from the initial insights and as your organization becomes accustomed to leveraging this kind of data.

LexisNexis Active Insights Enables a Highly Proactive Approach to Customer Engagement and Retention



- Increase retention
- Identify opportunities
- Improve loss ratio
- Reduce expenses

When life changes, so do insurance needs

- New drivers in the home
- First-time homeowner
- New homeowner
- Change in homeownership status
- Marital status changes
- Shopping for a new insurance policy
- Home renovations

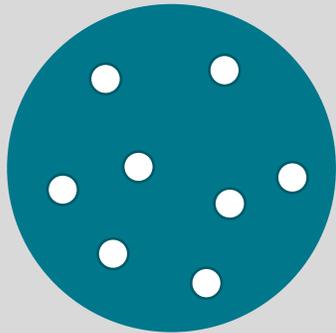
Other events may indicate potential coverage changes too:

- Foreclosures and vacancies
- New accidents
- Home inspection index score changes
- Moving violations

How do we do it?

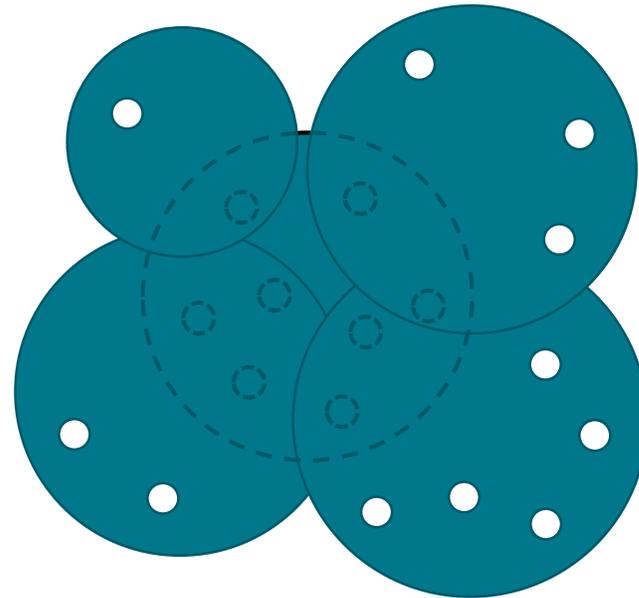
The Data Centric Approach

A single source of data is insufficient to overcome inaccuracies in the data



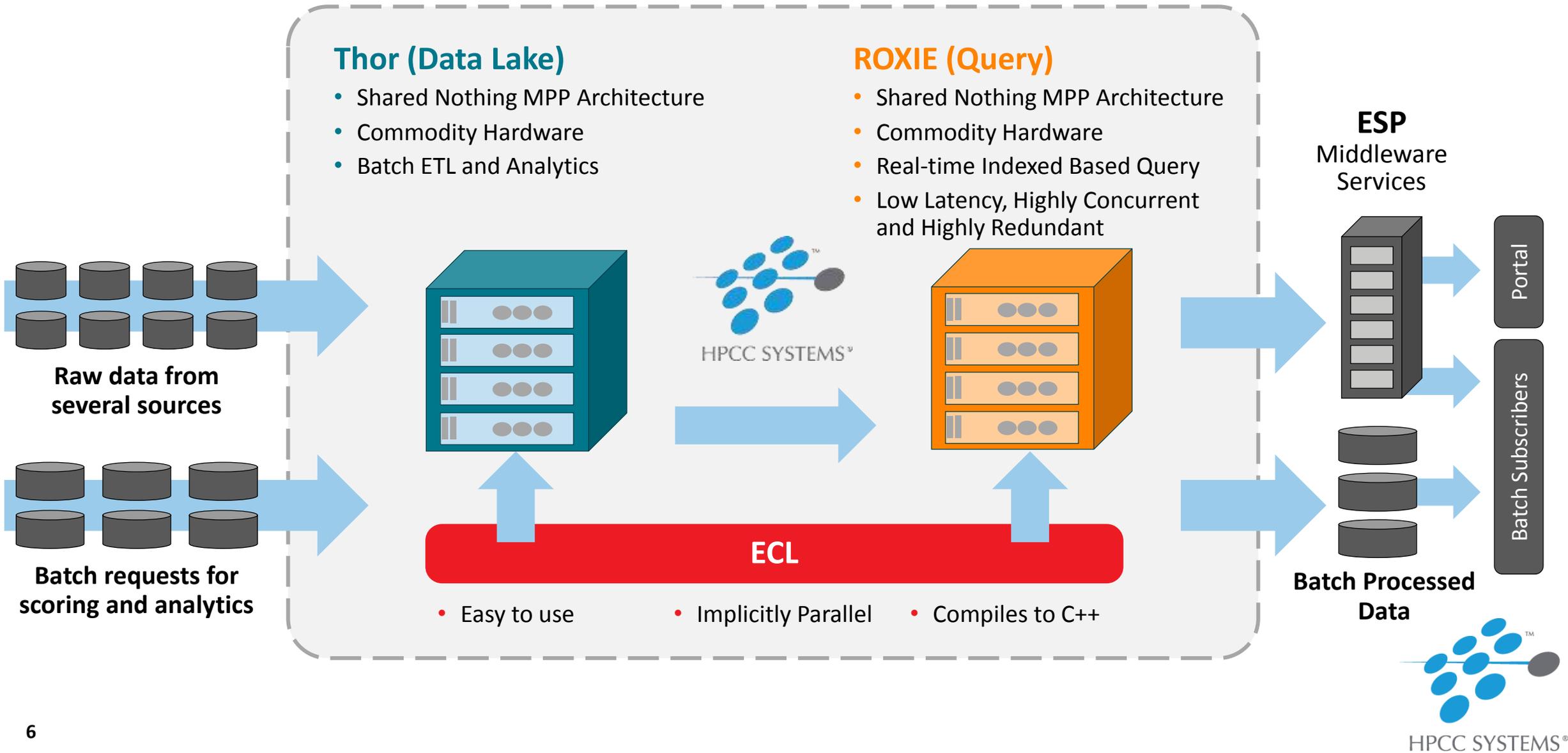
The holes are inaccuracies found in the data.

