

Data Analytics and the Future of Credit Risk Management

Audience: Chartered Institute of Bankers of Nigeria.
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Agenda.



- What is Big Data? Sources and Uses.
- Analytical Methods of Modelling Credit Risk
- Application Framework
- Review of International Best Practices

What is Big Data.

- Big data is data that is generated in high **Volume**, **Variety**, and **Velocity**.
- The principle of big data is very simple: The more knowledge you have about anything or any situation, the more accurate predictions you can make about the future.
- In May 2011, big data was announced as the next frontier for productivity, innovation, and competition.

Volume

Terabytes
Exabytes
Zettabytes

Variety

Structured
Unstructured
Semi structured

Value

Evidence based
Decisions
Data in Action
Statistical
Data Driven
Insights.

Veracity

Uncertainty
Incompleteness
Inconsistency

Velocity

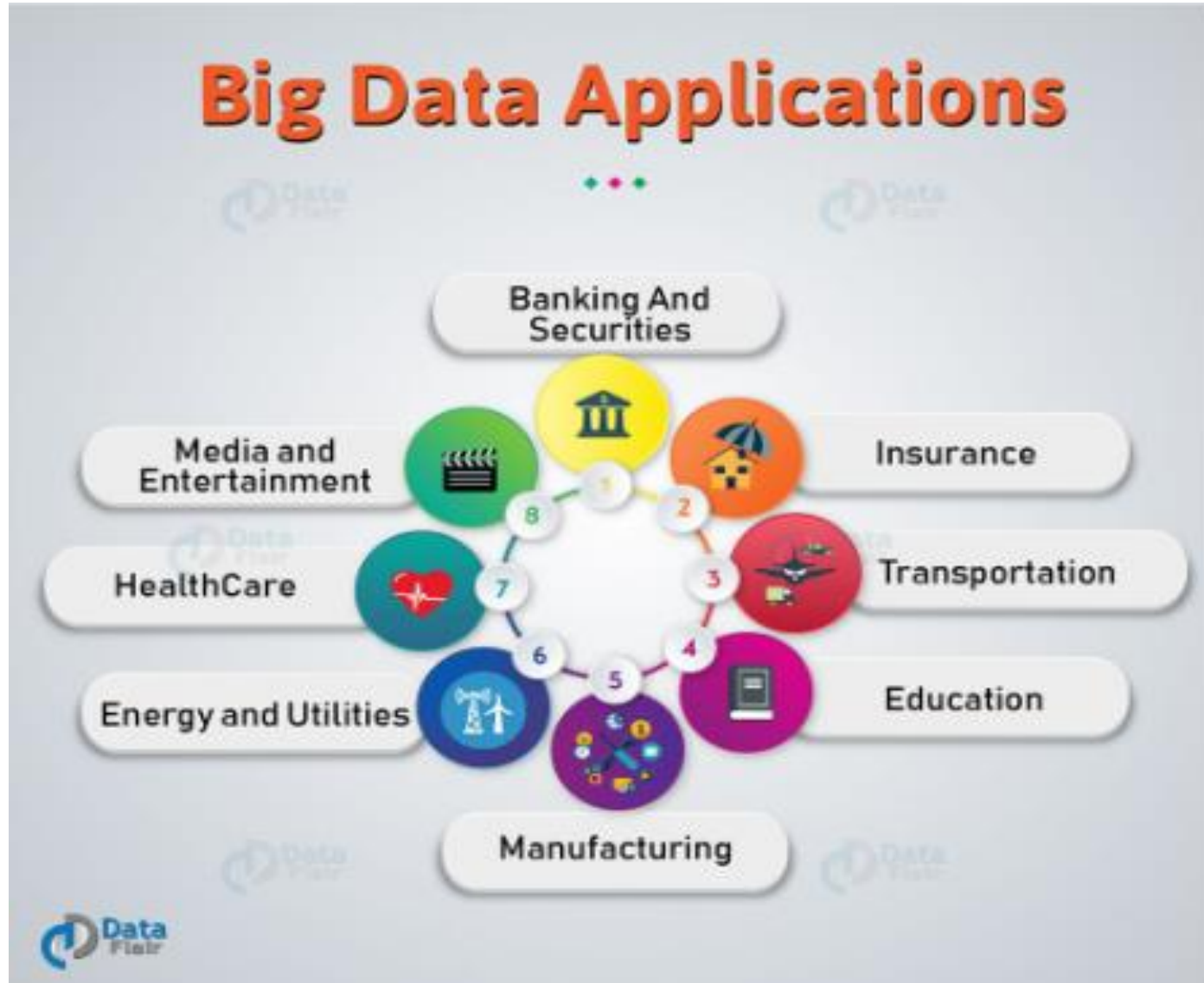
Batch
Real-time
Streaming

5 V's of Big Data

Sources of Big Data



Application of Big Data



Application of Data Analytics in Credit Risk Management.

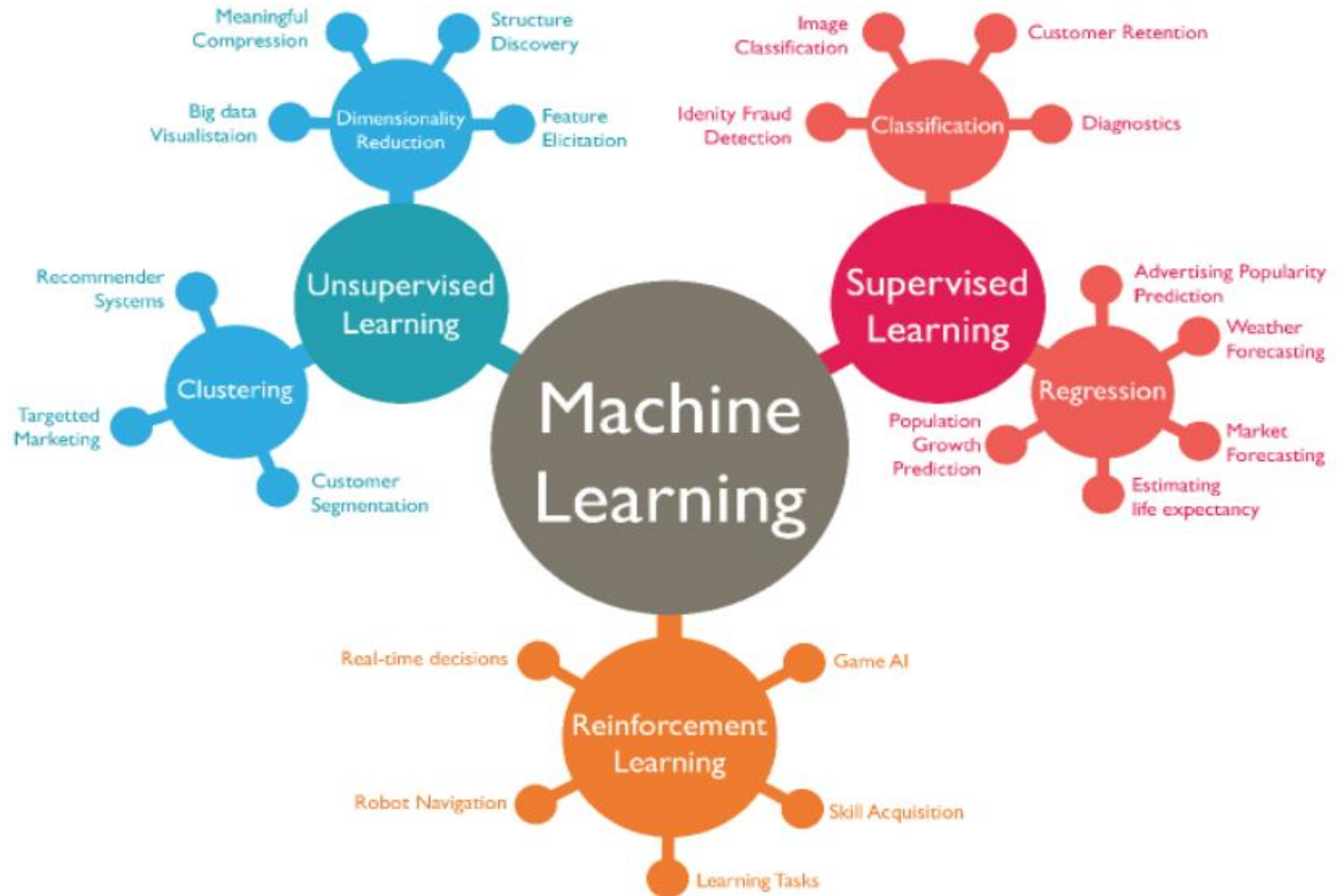
Credit Risk Learning Algorithm.

