IBM

IBM ANALYTICS

MAKING DATA SIMPLE & ACCESSIBLE

IBM **Cloud**

Data-driven cultures realize higher business returns

Achieve Differentiation

Manufacturing
Predictive maintenance, production output & inventory

Banking & Financial
Reveal trading behavior, regulatory compliance

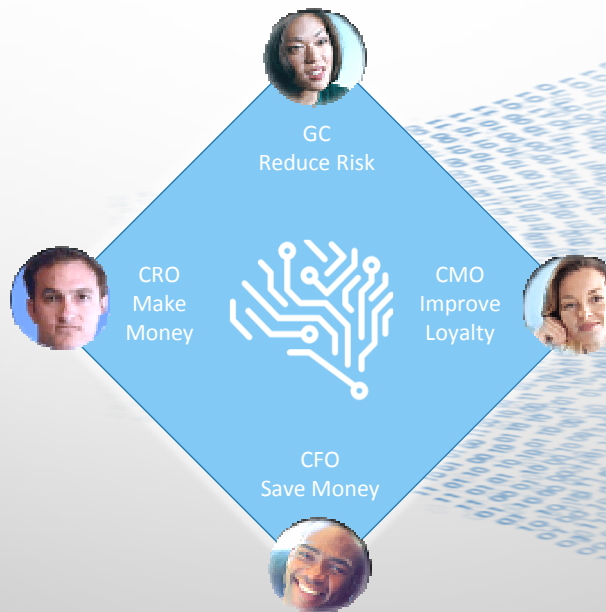**Retail**
Dynamic pricing and predictive merchandising

Healthcare
Accuracy of diagnosis and regulatory compliance

Telecom & Media
Predictive customer Experience and loyalty

Drive 6% Greater Productivity*

GC
Reduce Risk

CRO
Make
Money

CMO
Improve
Loyalty

CFO
Save Money

Apply Technology 13:1* ROI

Cloud
data agility and efficiencies

Mobile-IoT
real-time and flexible data access

Open Source
speed innovation and data exploitation

Artificial Intelligence
scale discovery of hidden insights

* MIT Slone School of Management Study of 330 firms

# Cognitive businesses will redefine how decisions are made

AI is the system of the future.
People will define <u>what</u> is to be learned.
System will learn <u>how</u> to learn it.

- Interactive decision making, learning and evidence-based explanations

- A range of techniques including natural language processing, knowledge and planning

- Statistical prediction analysis and pattern recognition to make highly data-driven decisions
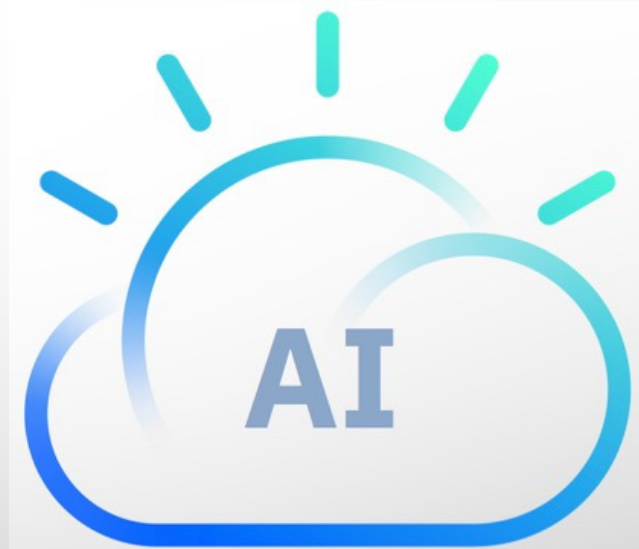
IBM Analytics makes data simple and accessible

- Leaders will establish a discipline in data science and accelerate the use of artificial intelligence

- The "AI Ladder" is an evolutionary process with various starting points

- IBM Analytics simplifies <u>every step</u> on the "AI Ladder" by delivering 3 platforms that ensure success

