Optimizing Business Transformation, Reducing Risk & Scaling Profitability
With
Gary L. Melling, President & CEO
and
Frank Massey, VP Business Development
"Artificial intelligence is the future, not only for Russia, but for all humankind. It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world." 

Russian President Vladimir Putin, September 4, 2017.

How Did We Get Here So “Quickly”?...

**Digitized:** Anything that can become digitized enters the exponential curve.

**Deceptive:** The initial exponential growth curve is VERY slow so it may seem irrelevant until it hits a whole number, e.g., .01 → .02, .02 → .04, etc...

**Disruptive:** The existing market is disrupted by the new market the exponential technology creates, e.g., why buy a CD if you can stream music?

**Dematerialize:** Separate devices are now moved into one device, e.g., digital camera and GPS into a smart phone.

**Demonitize:** Money is increasingly removed from the equation as things become cheaper, sometimes free.

**Democratize:** Once something is digitized, more people can have access to it, not just governments and the wealthy.

Peter Diamandis and Steven Kotler, Abundance
Let’s Start By Creating a Common Baseline...

**Artificial Intelligence (AI)**: A branch of computer science dealing with the simulation of intelligent behavior in computers.

**Machine Learning (ML)**: Focuses on the development of computer programs that can access data and use it to learn for themselves.

**Algorithm**: A step by step method of solving a problem. It is commonly used for data processing, calculation and other related computer and mathematical operations.

**Internet of Things (IoT)**: The network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data.

**Deep Learning**: An artificial intelligence function that imitates the workings of the human brain in processing data and creating patterns for use in decision making. Deep learning is a subset of machine learning in Artificial Intelligence (AI) that has networks capable of learning unsupervised from data that is unstructured or unlabeled.

**Heuristic**: A technique designed for solving a problem more quickly when classic methods are too slow, or for finding an approximate solution when classic methods fail to find any exact solution.

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Note 1: [https://www.merriam-webster.com/dictionary/artificial%20intelligence](https://www.merriam-webster.com/dictionary/artificial%20intelligence)
Note 3: [https://www.techopedia.com/definition/3739/algorithm](https://www.techopedia.com/definition/3739/algorithm)
Note 5: [https://www.investopedia.com/terms/d/deep-learning.asp](https://www.investopedia.com/terms/d/deep-learning.asp)
Types of Data...

MOST IMPORTANT is the DIFFERENCE BETWEEN TYPES OF DATA...

Structured Data\(^1\): Refers to information with a high degree of organization, such as that included in a relational database, is seamless and readily searchable by simple, straightforward search engine algorithms or other search operations.

For example, Financial data contained in an Enterprise Resource Planning (ERP) system, such as SAP, Oracle.

Unstructured Data\(^2\): Is essentially the opposite.

For example, emails, apps, texts, web, clicks, social, behavioral, photos, video, voice recordings, voice-to-text conversion/transcripts, word documents, handwritten notes, music, geolocation, IoT, MNO, telematics.

Note 1: https://www.google.com/search?q=structured+data%2C+def&ie=utf-8&oe=utf-8&client=firefox-b
Note 2: https://www.google.com/search?q=unstructured+data%2C+def&ie=utf-8&oe=utf-8&client=firefox-b
WHY is this Difference Important?...

• 90% Of Today's Data Has Been Created In the Last Two Years¹...

• 90% Of That Data is Unstructured Data¹...

• Since Businesses Generally Use Structured Data Only, That Means Businesses are only Using ~20% of Available Data for Decision Support¹...

• If a plane used only 20% of its engine power, IT WOULD NEVER GET OFF THE GROUND...

• “The world’s most valuable resource is no longer oil, but data” ²

• The four V’s of Big Data³
  • **Volume** – Scale of data
  • **Velocity** – Analysis of streaming data
  • **Variety** – Different forms of data
  • **Veracity** – Uncertainty of data

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Note ²: https://www.economist.com/.../the-worlds-most-valuable-resource-is-no-longer-oil-but-data
Note ³: http://www.ibmbigdatahub.com/infographic/four-vs-big-data

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What Does AI/ML Mean for the Future?...

The “Value” of data will shift from Structured to *Unstructured Data*.

Any/All highly regulated industries will be hit hard and fast (Structured Data).

Legislation and Policy are Lagging Even FURTHER BEHIND creating exposure, risk and liability; MANY Challenges for Leadership, Employees.

