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Smarter Analytics Live 2013
Turning information and insight into actionable business outcomes.

Intelligent Investigation Management

Stop fraud and protect the bottom line

Adrian Barfield, IBM

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Abstract

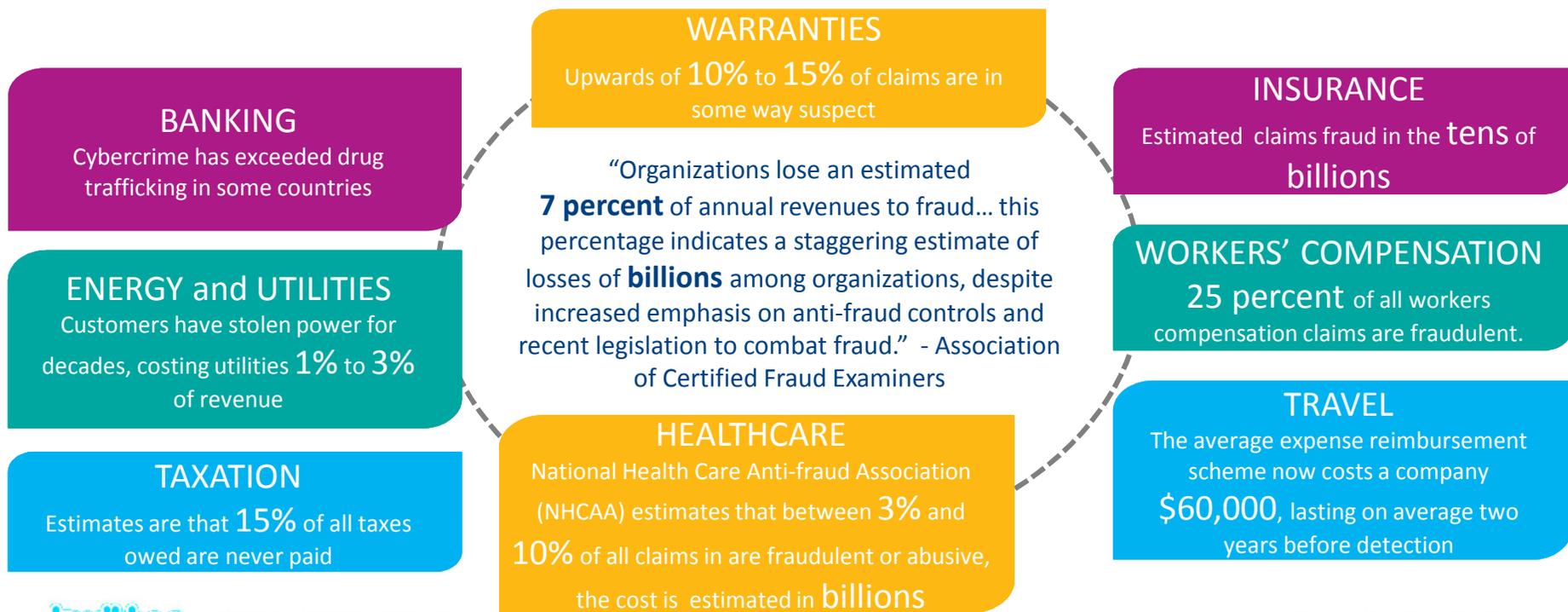**Stop the fraud and protect the bottom line**

- Fraud costs billions each year across the world—and organisations today view it as a real and growing threat. With organisations confronting cost-cutting measures or competitive pressure, there is growing pressure to investigate fraud and enforce compliance. . Join this session to find out how organisations today across government, financial services and insurance industries are leveraging solutions from IBM to gather information more easily than ever before, analyse it to spot trends and make connections, and drive investigations using their findings to more reliably investigate fraud.

Fraud costs private and public sector enterprises billions in revenues each year

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WARRANTIES
Upwards of **10%** to **15%** of claims are in some way suspect

"Organizations lose an estimated **7 percent** of annual revenues to fraud... this percentage indicates a staggering estimate of losses of **billions** among organizations, despite increased emphasis on anti-fraud controls and recent legislation to combat fraud." - Association of Certified Fraud Examiners

BANKING
Cybercrime has exceeded drug trafficking in some countries

INSURANCE
Estimated claims fraud in the **tens** of **billions**

ENERGY and UTILITIES
Customers have stolen power for decades, costing utilities **1%** to **3%** of revenue

WORKERS' COMPENSATION
25 percent of all workers compensation claims are fraudulent.

TAXATION
Estimates are that **15%** of all taxes owed are never paid

HEALTHCARE
National Health Care Anti-fraud Association (NHCAA) estimates that between **3%** and **10%** of all claims in are fraudulent or abusive, the cost is estimated in **billions**

TRAVEL
The average expense reimbursement scheme now costs a company **$60,000**, lasting on average two years before detection

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The investigation process is rife with challenges

- High operational cost chasing too many false positives

- Inefficiencies in coordinating investigations

- Limited visibility into the status of ongoing cases

- High resource needs to collect and assimilate information/evidence

- Inability to prevent and detect similar events in the future

> *These challenges limit an organization's ability to maximize recovery from perpetrators*

Challenges: Fighting fraud and financial crime

- Investigation has become overwhelmingly complex
- **Information** trapped in content and disparate systems
- Timely analytics tools & capabilities to discover patterns
- Lack of visibility and control of the **investigative process**
- Governance of the **investigative process**

Generally lack an intelligent & integrated enterprise
fraud and financial crime operating solution

Fraud investigations in the public sector has unique challenges to overcome

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Pro-Active Investigation
Identifying high risk fraud and at risk internal controls. Policy and Process assessment and automation improving data governance strategy, automation of rules and internal controls to mitigate risk

Reactive Investigations
Automation of investigation procedures and the need to provide a collaborative environment to co-ordinate all forms of evidence to support decision to prosecute & Prosecution documentation. Interview and material management

Pattern Identification
Identify type of fraud: Duplicate Fraud, Multi-payer; shell-game; defective goods; defective service by using technology to be more flexible in identifying pattern and type in order to properly investigate activity.

