

### Our Distil toolset helps investigate and uncover fraud in your data sets

*Distil works on structured data*

Primary Key Distil is our toolset and service that we use to investigate fraud. Primary Key Distil imports and analyses structured data, such as customer transactions; it learns, from instances your investigators have previously identified, what constitutes fraud; and uses this to predict new frauds before they take place.

*It unlocks the potential of your investigators*

Primary Key Distil will help your investigators:

- identify fraudulent transactions before the fraud occurs;
- identify other undesirable transactions, such as potential bad debt; and
- discover which factors are most likely to result in fraud.

*We use predictive analytics to characterise fraud*

Primary Key Distil uses predictive analytics, such as supervised and unsupervised learning or Bayesian inferencing to characterise fraud. As with Primary Key Illuminate, we hide this complexity, prioritising those results which are of most use in investigation, or in reporting to management.

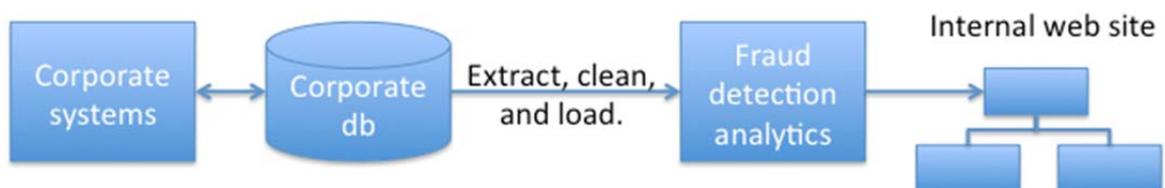
*We deliver results via a standard web browser interface*

The results, accessed via a standard web browser, aim to explain why a particular transaction might be fraudulent, so that your staff can make informed decisions.

*We run on your network so data and output remains in your control*

Primary Key Distil runs on your corporate network, so data and output remains under your security management and control at all times.

We minimise the impact on your IT department by only reading and never modifying your data, so your existing systems do not need to change their processing functionality.



*A simple charging model*

We charge for this service using a combination of simple time and materials for development, and a monthly subscription and support contract for subsequent use.

### Fraud Detection with Artificial Intelligence and Data Analytics

*What is fraud?*

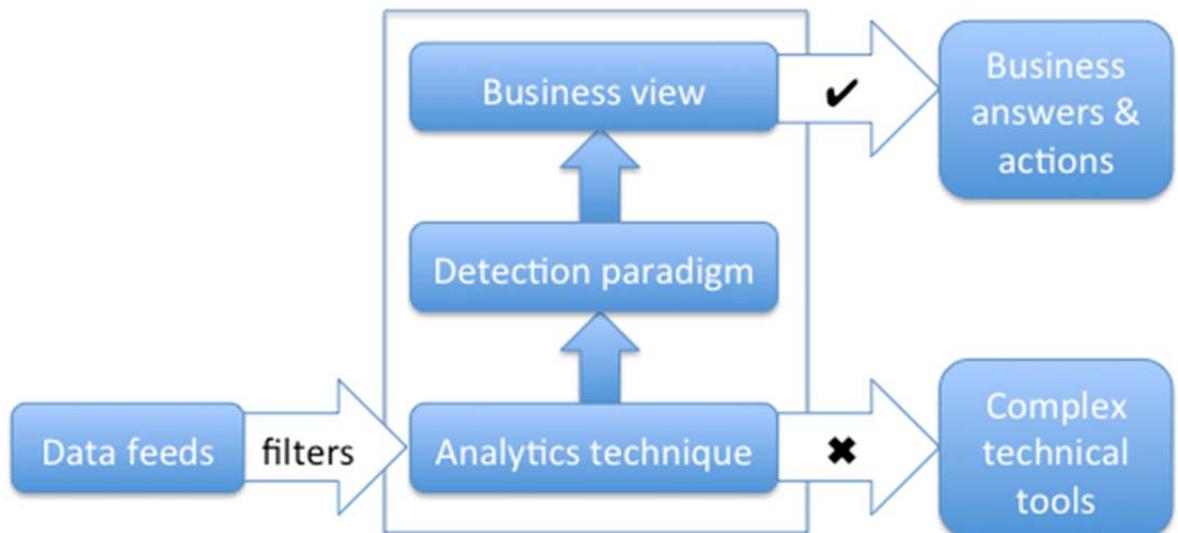
We consider fraud as theft with deception. Typical frauds found with Primary Key Distil may include bad debt, illegal reselling ("piracy"), or extracting money ("scams").