AI

Machine
Learning

Analytics

Data

The "AI Ladder"
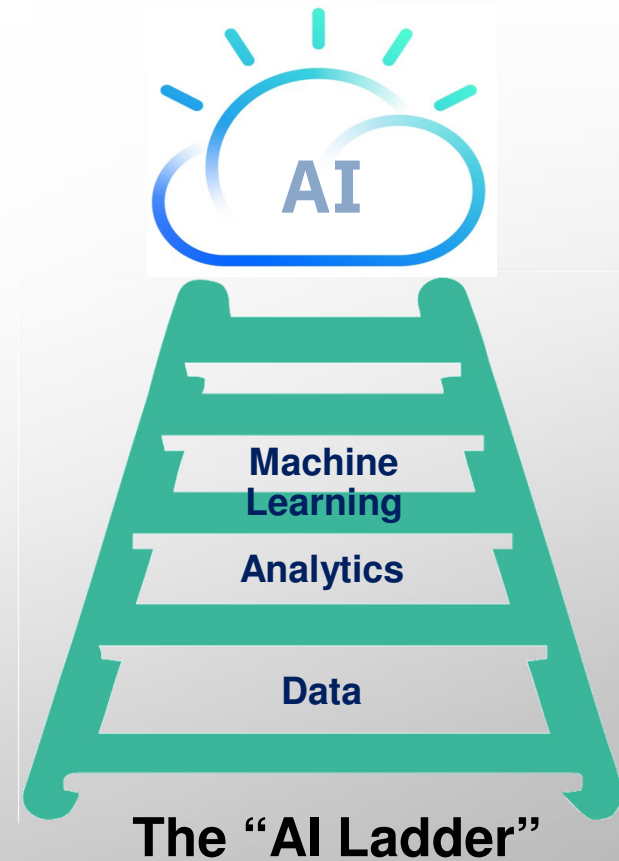
The need for Artificial Intelligence

- ## Problem Solving and Learning
  - *Automate decisions and processes*
  - *Prevent risks, identify opportunities*

- ## Recognition – Voice, Image
  - *Analyze interaction for tone and sentiment*
  - *Image analysis for identification and classification*

- ## IOT Based AI
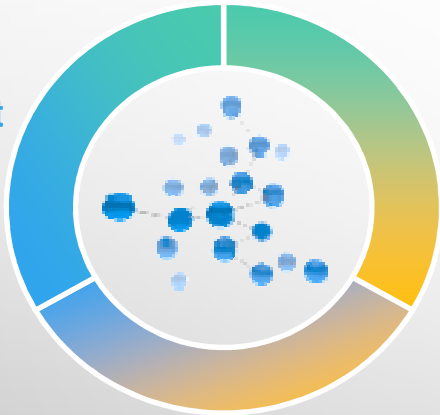 - *Autonomous vehicles*
  - *Smarter consumer goods*

AI
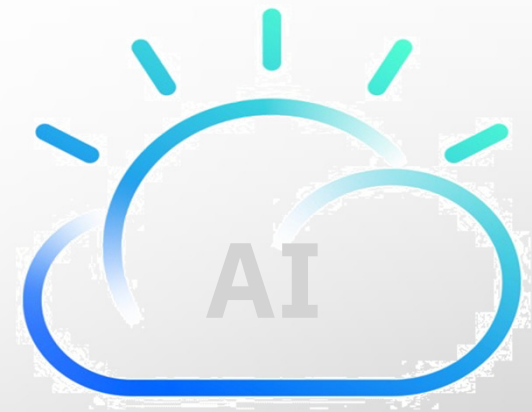
People will define <u>what</u> to learn