FOCUS to identify fast and clear differentiation required between background noise VS value-add technology and partnerships.

Early Risk Identification and Management... Exception Reporting.

Use of AI/ML used to accelerate move to *Root Cause Analysis – FAST!*

Canada/USA are FAR behind *in ADOPTION*, therefore the rate of change will be faster.
What is Clarity™?

Clarity™ is Acquired Insights’ Framework for Consolidating Advanced Technologies.

- **Ethics Management Office (EMO):**
  - Responsibility
  - Accountability
  - Transparency
  - Auditability
  - Incorruptibility
  - Predictability
  - Frustration Avoidance

- **Organizational Change Management:**
  - Identifying, Addressing, and Resolving Issues Pertaining to The People Side of Change

- **AI/ML:**
  - Structured Data
  - Unstructured Data
  - Behavioural Data
  - Social Data
  - IT Infrastructure
  - Software
  - FinTech

- **Robotics:**
  - Humanoid
  - Digital
  - Avatar

- **Human Profiling:**
  - The Science of Psychometrics (Applicants & Employees) and Predictive Analytics for Strategic Workforce Optimization

- **Organizational Audits:**
  - Talent Acquisition
  - HR
  - Social Metrics

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The Ethics and Social Responsibility of a company invariably decides the kind of Clients, Investors and Team Members it will attract. They are at the core of every business decision and strategy the company makes. On a personal level, ethical behavior means behaving decently and fairly to another person. But in a business sense, the impact of a decision goes beyond individuals and it is important to understand and evaluate the larger impact it can have on the world.

The Ethics Management Office (EMO) will convey corporate values, using codes and policies to guide decisions and behavior in ethical dilemmas.

- Acquired Insights places considerable importance on the creation and maintenance of an appropriate ethical company and working environment
- Our goal is to provide standards leading to a fully operational ethics function within Acquired Insights that is designed to ensure an understanding by all clients, suppliers, and team members of minimum acceptable standards of behavior
- An Ethics Management Office (EMO) will provide advice and guidance to all
- The core ethical values and principles are:
  - Personal and professional integrity
  - Loyalty, independence and impartiality
  - Tolerance and understanding, non-discrimination, and respect for human rights
  - Accountability

Acquired Insights is creating and adopting a formal written Company Code of Ethics and distributing copies to all stakeholders.
Going from an organization without artificial intelligence (AI), to one with it, is a big step. While leveraging the benefits that come with this technology, having a strong Organizational Change Management (OCM) strategy ready to go is imperative. Failing to cover this much-needed step, oftentimes leads to a failed adoption that ends up costing the company in time, money and resources.

Change management strategies are used to transform workforce behaviors from a current state to a desired future state. In effect change management is an approach for ensuring that changes are efficiently and positively implemented to achieve organizational goals.

This transformation of an organization’s Human Capital through competency alignment and cultural fit is a key component that differentiates Acquired Insights from existing companies in the knowledge management sector and to some degree, becomes a barrier to entry to potential new entrants.

Your digital transformation strategy has a lot of moving parts, and requires full-time attention.

Many projects fail due to a lack of Organizational Change Management focus.
Clarity™
Powering Intelligent, Digital Products

Software that Adapts to Customer Behavior
Adaptive FinTech Platform Components

Rapid Scaling and Monetizing of Intelligent Digital Products Worldwide.
Behavior Data Warehouse (BDW)

Captures Predictive Behavioral Data.

We know which behavior features are predictive. This knowledge is embedded in the BDW and Analytical Models.

For advanced data science, predictive behavior data is essential, without it you are simply flying blind.

The BDW can collect up to 20,000 predictive behavior features for each client within the first 30 – 60 seconds of interaction. You gain a comprehensive client/customer “picture” and significantly improve decision accuracy and profitability.
The DE is massively scalable and facilitates intelligent next-best-action and KPI optimization, adapting to customer behavior.

It can be implemented rapidly and easily with minimum intrusion on existing systems.

Based on our experience, the DE can typically be implemented and delivering improved results within 4 weeks.
Dynamic Customer Journey Framework

Works in conjunction with the Decision Engine to facilitate *mass digital product personalization* based on customer-product behavioral dynamics and business objectives.
Models Library (ML)

Rapidly Optimize Business and Digital Product KPIs.