- Automating credit decisions currently made by credit risk analysts will reduce human bias and errors in credit decisions.
- The most important component of a credit risk model is the **Probability of Default** (PD), which is usually estimated statistically employing credit scoring models.
- Credit risk can be measured with **Machine Learning** (ML) models, able to extract non-linear relations among financial and Non-Financial information.

Machine Learning in Credit Risk Management.

- **Machine Learning** (ML) is a branch of **Artificial Intelligence** (AI) that focuses on using data and algorithms to imitate how humans learn, gradually improving its accuracy.
- Via the use of statistical methods, algorithms are trained to make classifications or predictions, uncovering critical insights within data.
- Learning Algorithms work on the basis that strategies, algorithms, and inferences that worked well in the past are likely to continue working well in the future.

Types of Machine Learning Methods.



Common Machine Learning Uses in Credit Risk Analysis.

❑ **Descriptive:** the system uses the data to explain what happened.



Predictive the system uses the data to predict what will happen.



❑ **Prescriptive** the system will use the data to make suggestions about what action to take.

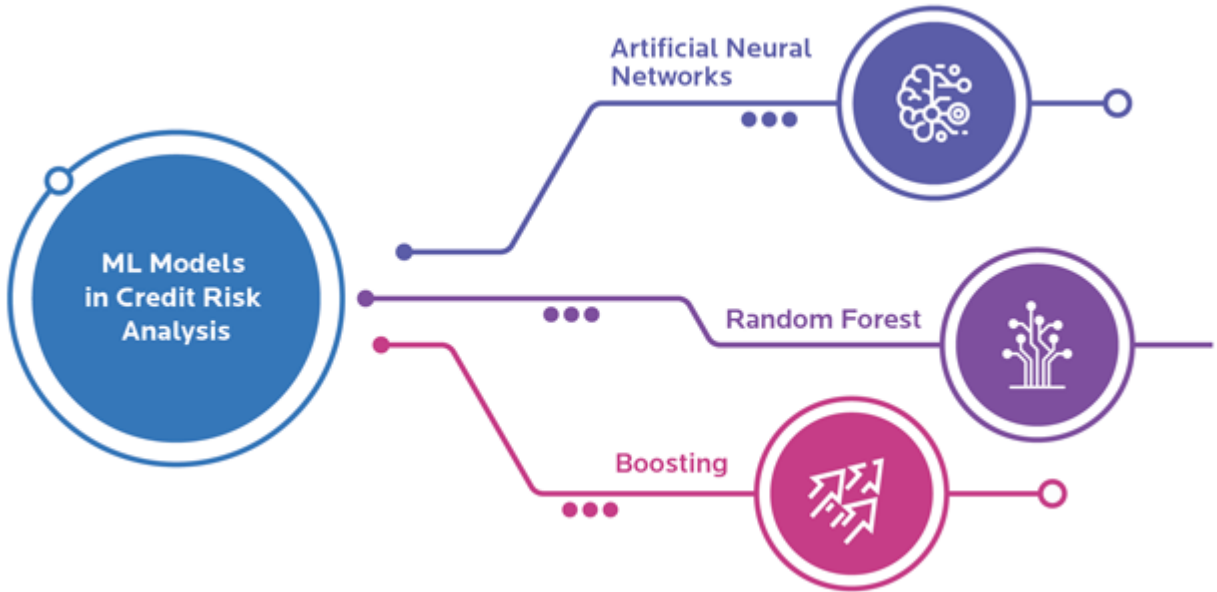
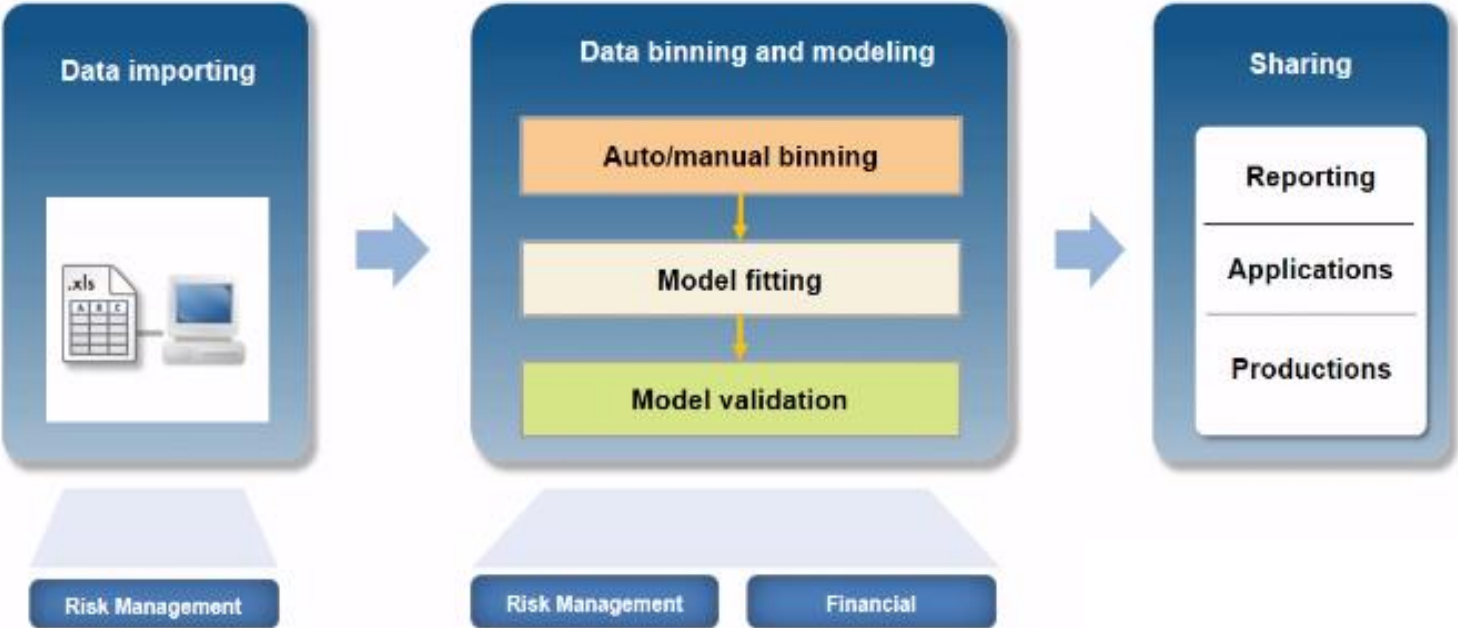


Credit/Application Scoring Model.



- ❑ A credit scoring model is a mathematical model used to discriminate good and bad credit risk.
- ❑ Bad credit risk are customers that may trigger a credit event (i.e. bankruptcy, obligation default, failure to pay, and cross-default events).

Work Flow of Credit Score Modelling.