AI will learn <u>how</u> to do it

IBM Analytics platforms enable the AI Ladder

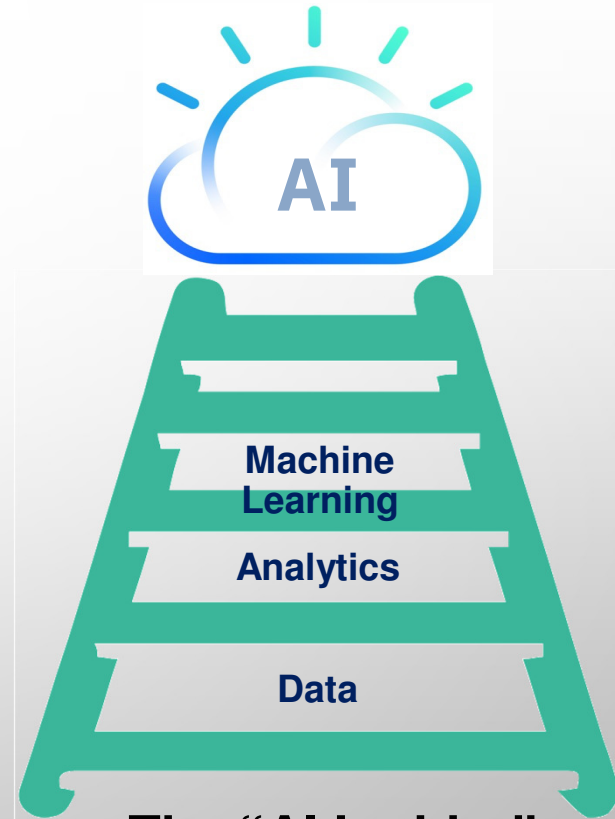**3 platforms, 1 Information architecture**

Hybrid Data Management

Data Science & Business Analytics

Unified Governance & Integration

AI

Machine Learning

Analytics

Data

The "AI Ladder"

IBM platforms deliver the capabilities our clients need

Collect	Organize	Analyze
Hybrid Data Management	**Unified Governance & Integration**	**Data Science & Business Analytics**

- Collect all types of data, structured and unstructured
- Includes all open sources of data
- Leverages a single platform with a common application layer
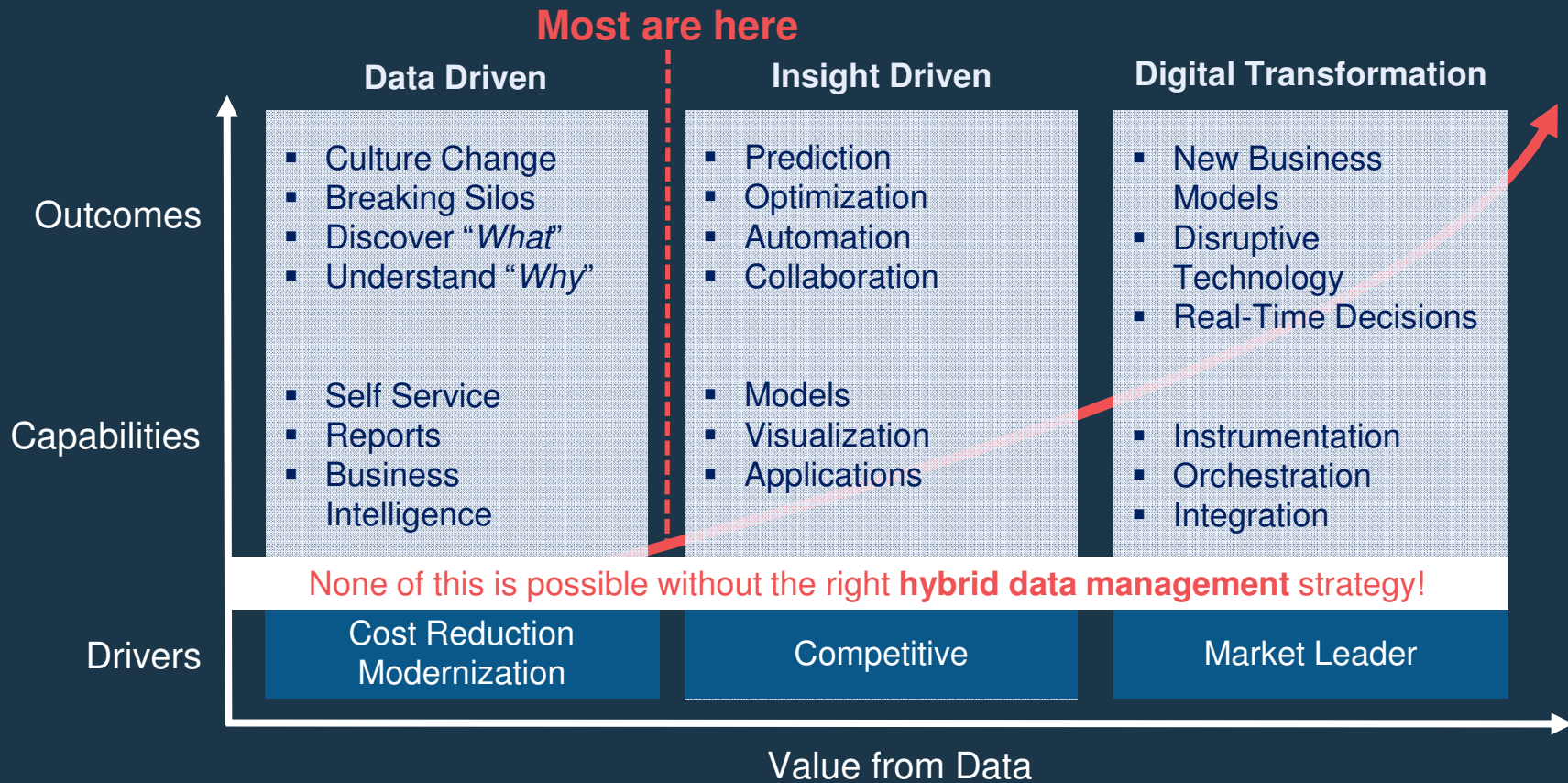- Write once and deploy anywhere