Advance Machine Learning models designed to rapidly optimize business and digital product KPIs. These Models can leverage behavior data to improve conversion, acceptance rate, LTV, profitability, pricing, retention, and collections, while minimizing abandonment rate, default, fraud, churn, cancellations, risk, etc.
Loan Management System (LMS)

Adapts to Multiple Digital Products, Geographies and Business Processes.

A highly scalable, customizable, and extensible transactional repository for financial digital products. Captures all customer and product lifecycle decisioning data. Adapts to multiple financial products, intelligent workflows, and “back-end” business processes.

Facilitates Straight-Through-Processing (STP).

Our digital robots replicate the interactions of people and technology to automate a range of operational and support processes. Any structured decision-making process now completed through human interaction with technology can be improved through automation.
Enables Advanced Feature Engineering and Productionalization of Analytical Models.

Features the engineering workbench. Use ADW to consolidate multiple sources of structured and unstructured predictive data to create a 360° customer view. ADW facilitates the creation of production strength analytical models, significantly reducing time-to-market, and includes an iterative approach to the creation and tuning of predictive models.
How Can We Use Unstructured Data for Better Decision Support?

- Financial data
- Transactional data
- Insurance data
- Sensors/meters data
- Device/Product spec data
- Satellite/Geolocation data
- MNO data
- Unstructured data
- Traffic/Routing data
- 3rd party data (weather, gov., credit bureau, utilities, news, aggregators, etc.)
- Social data
- Knowledge base
- CRM data
- Maintenance/Troubleshooting data
- Apps data
- Marketing data
- KYC data

ADW
Analytical Data Warehouse

Predictive Analysis

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Case Study 1: Automate and Optimize Underwriting and Risk Management with Robo-underwriter
Business Background & Challenges

Client Background

• A major, North American, consumer finance company with a substantial store network focused on the subprime and near-prime market

• Products include short term loans, installment loans, lines of credit, vehicle financing, savings account, overdraft facility, insurance

• Sub-prime lending products ranged from APR 42%-116%, with a term up to 5 years. Loan amounts ranged from $500-$5,000.

• Near-prime APR ranged from 26% – 38%, with a 3-5-year term, with loan amounts from $5,000 to $15,000

Challenges

• Accumulated a substantial amount of predictive data; although didn’t know what it was or what to do with it

• Operations were predominantly manual; risk management, underwriting, customer lifecycle management had been built around the offline business

• Changes in the regulatory environment and other market pressures

• Rapidly implement intelligent automation and at the same time, accelerate the transformation of its consumer financial products from offline to digital
Objective & Scope

Objective

• Automate and optimize underwriting and risk management offline and online (robo-underwriter)

• Decrease losses and improve control; improve the performance of the existing book of business

• Lower operating costs; De-couple operating costs from portfolio size

• Profitably scale online and mobile lending, expanding geographic coverage and market share

• Optimize product portfolio mix; improve targeted marketing and customer acquisition

Scope

• Implement Minimum Viable Product (MVP) methodology followed by phased productionalization, system training and monitoring.

• Analyze the offline and online loan portfolio to baseline the current business KPIs and estimate the potential uplift possible

• Introduce Affordability controls and models to improve the quality of underwriting decisions, reduce and control frauds, and comply with the regulatory framework

• Implement a 3-phase approach using Decision Engine (DE) and Models Library (ML) robo-underwriter
After the baseline KPIs were calculated, portfolio data was enhanced. Credit bureau and bank statement data was added to the application data. This allowed the Models Library model capabilities to be used more fully and achieved a significant uplift in predictive quality.

Unstructured Data and Tools:
• Enables better segmentation of risks and rewards
• More sophisticated champion/challenger strategies around the cut-offs
• Provides additional decision keys and rule sets
Affordability controls and models were also introduced using Models Library and Decision Engine. This was necessary in order to improve the quality of underwriting decisions, reduce and control frauds, and comply with the regulatory framework. This was applied to both the online and offline business.
### Phase I
- Adaptive platform integrated into existing Loan Management System (LMS)
- Additional 3rd party data sources integrated
- Offline robo-underwriter was deployed across operating regions and stores
- This allowed faster and more consistent decisions
- Improved portfolio credit quality and the customer experience

### Phase II
- Dynamic Customer Journey Framework (DCJ) and intelligent business workflows customized
- Lead Evaluation services added to scale online customer acquisition cost effectively and profitably
- Online robo-underwriter deployed across operating regions
- LMS synchronized with the legacy loan management system
- Behavior data capture, using BDW implemented
- Didn’t require client to upgrade their legacy systems