Our platform is built on the premise of absorbing data from **multiple data sources** and transforming them to a **highly intelligent social network graphs** that can be processed to non-obvious relationships.

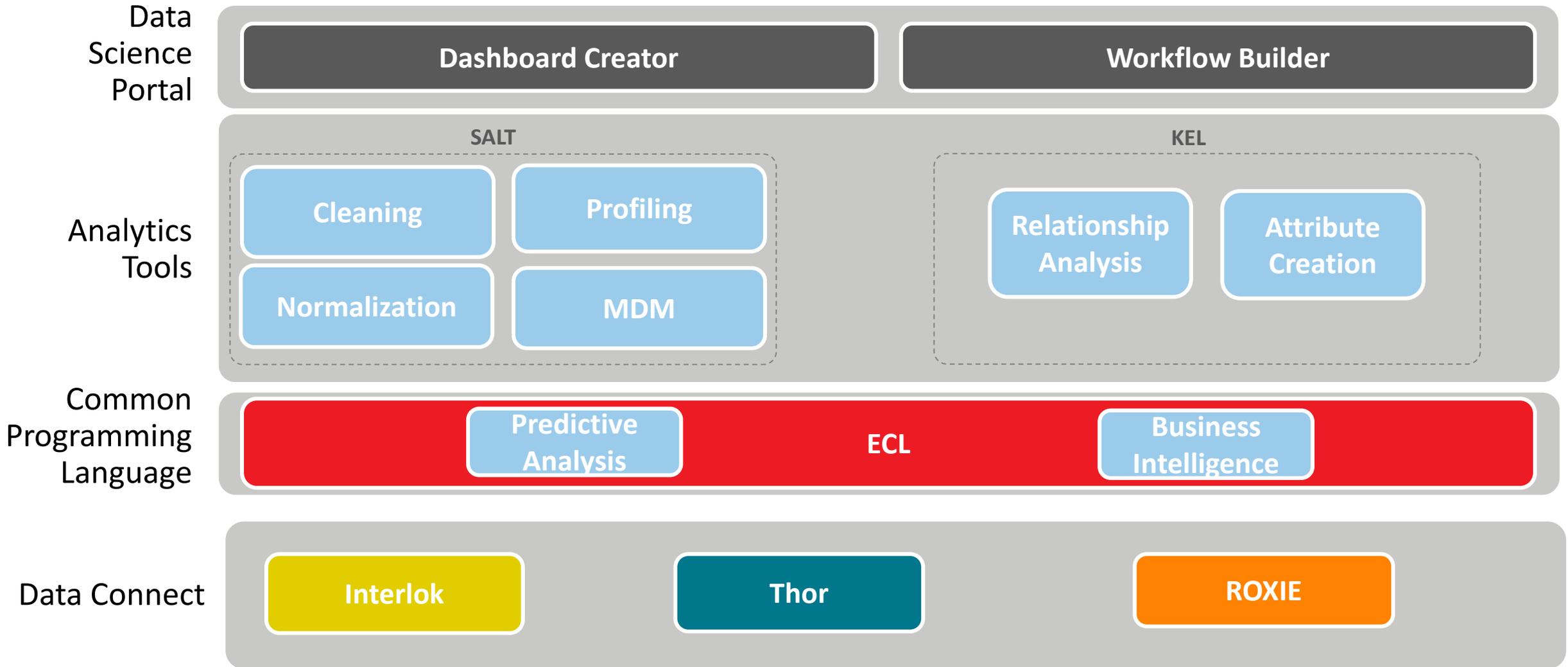


The holes in the core data have been eliminated.