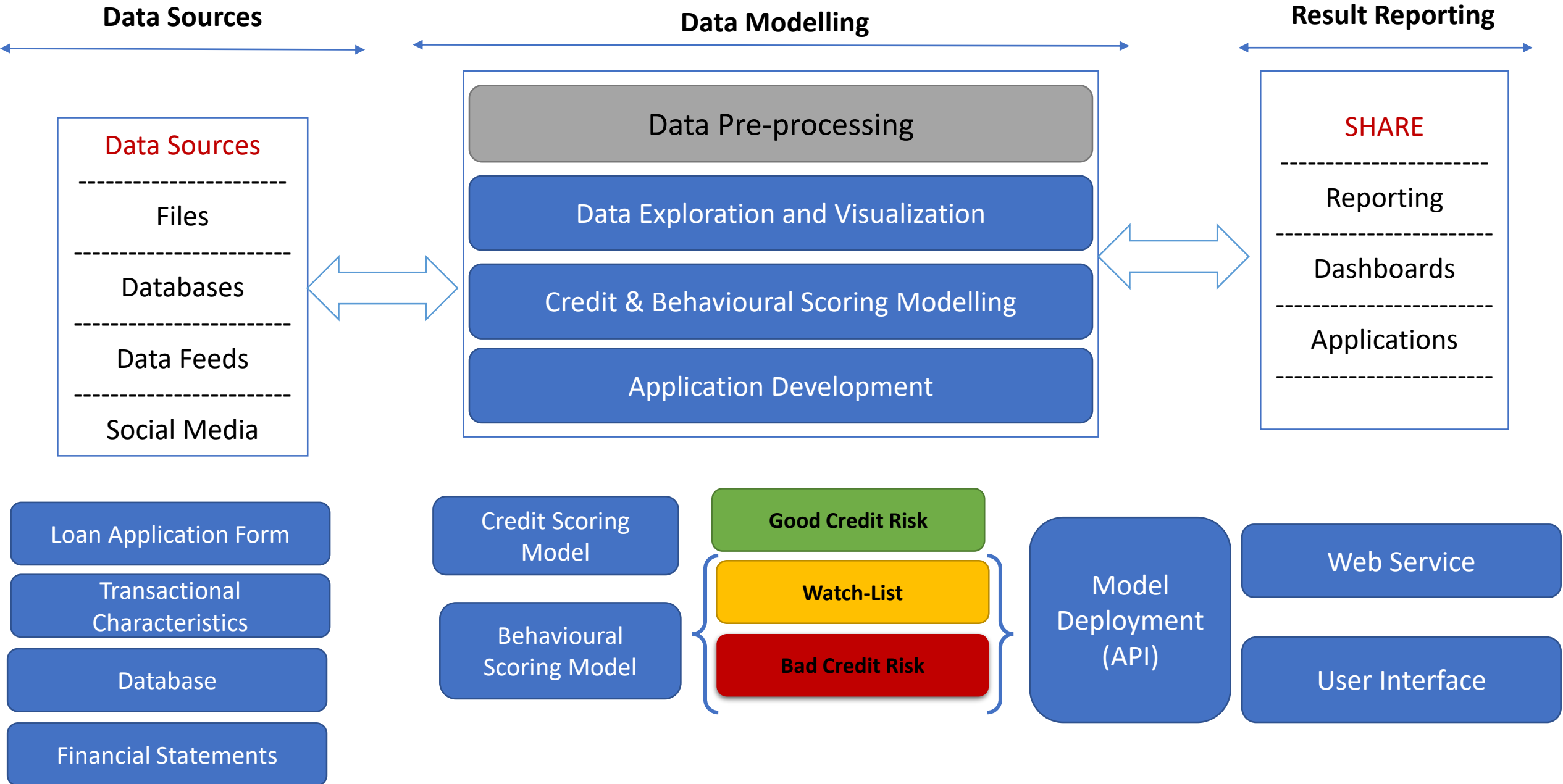
Psychometric Credit Scoring.

- ❖ Lenders around the world use alternative credit scoring solutions as a means to improve their credit models and better service the underbanked.
- ❖ Psychometric solutions take the form of professionally constructed behavioral questionnaires, with algorithms that yield scores based on patterns of responses to carefully constructed questions.
- ❖ Psychometric tools can provide lenders with a complementary layer of analytics that focuses on a borrower's personal character traits, as they are relevant for good lending behaviors.

Behavioural Scoring Models

- ❑ Behavioural scoring quantifies your loan customer's behavior to improve your credit portfolio management.
- ❑ Behavioural scoring helps to automatically segment and rate accounts, customers, and portfolios, thus efficiently managing a particular borrower's credit account and the entire credit portfolio.
- ❑ Behavioral credit scoring monitors the transactional behavior of existing customers.

Computational Credit Risk Modelling Workflow.



International Best Practices

Lendt and Brighterion Findings.

Key Takeaway

50%

Of Financial institutions are currently utilising AI for credit risk management

Planning to do so in the next 2-5 years.

25%

26%

Showed concerns about the difficulties of AI implementation.

**Thank You for Listening.
Questions!!!**