Evidence
Evidence gathering is getting more complex. The need to assess greater quantity & complex data, transactions, contracts, video, social media, audio, records.
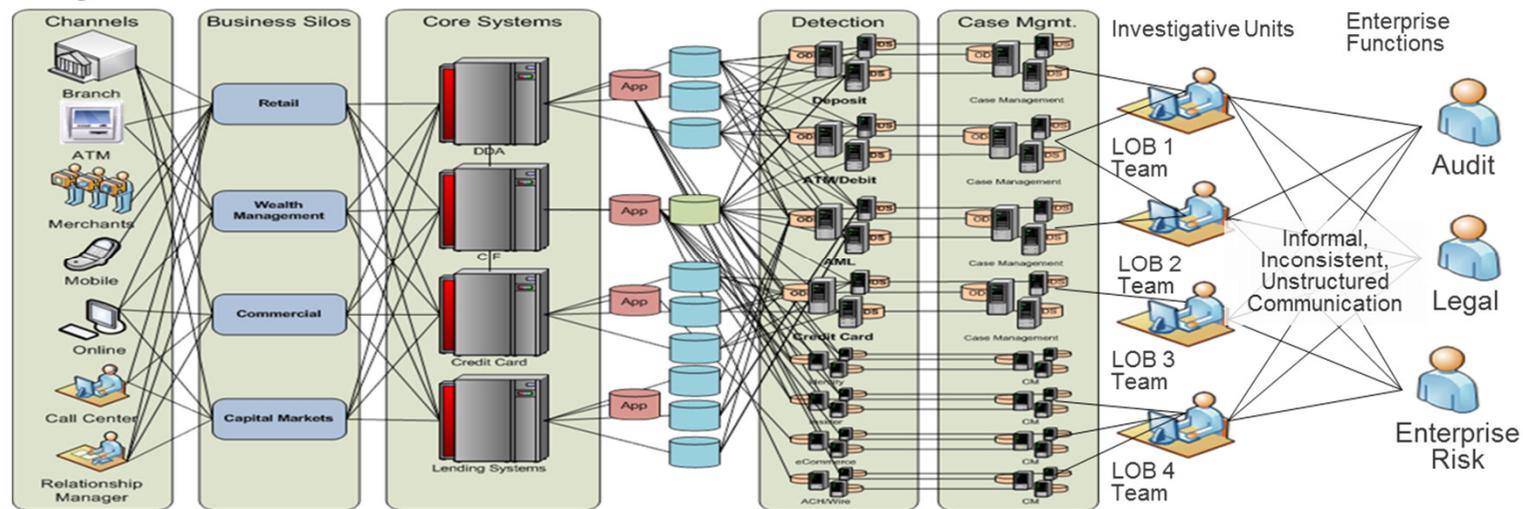
SmarterAnalytics

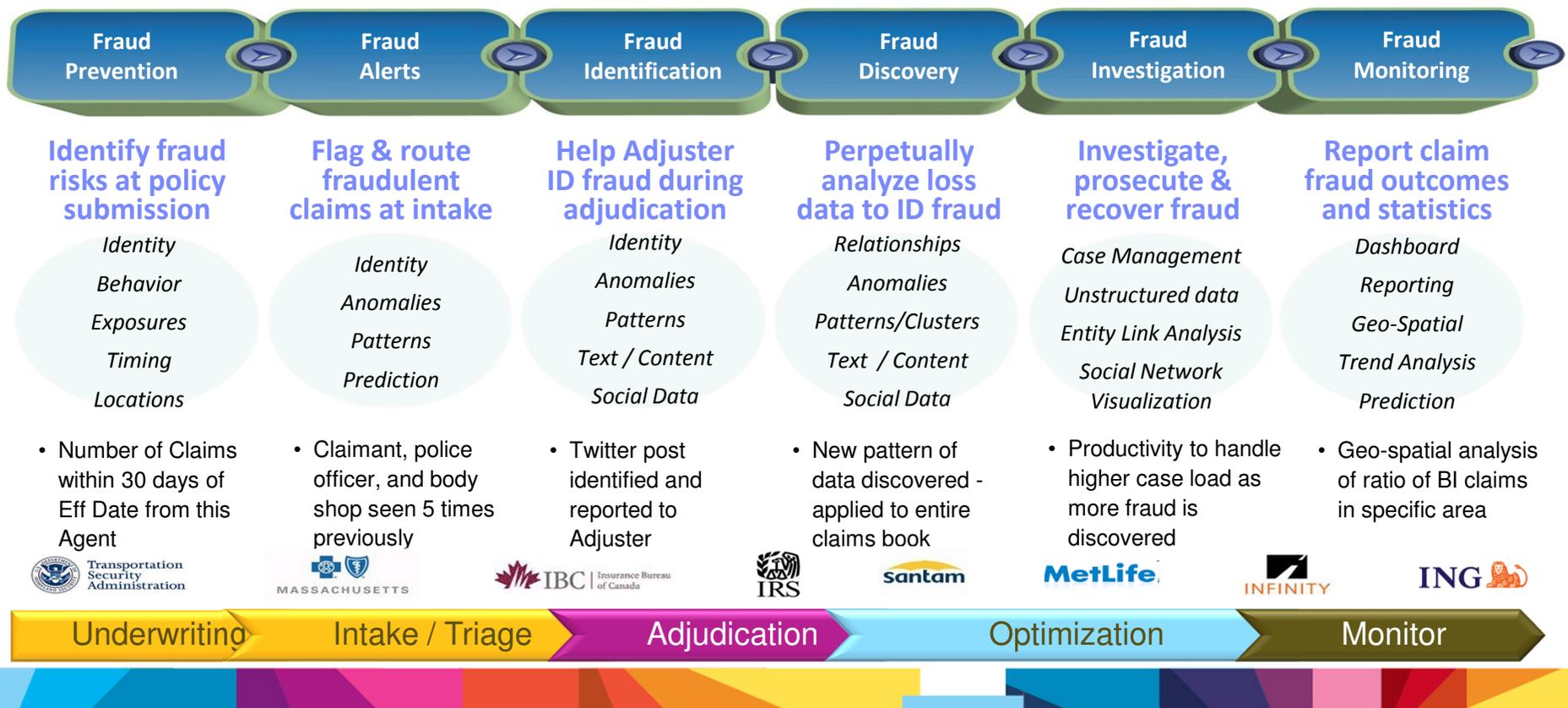# Fraud schemes are becoming more complex