### Phase III
- Models Library conversion models tuned and deployed
- Additional tuning carried out once BDW was operational
- Customer journey variations A/B tested and tuned using AI intelligent business workflows
- Optimized product portfolio mix; improved targeted marketing and customer acquisition
By Including Unstructured, Behavioural Data and Using the Right Tools to Make that Data Actionable, the Following Quantitative and Measurable Benefits Were Delivered:

- Profit increased by 28%
- Portfolio write-off decreased by 19%
- Quarterly volume growth increased by 12%
- Online STP increased from 50% to 87%
- Customer acquisition costs reduced by 32%
- Customer retention rate increased by 9%
- Online conversion rate increased by 31%

The greatest challenge this organization originally faced was the notion that they couldn’t engage in AI/ML solutions until their current legacy systems were brought up to date.

- Didn’t need to build a Data Cube/Mart
- You need a partner that has superior systems integration experience.
Case Study 2: Enterprise Operational Risk Management: Focus on Financial Institutions
Business Background & Challenges

Client Background

• Bank implementing Basel III and Enterprise Risk Management
• Focus on Data Management
• Need to enable automated Data Governance strategies
• Highly complex data and systems architecture
• Geographically dispersed operations

Challenges

• As part of Data Management and Governance – measure data quality
• Identify associations between key business metrics and data quality issues
• Monitor / Assess the effectiveness of Data Management and Data Quality governance initiatives in perpetuity
The Problem: Operational Risk

- Risk events and root causes were scattered in huge amount of heterogeneous unstructured data, including web, and social media.

- Operational & reputational risk modeling and control required path analysis of root causes of loss events as well as a substantial - structured, predictive, categorize time-series loss events data – which was not available.

- Identifying, gathering, extracting (over 1000 data fields and 236 types of transactions for 12mil companies, correlating to 500K+ loss events DB), co-referencing, relating, categorizing, aggregating and structuring operational risk data requires innovative use of: text & web mining, semantic analysis & Natural Language Processing (NLP), Morphological/Syntactic Analysis, sentic computing (linguistic, psychology, cognitive science, sociology and ethics), Oracle Online Analytical Processing (OLAP) for multi-dimensional pattern mining and data visualization.
Use of RL3 – A proprietary and powerful declarative language, i.e., a non-imperative style of programming in which programs describe their desired results without explicitly listing commands or steps that must be performed in support of automated data extraction from unstructured data sources.
Objective & Scope

Objective

• Automatically and in perpetuity, without any manual effort, identify data quality problems in any data set; structured and unstructured. Associate data quality issues with key business metrics and pinpoint where data quality management effort should take place to improve the business metrics

• Monitor the impact of data quality on key metrics for the enterprise

Scope

• Perform 4I (Invalid, Incomplete, Inconsistent, Inaccurate) data quality measurement and discovery for both structured and unstructured data

• Be able to define data quality issues that impact and are root causes of dynamically defined key business metrics

• Provide an easy to use, highly scalable business impact monitoring BI application that is dynamically self configured as the data characteristics change over time
Solution: Operational Risk - Deployment Infrastructure

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Technologies

- Intelligent Crawler / RSS Harvesting Engine, with Oracle back-end
- AI based Language Detector
- Extensive AI/Machine Learning Library
- Synthatic / semantic analysis engine – based on “deep parser technology”
- Anaphora resolution engine
- RL3 – proprietary Rules language for data extraction / categorization
- Named Entities Extraction library
- Association Data Mining
- Languages: Java, C++ (back-end), PL/SQL, C# .NET (front-end)
- Data Management: HyperTable, DFS, Oracle OLAP
- Search: Solr Cloud, Lucene
- Infrastructure: Mesos, Storm, Hadoop, MapReduce, Open MQ
- Knowledge Management: Scrappy, Knowledge Management tools, Lingvo, Wordnet, Wikipedia Data Mining
- Data Quality Management tools – proprietary
- Artifacts Management: GIT, SVN
- Interfaces: REST, JSON, XML
- Linux, Windows
A blog or social media entry related to monitored company appears...

An entry is passed through semantic analysis engine and similarity detection engine to extract predictive metrics and identify related entities (recent article, tweet about a company, etc.)