- Satisfy all matters of finding, cataloging and masking data
- Integrates fluid data sets
- Delivers built-in compliance
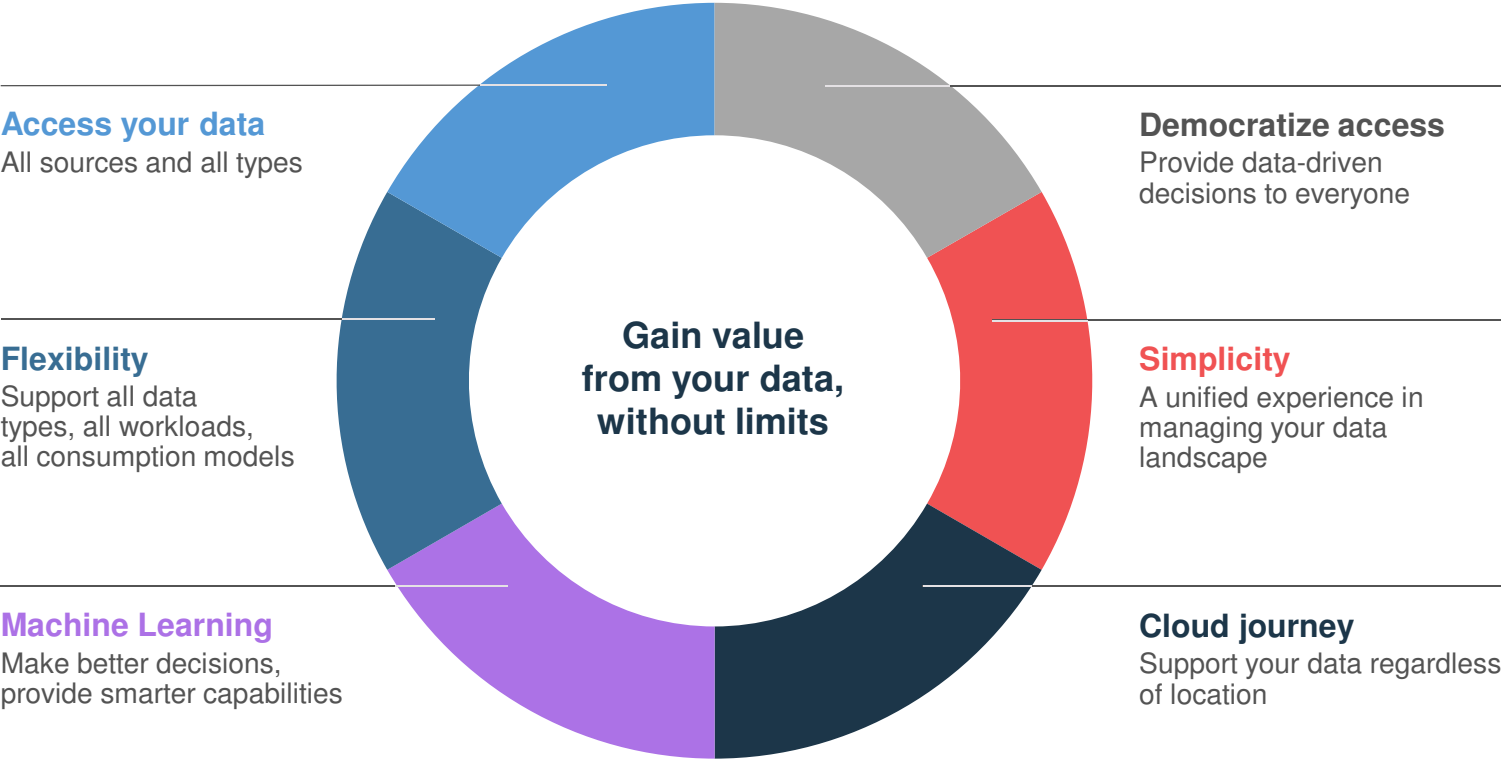- Leverages advanced machine learning capabilities