- Complex patterns ; many channels
- Structured and unstructured data
- Tight deadlines to assess risk and investigate possible fraud
- (LOB) Investigation Unit is focal part of the solution, involve other stakeholders to enrich investigation and raise awareness
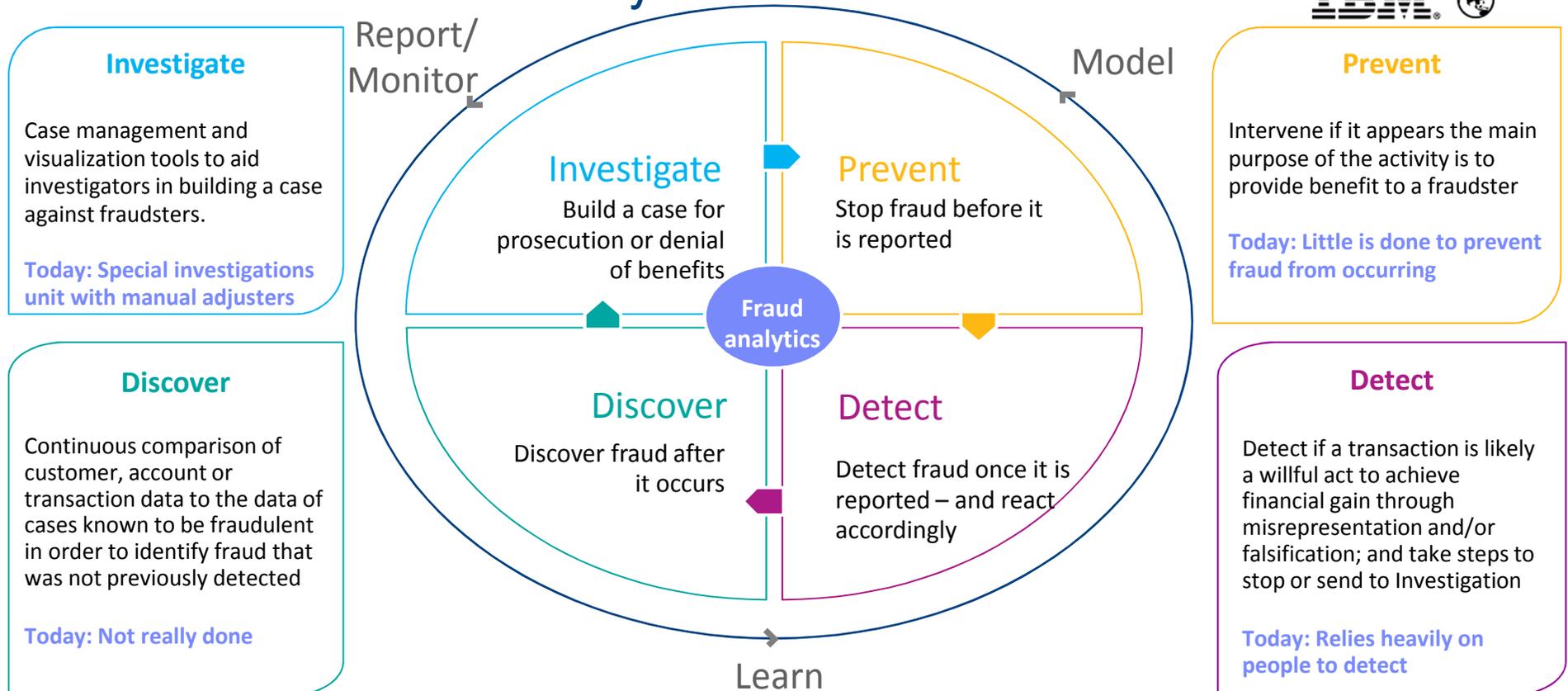
Insurance - Fraud can be Reduced At Each Stage of the Claim Lifecycle

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Fraud Prevention	Fraud Alerts	Fraud Identification	Fraud Discovery	Fraud Investigation	Fraud Monitoring
Identify fraud risks at policy submission	**Flag & route fraudulent claims at intake**	**Help Adjuster ID fraud during adjudication**	**Perpetually analyze loss data to ID fraud**	**Investigate, prosecute & recover fraud**	**Report claim fraud outcomes and statistics**
Identity	*Identity*	*Identity*	*Relationships*	*Case Management*	*Dashboard*
Behavior	*Anomalies*	*Anomalies*	*Anomalies*	*Unstructured data*	*Reporting*
Exposures	*Patterns*	*Patterns*	*Patterns/Clusters*	*Entity Link Analysis*	*Geo-Spatial*
Timing	*Prediction*	*Text / Content*	*Text / Content*	*Social Network Visualization*	*Trend Analysis*
Locations		*Social Data*	*Social Data*		*Prediction*
• Number of Claims within 30 days of Eff Date from this Agent	• Claimant, police officer, and body shop seen 5 times previously	• Twitter post identified and reported to Adjuster	• New pattern of data discovered - applied to entire claims book	• Productivity to handle higher case load as more fraud is discovered	• Geo-spatial analysis of ratio of BI claims in specific area

Transportation Security Administration • MASSACHUSETTS • IBC Insurance Bureau of Canada • IRS • santam • MetLife • INFINITY • ING

Underwriting	Intake / Triage	Adjudication	Optimization	Monitor

IBM's vision for fraud analytics

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Investigate

Case management and visualization tools to aid investigators in building a case against fraudsters.

Today: Special investigations unit with manual adjusters

Discover

Continuous comparison of customer, account or transaction data to the data of cases known to be fraudulent in order to identify fraud that was not previously detected

Today: Not really done

Report/ Monitor

Model

Investigate
Build a case for prosecution or denial of benefits

Prevent
Stop fraud before it is reported

Fraud analytics

Discover
Discover fraud after it occurs

Detect
Detect fraud once it is reported – and react accordingly

Learn

Prevent

Intervene if it appears the main purpose of the activity is to provide benefit to a fraudster

Today: Little is done to prevent fraud from occurring

Detect

Detect if a transaction is likely a willful act to achieve financial gain through misrepresentation and/or falsification; and take steps to stop or send to Investigation

Today: Relies heavily on people to detect

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IBM's approach to managing fraud
Leveraging an integrated platform to address fraud across its lifecycle

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Investigate
- i2
- Case Manager
- Identity Insights
- Cognos Reporting
- Streams
- Content Analytics

Discover
- SPSS
- LAWS
- FAMS
- Streams
- Content Analytics
- iLog

Prevent
- Identity Insight
- SPSS
- iLog

Detect
- Identity Insight
- SPSS
- iLog
- Big Sheets
- Streams
- Content Analytics
- i2

Report/Monitor

Model

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Learn

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IBM has the technology to address end-to-end fraud management

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Enterprise Performance Dashboards

Cognos. software

- Create and deploy easy-to-understand reports, dashboards, and scorecards
- View information with real-time monitoring to make decisions in real-time
- Leverage planning and budgeting tools to improve process efficiency

Fraud Intelligence Analysis

- Any data source
- Risk scorecard
- Cross channel analysis
- Multi-stakeholder investigation
- Role based briefing

Advanced Case Management

- Comprehensive case management
- Integrated collaboration and rules
- Case analytics
- Content-centric business process mgmt

Analysts & Investigators

Threat Detection Analytics

SPSS AN IBM® COMPANY

- Automated Pattern Discovery
- Analyze trends, forecast
- Predict future outcomes
- Conduct ad-hoc analysis
- Prescribe interventions

Content Analytics

Rapidly Derived Insight
- Search and Explore
- Analyze and Visualize
- Aggregate and Extract

- Configure raw internal and external content
- Process with natural language processing and enhanced content analytics
- Understand trends, patterns, correlations, anomalies, more

Identity Insight

- Identities and relationships are pre-calculated and perpetually updated
- Suspicious pattern alerting
- Massive data volumes and real-time performance
- Context accumulation technology
- Properly addresses multi-cultural name variations

Owned / Open   Text / Rich   Structured / Unstructured

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Intelligent Investigation…

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People

Database — Systems

Relationships — Content

Unknown — Investigation — Evidence

Similar Situations

Experts

Correspondence & Documents

Allegation

Processes & Rules

Alleged's History

External Counsel

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IBM Intelligent Investigation Manager
A new solution for optimizing fraud investigation

- Efficiently process cases and coordinate activity across the investigative team

- Conduct forensic analysis, generate leads, visualize the scope of the fraud and gather evidence.

- Capture results directly into the case.