With the use of knowledge database and algorithms (Singular Value Decomposition - SVD), weighted vector of the blog entry is calculated. Blog entry vector is associated with the loss event category

A weighted vector is processed by Bayesian network (initially configured by expert-specified values or pre-computed with the use of genetic algorithms and association mining)

Nodes probability distributions are post-calibrated with the use Support Vector Machine (SVM) and Artificial Neural Networks (ANN)

Operational risk and reputation vectors or scores are produced and incrementally added as facts into the Online Analytical Processing (OLAP) star-schema for further analysis
The Singular Value Decomposition can then be provided to data visualization software to identify least squares fitting of data, multivariable control, matrix approximation, and determining the rank, range, and null space of a matrix.
### Data Quality Management: One Can Take This Data...

![Excel spreadsheet](image)

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<th>C</th>
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...Drag It To The Learning Engine...

- No Prior Knowledge of the Data
- No Setup
- No Pre-processing
- No Profiling

...Just Drag and Drop
...And Automatically Identify These Data Quality Errors

- No Meta Data
- No Reference Data

...All learned via Inductive Logic Programming (ILP) Engine, Automatically Deriving Rules
Technologies

- Data Mining: ILP, Association Data Mining Algorithms, Anomaly detection algorithms, Statistical Analysis, Six Sigma
- Languages: Java, C++, Prolog, R, J, ILP
- Data Management: Hadoop/MapReduce, Oracle, Oracle OLAP, ETL Integration, and the proprietary Decision Engine (DE)
- Artifacts Management: Support Vector Machine (SVM) and GIT (A version Control System for tracking changes in computer files and coordinating work on those files among multiple people)
- Requirements Management: Volere
- Architecture: Service Oriented Architecture (SOA), Publish/Subscribe
- Operating Systems: Linux, Windows
Overall Improvements...

Dynamic, Scalable & Automated Discovery of:
- Data Quality (DQ) Rules
- Data Quality Problems
- DQ Problem Severity
- Data & Field Relationships
- DQ Root Causes
- DQ Business Impacts
- Anomalies Heat Map
- 6-Sigma, Dimensional Baselines
- OLAP Monitoring Configuration

Primary business benefit was to identify data quality issues and resolve them in perpetuity which also contributed to improved risk quantification under the Basel framework.
Case Study 3: Customer Acquisition and Lead Evaluation Service
Business Background & Challenges

Client Background

• A global, financial institution focused on consumer and Small/Medium Enterprise (SME) credit
• Significant online and mobile presence
• Provides a range of B2C and B2B digital lending products
• Planning to grow its lead generator channels across Europe, North America and Asia-Pacific
• Focus on sub-prime and near-prime customers

Challenges

• The client faced challenges in customer acquisition and buying leads
• Accumulated a substantial amount of predictive data
• Requirement to improve overall portfolio profitability and volume
• They wanted an automated, intelligent system to answer multiple questions prior to lead purchase
1. The level of lead interest?

2. How likely is the lead to:
   a. complete the customer journey (via website or mobile application)?
   b. be accepted by the decisioning and underwriting system?
   c. default, if a loan is granted?
   d. exhibit fraudulent behavior (e.g. never pay, once the loan is granted)?

3. Is the lead prime, near-prime or a sub-prime?

4. Given the above, is the lead correctly priced?

5. If accepted, will it be profitable?

6. Can you integrate easily to multiple lead generators, across countries and regions?

7. Can an automated system do this and still accurately filter profitable leads?

8. Can an automated lead evaluation system answer some or all of the above accurately in real-time?

9. Is the lead in the system already, or on a black-list?

10. What is the likely retention rate and life-time-value of the lead?

11. If accepted, will the customer use company’s financial products again and how often?

12. What are the predicted, risk adjusted, credit limit and terms that can be safely offered?
Objective & Scope

Objective

• Measure and predict lead behavior consistently across large number of countries and regions
• Provide accurate answers to the above questions using automated, real time decisioning
• Increase Initial lead volume from approximately 3000-5000 leads per day

Scope

• Implement a 3-phase approach using Decision Engine (DE) and Models Library (ML), identify a range of probability scores covering each of the questions described in the problem section
• Determine whether the lead provided was correctly priced before purchasing
• Conduct A/B tests to tailor financial products offered. Use Dynamic Customer Journey (DCJ) framework, Behavior Data Warehouse (BDW), and ML to dynamically personalize and optimize the customer journey
• Measure and improve further lead retention and Loan-To-Value (LTV)
• Assessed core lead evaluation functionality