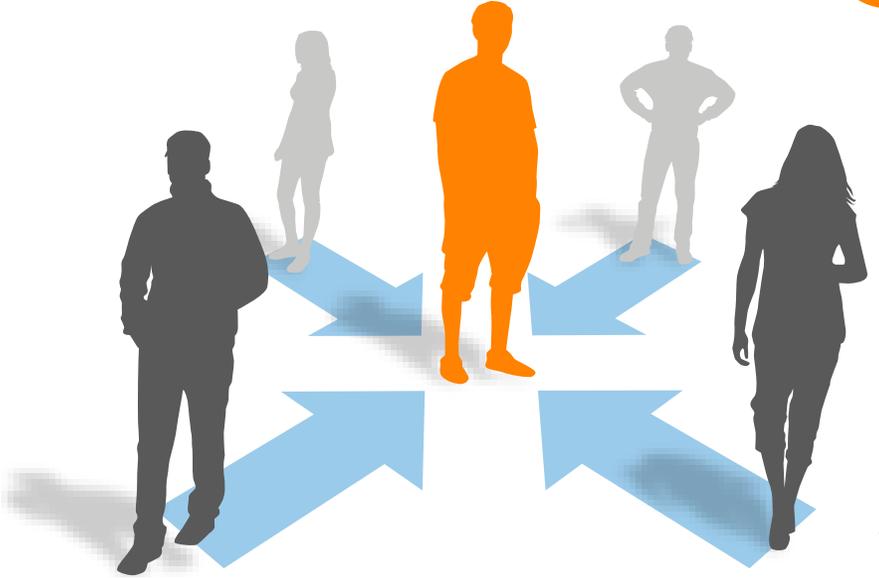
Data Flow Oriented Big Data Platform



STRIKE Technology Layer View



Master Data Management with SALT

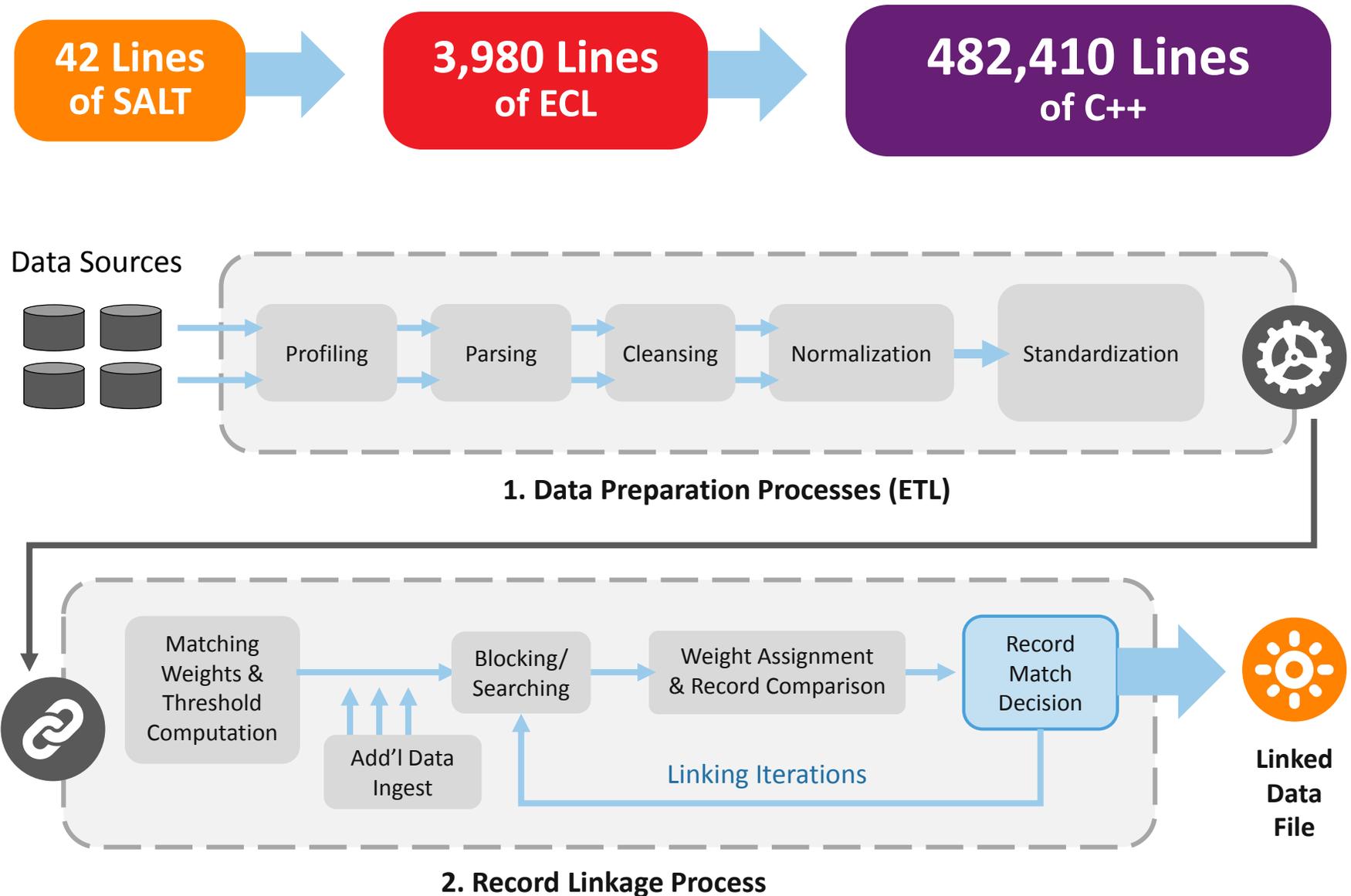


From disparate data, to clustering,
to showing relationships

SALT Enables Content Disambiguation to Increase Productivity



- The acronym stands for “Scalable Automated Linking Technology”
- Entity disambiguation using Inference Techniques
- Templates based ECL code generator
- Provides for automated data profiling, parsing, cleansing, normalization and standardization
- Sophisticated specificity and relatives based linking and clustering



SALT's Superior Linking Technology

SALT eliminates **FALSE NEGATIVES** using probabilistic learning