- Discover new entities, patterns and insights by searching through structured and unstructured content

- Facilitate the management of the case including the handoff to supervisors, litigators or other authorities

- Provide transparency into the effectiveness of the investigative process using integrated KPI reporting and analytics

- Provides an audit trail of information, tasks, reviews, approvals and correspondence associated with all aspects of a case

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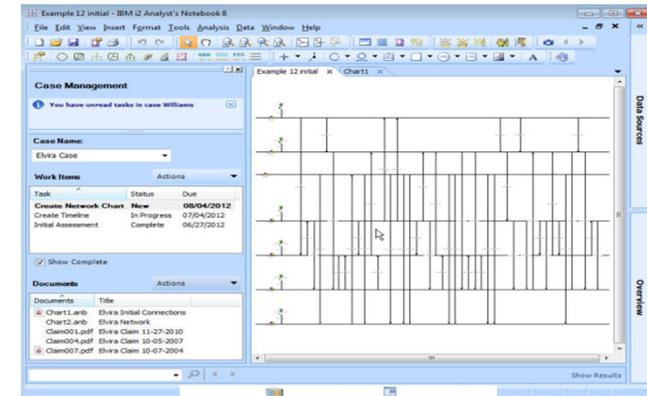
Intelligent Investigation Manager components

IBM Intelligent Investigation Manager

IBM Case Manager

IBM Content Analytics

IBM i2 Fraud Intelligence Analysis
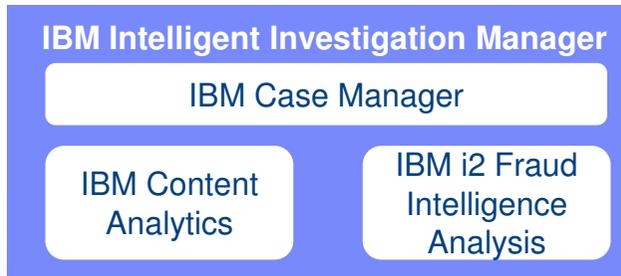
IBM Case Manager for delivering customizing investigative solutions that enable investigative teams to efficiently manage an investigation

IBM i2 Fraud Intelligence Analysis for conducting forensic analysis in the context of the investigation

IBM Content Analytics for driving the discovery process across all available data during the investigation

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The value of forensic analysis

Improve context by delivering more insight into the relationships between data points

- Model does not show correlations between individuals

Visualizes connections that otherwise would have to be picked up the case investigator

Allows analysts to be more effective – ability to receive deeper insight into investigation process

- Provides evidence/output for criminal or civil prosecution
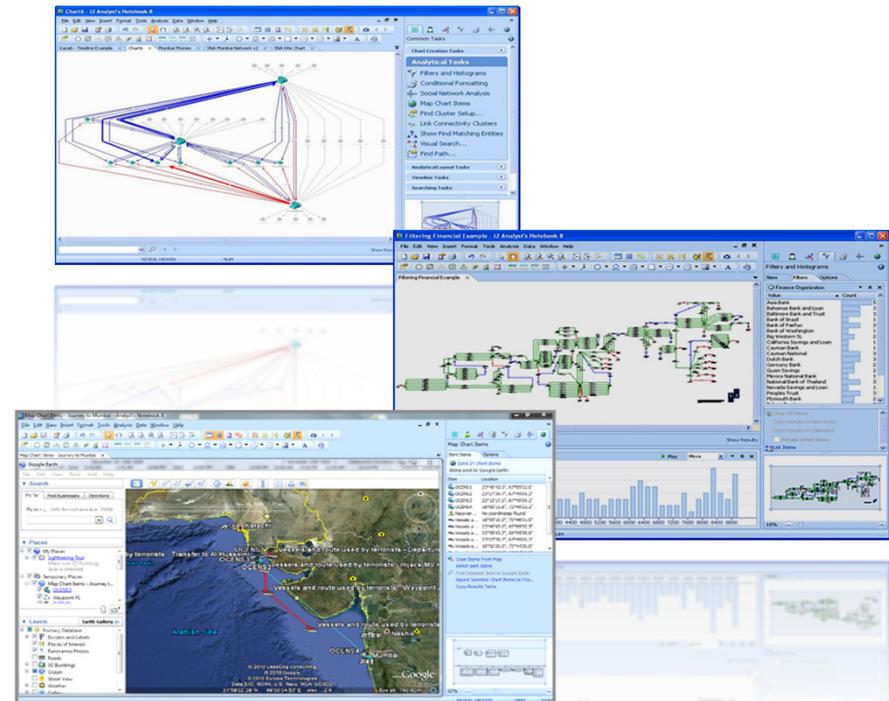
Capabilities Are Used by Clients In Multiple Sectors

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National Security	Defense	Law Enforcement	**Private Sector**	Government

National Security	Defense	Law Enforcement	**Private Sector**	Government
Counter Terrorism	Establishing Civilian Structures	Tactical Lead Generation	Security Investigations	Industry Oversight & Compliance
Counter Intelligence	Counter Intelligence	Counter Terrorism	Industry Oversight & Compliance	Cybercrime
Intelligence Analysis	Intelligence Analysis	Major Investigations	Cybercrime	Securities Investigations
Border Security	Target Analysis and Defense	Organized Crime	Risk Management	Anti-Money Laundering
Cyber Risk	Peacekeeping	Neighborhood/ Community Policing	Anti-Money Laundering	Fraud
	Force Protection	Public Order/Major Event Management	Fraud	
	Pattern of Life Analysis	Volume Crime		
	Human Terrain Mapping	Fusion Centers		

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Forensic Analysis Maturity

Manual Charting

Local and Team based repository
External Data Sources

External Data Sources
Enterprise Intelligence Analysis Platform
Video Analysis

Intelligent Law Enforcement
Fraud Intelligence Analysis
IAP for Defence & National Security

Intelligent Investigation
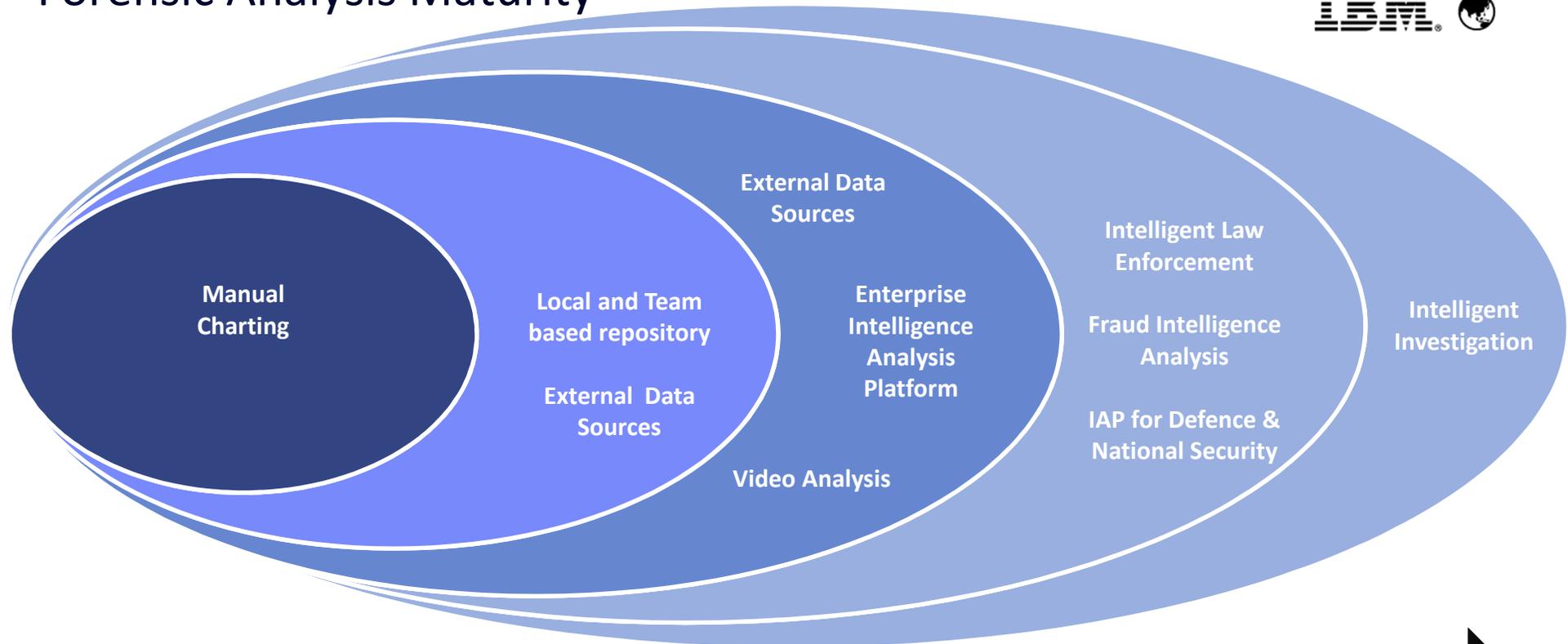
Increasing sophistication, depth, accessibility and applicability to industry