• For each country/region, a range of Models Library (ML) models were used including default, fraud and limit management. ML models are pre-tuned, highly predictive, and country/state compliant

• Behavioral, credit bureau and further data sources were integrated to support AI/ML techniques
Solution: Phase II

• 3 months’ lead performance data was collected. This included:
  ✓ behavioral
  ✓ acceptance
  ✓ conversion
  ✓ default data

• A range of conversion models were then applied for each country, region, financial product

• Lead behavioral data was captured and used as further input

• Both Retention and LTV models were further tuned after an additional 3 months’ lead data was collected for each connected lead generator
Solution: Phase III

- Measure and improve further lead retention and LTV

- Using the proprietary DE, there were additional predictive ML retention and LTV models deployed for each country and geography implemented in Phases I and II

- Enhanced output consisted of a range of scores including retention score and LTV for each country, region and product combination

- DE intelligent workflows used various outputs to determine whether the lead provided was correctly priced, taking into account default, conversion, retention and LTV, before purchasing
# Results...

<table>
<thead>
<tr>
<th><strong>Phase I</strong></th>
<th><strong>Phase II</strong></th>
<th><strong>Phase III</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Implemented in 9 weeks</td>
<td>- Increased customer conversion rates by 27%</td>
<td>- Increased new customer acquisition volume by an additional 9%</td>
</tr>
<tr>
<td>- Lowered customer acquisition costs by 32%</td>
<td>- Increased new customer acquisition volumes by an additional 12%</td>
<td>- Further increased overall system accuracy and acceptance rates</td>
</tr>
<tr>
<td>- Increased new customer acquisition volumes by 21%</td>
<td>- Accurately measured lead generator conversion rates across countries, regions, digital financial products and lead generators.</td>
<td>- Improved selection and optimization of lead generators</td>
</tr>
<tr>
<td>- Provided the client with the ability to grow online customer acquisition and increase geographic and regional coverage while controlling defaults</td>
<td>- Identified good customers who were not likely to convert and conducted a/b tests to increase conversion of these customers</td>
<td>- Enhanced evaluation of lead pricing prior to purchasing</td>
</tr>
</tbody>
</table>
Overall Improvements...

Through this Customized Solution, the Following Results Were Delivered in Approximately 6 Months:

• 32% reduction in customer acquisition costs
• 48% increase in new customers

• One business benefit was the new capability of being able to include behavioural data in qualifying lead generation services
• A primary business benefit was this project protected the credit quality of the portfolio
• In reviewing the vendor’s detailed case study, consensus was quickly built internally and approvals for funding were easier and faster to obtain.
Better Business Outcomes - Here’s What to Look For

**You Know You’re Ready When...**

- You want to minimize the impact of digital transformation on business continuity
- You want to see results in weeks not years
- You want to implement AI/ML in a non-disruptive way
- You are tired of vetting new grad AI/ML startups

**Why Choose Us?**

**Capabilities Perspective:**

- 250 AI/ML Data Scientists
- 20 years Direct Experience in AI/ML; Cross-Industry
- 300 Person Years Invested in the Models Library
- Software that Adapts to Customer Behavior

**Operations Perspective (Typical):**

- Implementation in 6-9 Months
- ROI Starts in 9-12 Months
- 100% ROI in 12-24 Months
- Solution Becomes Self-Funding

**Organizational Perspective:**

- Solution is Fully Customizable
- Non-Disruptive Implementation
- Short Implementation Eliminates Project Fatigue
- Head of Tech was Lead Developer on SAP HANA

**Internal Perspective:**

- Focus on Supporting Business Practices
- Change Management Component
- Project Management Component
- Human Resources Component
Financial Services AI/ML Clients Include…

• Actively Engaged with 80+ Financial Institutions (Predominantly The EU, The UK, MENA, APAC);

• Focus on Building Footprint in North America;

• Growth Through Referrals and Largely Word of Mouth;

• Significant Growth Anticipated due to Rapid Uptake of Financial Services Using Mobile Technology.
Considerations for Discussion...

• **Data Sovereignty** - The idea that *data* are subject to the laws and governance structures within the nation it is collected.

• **General Data Protection Regulation (GDPR) in Europe**
  A new set of rules designed to give EU citizens more control over their personal data. It aims to simplify the regulatory environment for business so both citizens and businesses in the European Union can fully benefit from the digital economy.

• **What China is Doing with Data Privacy**
  Citizen Social Credit Scores

• **Canada's Data Strategy**
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