- 1. Flavio Villanustre, Atlanta
- 2. Javio Villanustre, Atlanta

SALT

MATCH — the system has learnt that “Villanustre” is specific because the frequency of occurrence is small and there is only one present in Atlanta

ERROR

NO MATCH — because the rules determine that “Flavio” and “Javio” are not the same

INPUT

RULES

SALT eliminates **FALSE POSITIVES** using probabilistic learning

- 1. John Smith, Atlanta
- 2. John Smith, Atlanta

ERROR

MATCH — because the rules determine that “John Smith” and the city for both the records match

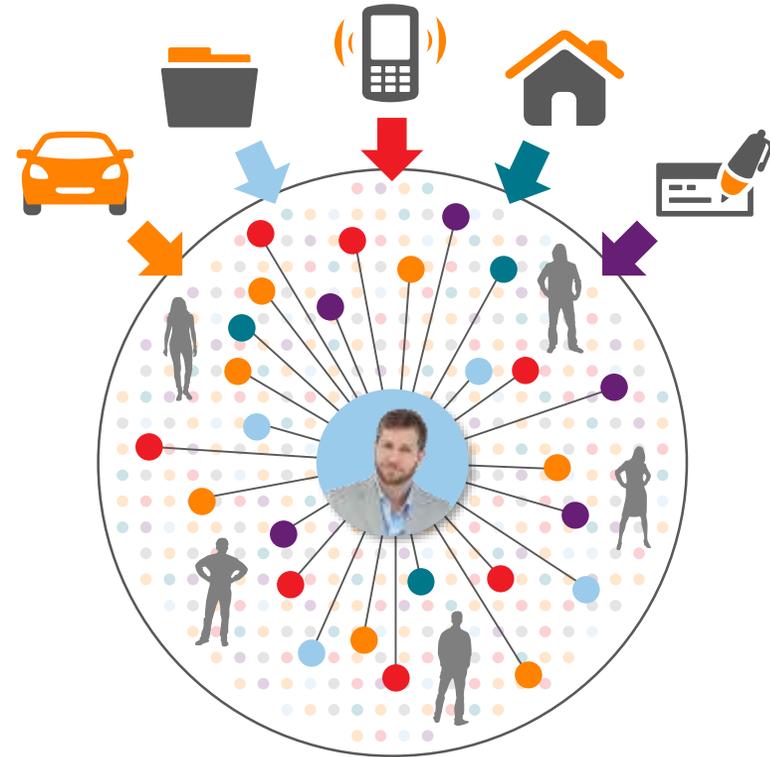
SALT

NO MATCH — the system has learnt that “John Smith” is not specific because the frequency of occurrence is large and there are many present in Atlanta