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IBM Video Analytics
Activity Driven Alerts from Video Analysis

Motion Detection	Tripwire	Directional Motion	Abandoned Object	Object Removal
Triggers on any motion that fits size/duration constraints	Triggers when object center passes over a virtual line	Triggers when object moves in a certain of directions	Triggers when object appears in region, stops and remains still for period of time.	Triggers when object which has been still in image for long time starts to move.
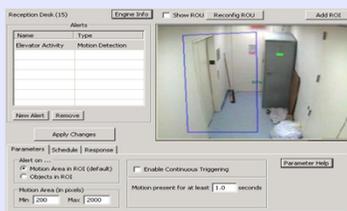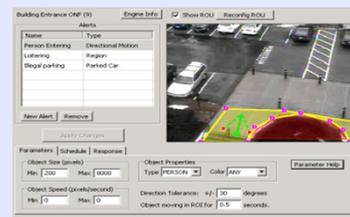
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IBM Coplink (Face Match)
Facial and Demographic recognition in the field

Ingest
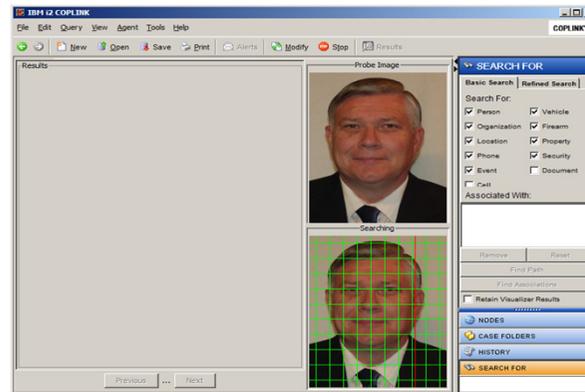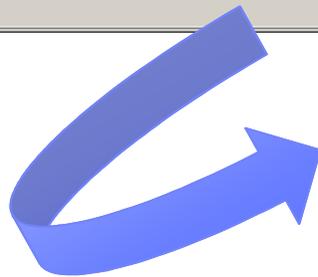
Search
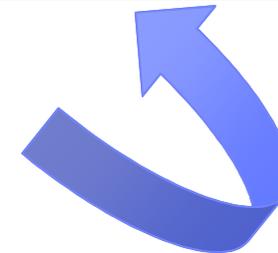
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Make investigators productive through interactive visualisations
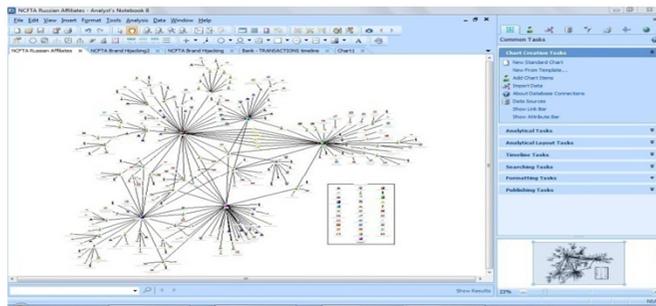
Link analysis & social network analysis
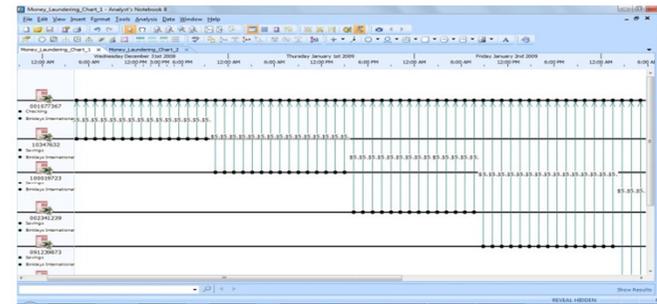
Transaction timelines
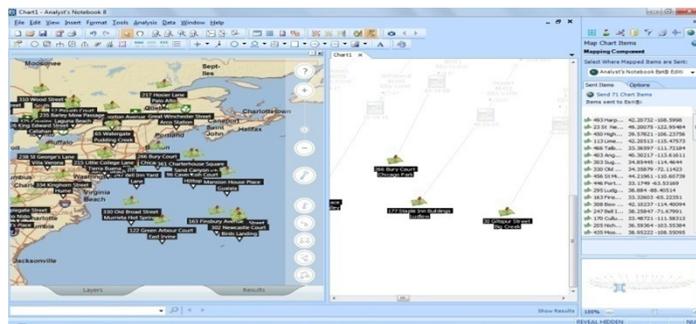
Geospatial
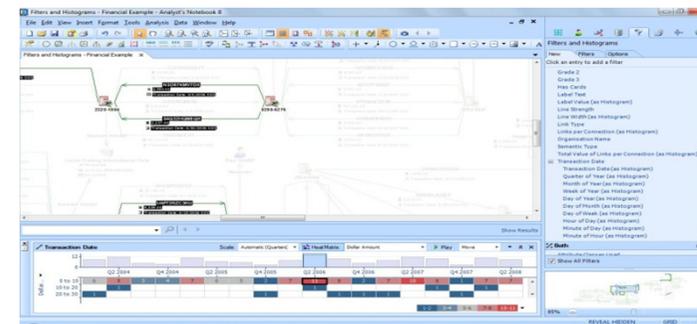
Histograms & activity heat maps

Key Issue: "80% of time spent on entering or managing data & information"

- *"sometimes we had to manually enter information from nearly 300 reports a day…"*

Leaving ONLY 20% of time on analysis

Unstructured data – Automatic Entity Extraction

External

Internal

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Open Source

Email   Geospatial   Telephones   SIGINT   Biometrics   Data Records

Content Analytics enables agencies to ingest, search and analyze unstructured and structured data from multiple sources