Fraud Detection using Primary Key Distil

*We turn data into business answers*

Primary Key Distil is designed to turn data – consumer transactions, account data, transaction history – into actionable business answers, rather than the more typical complex technical reports, which then need to be further refined by analysts:

*By providing you with business answers directly we make your operations more efficient*



*Answering the who, what, where, when and how*

We answer fraud detection questions in ways to which the business can relate, because it reflects the business world:

- **Actor-centric:** who – third parties, customers, and retailers.
- **Finance-centric:** what – money, accounts, and credit cards
- **Geo-centric:** where
- **Event-centric:** when
- **Compound view:** how – clues and indicators

*The seven Primary Key Paradigms of fraud detection*

There are only so many ways to commit, and hence detect, fraud:

1. **Tip-offs:** from industry associations, police, or public
2. **Mistake:** fraudster blunders
3. **Repetition:** it worked before, so do it again
4. **Association:** with places, people or merchants of ill repute
5. **Behaviours:** there are only so many ways to commit fraud
6. **Abnormal:** implausible, impossible, or contradictory facts
7. **Clues:** add up to smell a rat!

*The five main technique classes*

To exploit these paradigms, we use five main technique classes:

1. **Knowledge** from investigator experience
2. **“Rules”** etc inducted from previous known outcomes
3. **Pattern** and **fuzzy matching** to handle deliberately or accidentally degraded data
4. **Anomaly detection** to spot new unknown frauds
5. **Bayesian inferencing** to aggregate partial indicators

### About us

Since 2010 Primary Key Associates has delivered world-class consultancy, developing and exploiting cutting-edge analytics, artificial intelligence and digital investigation technologies.

### Answer-Focused Technologies

We re-invest much of our revenue to develop cutting-edge data analytics, investigation and artificial intelligence technology to address the business problems we see our clients facing. Our IPR portfolio includes:

- Primary Key **Scenario Analytics** – a fast, modern and flexible data analytics technology to find, explain and illustrate the 'unknown knowns' in your large datasets.
- Primary Key **Insight Engine** – Scenario Analytics combined with powerful entity and relationship extraction, applied to digital forensics that reveals previously unknown connections in evidence.
- Primary Key **Illuminate** – a social media analysis and intelligence technology and service to find and analyse open source data to address particular business problems.
- Primary Key **Incipients** – predictive analytics that identify what is going to trend.
- Primary Key **Distil** – a technology toolkit we deploy on client sites to both find frauds and identify the business practices that make you vulnerable to fraud.
- **Fast analytic heuristics** to overcome the bottleneck of solving intrinsically non-parallel, yet vital, problems.

### Expert consultancy and services

Our team are experienced professionals in IT and related areas:

- As experts in enterprise and security architectures (including SABSA), information security and cryptography we help design, validate, and test systems which are secure both physically and in cyber-space.
- We build software systems from the smallest (in C and assembler coded microcontrollers) through the mobile (Java or Swift coded Android or iOS apps), to the ubiquitous (Python or C+ on PCs, web technologies and virtualised servers) and even the esoteric (real-time and spacecraft).
- We understand data (SQL and graph databases) and artificial intelligence (computational linguistics, image analysis and machine learning) and have fast algorithms for timely and secure analysis of big datasets and evidential analysis of social media.
- We provide cyber threat intelligence and competitive intelligence.
- We support civil and criminal digital investigations from open source research through digital forensic analysis and providing expert witness reports and testimony.
- We undertake both technical and business programme and project management.

e: [feedback@primarykey.co.uk](mailto:feedback@primarykey.co.uk)

w: [www.primarykey.co.uk](http://www.primarykey.co.uk)

t: +44 1403 599900

 @pkaluk