Relationship Analysis With KEL

KEL — an abstraction for network/graph processing

- Declarative model: describe what things are, rather than how to execute
- High level: vertices and edges are first class citizens
- A single model to describe graphs and queries
- Leverages Thor for heavy lifting and ROXIE for real-time analytics
- Compiles into ECL (and ECL compiles into C++, which compiles into assembler)



LexisNexis Legal & Professional



THE CHALLENGE



Fast insight into case law



100+ million documents



Entity identification and resolution



Document and topic classification



Near real-time feedback



THE SOLUTION

- Generation 2 entity recognition employs HPC PARSE(...) function and pattern rules
 - More entities recognized
 - Faster development
 - Faster operation
- SALT based entity resolution
- Custom resolution for citation entities
 - Case law and statute reference
 - References can be anaphoric (like *infra*)
 - Parallels (same case in more than one book)
- Active learning used to extend classification

THE OUTCOME: 

Two enormous benefits:

- ✓ *Huge lift on entity resolution and document classification because of SALT*
- ✓ *Ahead of customers in terms of performance and maintaining currency of data because of the rapid big data processing capabilities*

Smart Hard Hat Ecosystem



THE CHALLENGE



4,000 workers die and millions injured annually while working on the industrial floor



Very high cost for maintaining safety for businesses

Smart Hard Hat Ecosystem



THE SOLUTION

- Equip workers' hats with smart sensor technology
- Central real-time processing of (high volume) information with real-time alerting capability (HPCC Systems)
- Customizable dashboards, rules framework and data workflow frameworks (HPCC Systems)
- Predictive modeling and analytics (HPCC Systems)

THE OUTCOME: 
Produced an industrial wearable that uses IoT and wireless communications systems to protect and empower industrial workers.

Driver Behavior with Smart Telematics



THE CHALLENGE



High cost of insurance



High car accident rates



Lack of tools to analyze driver behavior

Driver Behavior with Smart Telematics



THE SOLUTION

- Telematics smart phone application
- Central system to collect (very large) data and perform analytics (HPCC Systems)
- Journey based feedback to all drivers to advice and correct behavior (HPCC Systems)
- Insurance enrollment to reduce premiums

THE OUTCOME:



- ✓ *Recommend corrections to driver behavior that would avoid accidents*
- ✓ *Reduce overall Insurance costs*
- ✓ *Correlate information from drivers data traversing the same path to create an understanding of predictable actions*
- ✓ *Examples include periods of traffic congestion, problem areas in the path and hazard detection*

Contextual Marketing



THE CHALLENGE



Understanding an individual customer's behavior based on past actions



Technical problem

- Huge volumes of data based on observed cell phone Wi-Fi
- Apply advanced machine learning techniques

Contextual Marketing



THE SOLUTION

- Central analytics system to collect and analyze data (HPCC Systems)
- Leverage parallel algorithms to perform analytics on large quantities of data (HPCC Systems)

THE OUTCOME: 
Created a platform to process any location specific telecom data that can be analyzed rapidly to gauge consumer behavior and in turn help drive context-based marketing

Predict Passenger Volumes in Airports



THE CHALLENGE



How to interpret 100's millions of location points while adjusting to flight schedule changes



Complex clustering algorithm requirements



Understand passenger behaviors and interaction of local areas of activity

Predict Passenger Volumes in Airports



THE SOLUTION

HPCC used to solve Big Data challenges

- Raw data to refined data
- Clustering analysis
- Forecasting

THE OUTCOME:



Better passenger experience and better airport planning

Resources

- Portal: <http://hpccsystems.com>
- ECL Language Reference: <https://hpccsystems.com/ecl-language-reference>
- SALT: <https://hpccsystems.com/enterprise-services/purchase-required-modules/SALT>
- KEL: <https://hpccsystems.com/download/free-modules/kel-lite>
- Machine Learning: <http://hpccsystems.com/ml>
- Online Training: <http://learn.lexisnexis.com/hpcc>
- HPCC Systems Blog: <http://hpccsystems.com/blog>
- HPCC Systems Wiki & Red Book: <https://wiki.hpccsystems.com>
- Our GitHub portal: <https://github.com/hpcc-systems>
- Community Forums: <http://hpccsystems.com/bb>
- Case Studies: <https://hpccsystems.com/resources/case-studies>