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Content Analytics for Investigation
Enables agencies to ingest and analyze investigative documents

Correlate data
- Correlate unstructured information (reports, notes) to structural system

Analyse unstructured information
- Derive and identify new trends, patterns and anomalies

Connect structured and unstructured data
- Provide a 360-degree view of suspects and relationships

Advanced analytical features
- Semantic searching, risk alerting, SNA etc… help turn volumes of data into a wealth of insights

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Document Processing – Pipeline Details

The only industry standard for content analytics

- OASIS Standard as of March 2009 - UIMA
- Enables interoperability of different analytics solutions and enterprise applications
- Provides an SDK for building and composing text analytics
- Defines a common interface for integrating text analysis modules
- Enables development of new and re-use of existing components for analysis
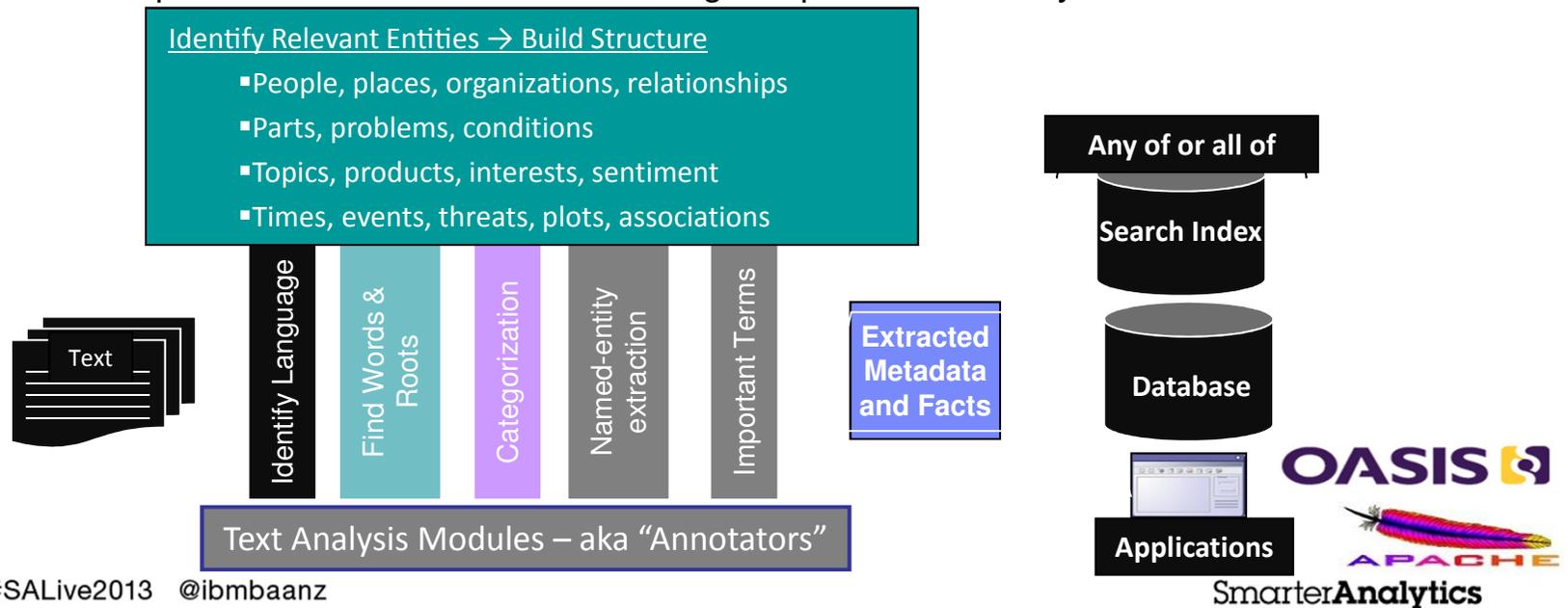
Identify Relevant Entities → Build Structure
- People, places, organizations, relationships
- Parts, problems, conditions
- Topics, products, interests, sentiment
- Times, events, threats, plots, associations

Text

Identify Language

Find Words & Roots

Categorization

Named-entity extraction

Important Terms

Extracted Metadata and Facts

Any of or all of

Search Index

Database

Applications

OASIS

APACHE

Text Analysis Modules – aka "Annotators"

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What do Content Analytics annotators do?

annotator- a software component that performs linguistic analysis tasks, then produces and records annotations
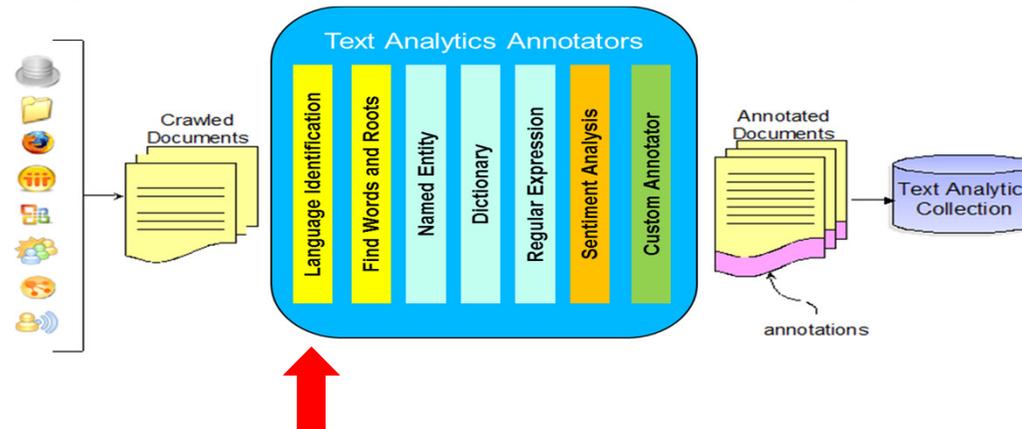
I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).
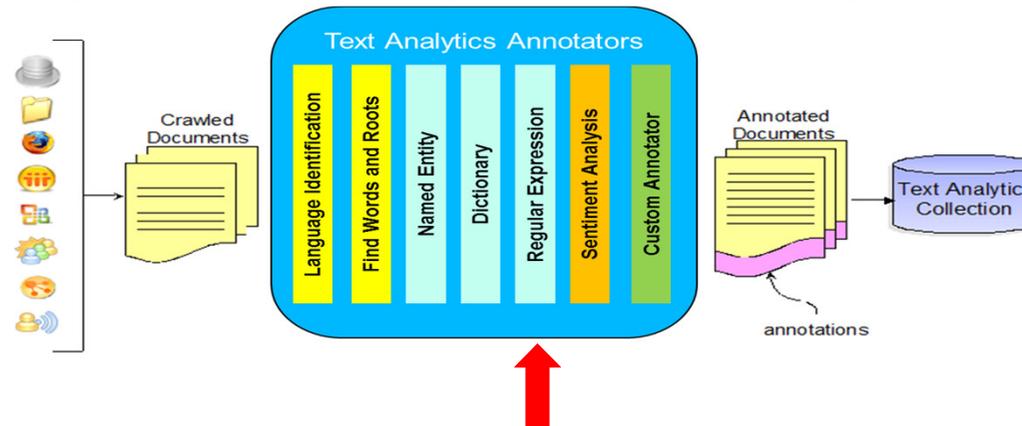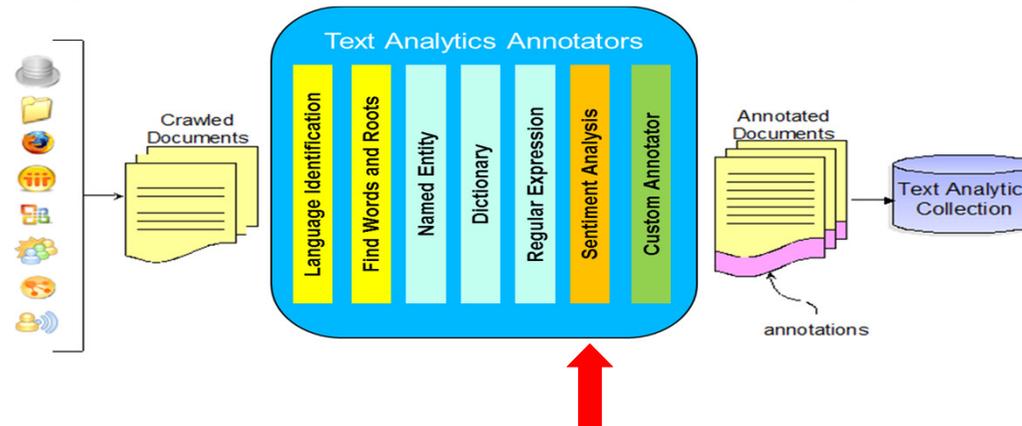
ENGLISH

What do Content Analytics annotators do?

annotator- a software component that performs linguistic analysis tasks, then produces and records annotations
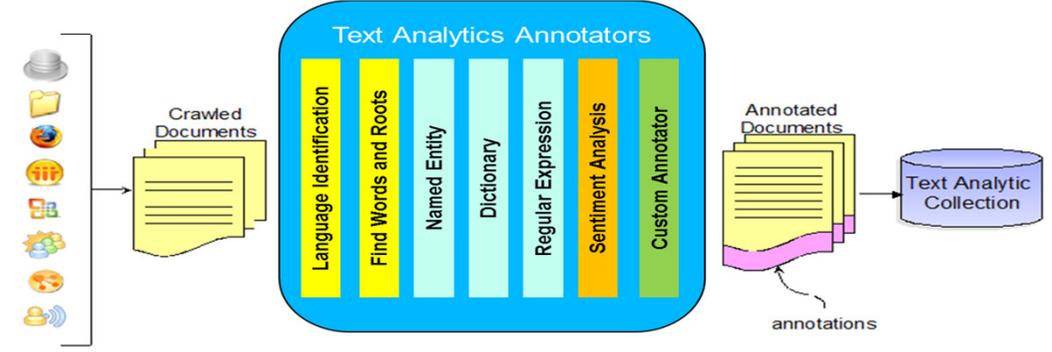
I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

| Noun | Verb | Adverb | Determiner | Pronoun | Etc… |

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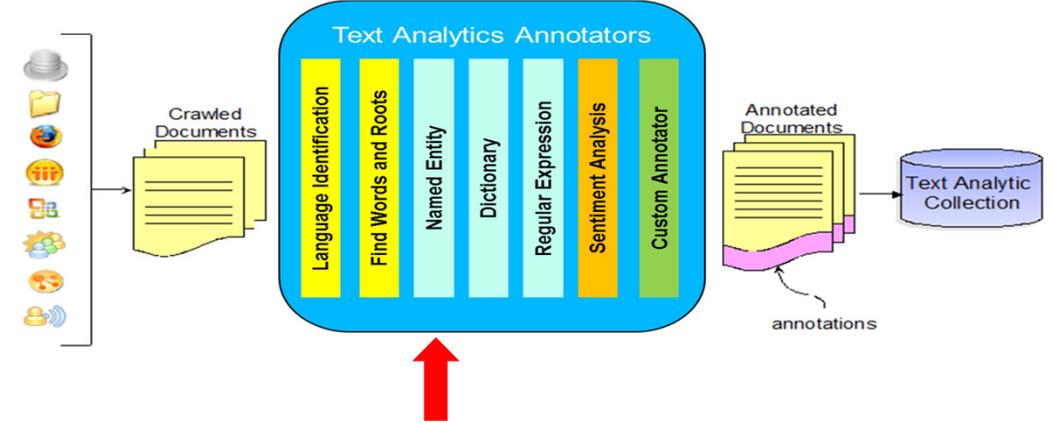
I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

Person   Organisation   Location

What do Content Analytics annotators do?

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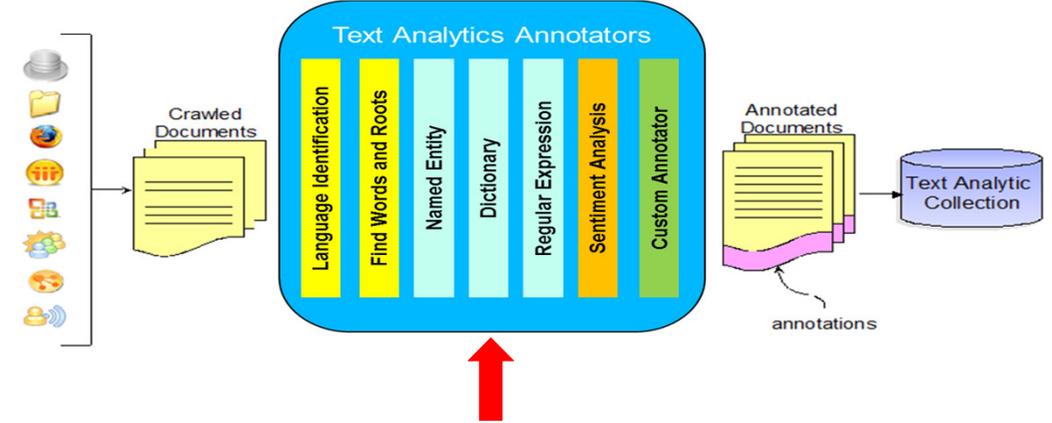

I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

| Car Manufacturer | Motion Identifier | Location Identifier |
| Car Model | Incident Identifier | |

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What do Content Analytics annotators do?

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I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

Possible Number Plate   **Date**   **Policy Number**

What do Content Analytics annotators do?

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I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

| Negative | Positive | Ambivalent |

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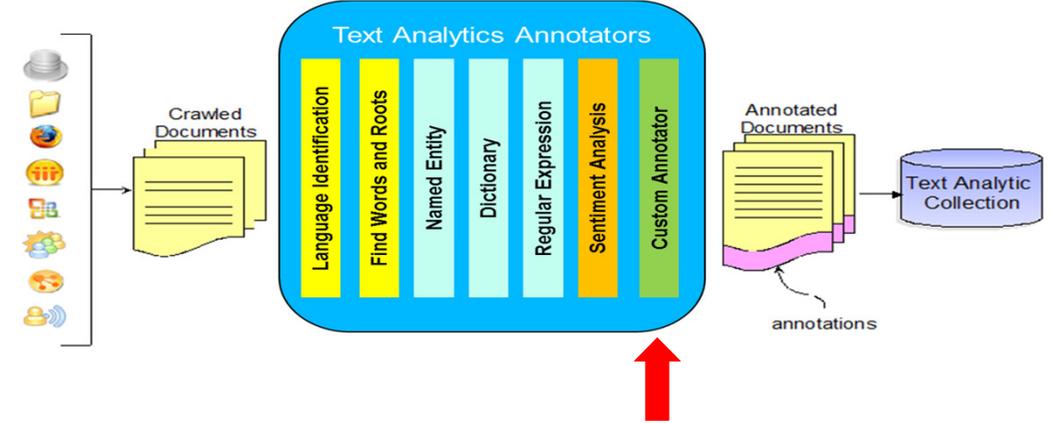
I was waiting at the traffic lights in my Audi A4 (9003EKH) at the corner of Ruckers and Wills street, when I was hit from behind by a Toyota Prius (7893THR).

Policy Holder Vehicle	Possible Non Fault
Vehicle	Stationary Vehicle
Incident Location	Number Plate

IBM Case Manager
Simplifying the delivery of investigative solutions
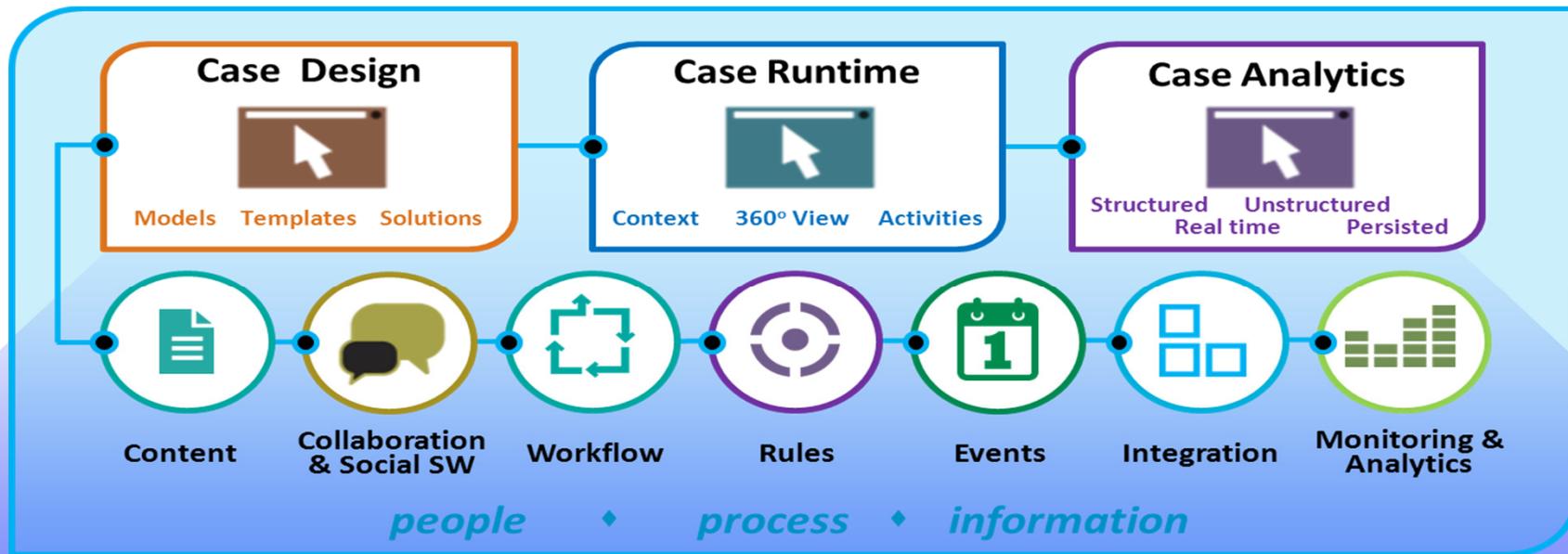
The value of case management to fraud investigation

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Provides more efficiency and transparency to the investigative process

Provides coordination and management of overall investigation
- Routing of work to investigative team
- Integration of collaborative elements
- Management of investigation documents
- Support for ad-hoc work that occurs during an investigation

Preparation of 'case ready' reports for negotiation or prosecution

Improve efficiencies
- KPIs – investigations, $ saved
- As the investigation is occurring
- After the investigation has completed
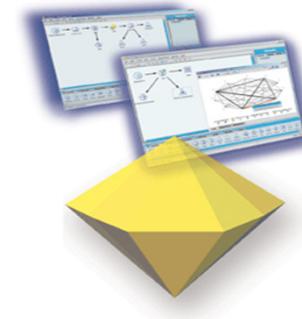
Crossing the Investigation Team boundaries

In Summary

- **Provides Governance around the entire investigation process**
- **Enforce service levels**
- **Breakdown the boundaries across information silos for clearer visibility**
- **Provide access to information held within structured AND unstructured data sources.**
- **Identify correlations between information**
- **Pre-integrated solution stack to provide faster ROI and lower TCO**

- **Most Importantly - turn information into intelligence to stop fraud and protect the bottom line!**
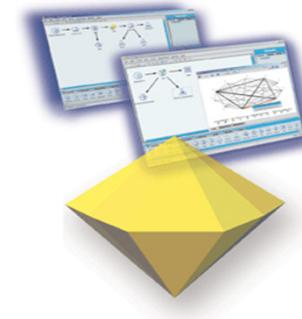
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Demonstration – Ask the experts area

Intelligent Investigation Manger 15:00 – 15:15
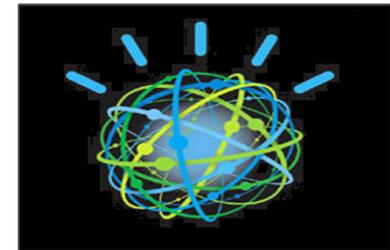
Adrian Barfield, IBM Software Solutions

adrian.barfield@au1.ibm.com

Join me to play
against Watson!

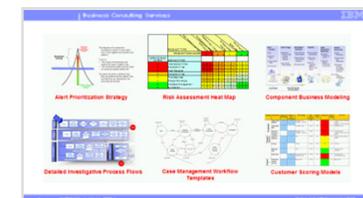SmarterAnalytics

IBM's capabilities in Security and Fraud

Industry Recognition

- 2011 **Top Analytics and Business Intelligence Service Provider** (Gartner Group)
- 2010 **Best Security Company** (SC Magazine)
- 2009 **#1 Identity and Access Management** (IDC Market Share Leadership)
- 2011 **Dynamic Case Management Strategy Leader** (Forester Report)
- 2008 **Leading analytic model solution** (last Gartner Group Report)

Broad and Deep Domain Expertise

- Broad expertise & experience across Financial Crimes (AML, Fraud, Case Management, Sanctions, Governance, Enterprise Risk, Identity and Access Mgmt)
- Tested reference models for financial crimes (architecture, workflows, business processes, risk assessments, scoring models, scenarios, IAM)
- Proven project management methodology
- System Implementation Accelerators

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