- Delivers descriptive, prescriptive and predictive insights across all types of data
- Empowers all your teams and their unique use cases
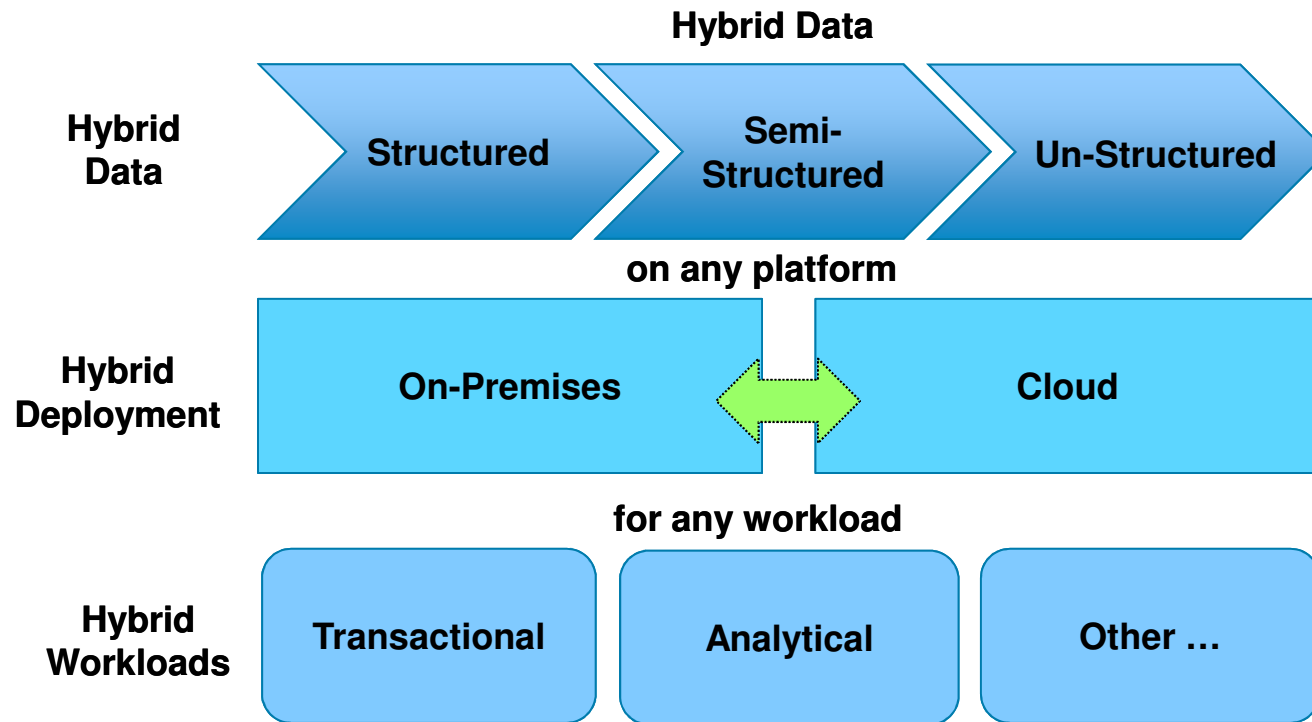- Enables advanced analytics and data science methods

As data becomes more **accessible**, it provides more **value**

Most are here

	Data Driven	**Insight Driven**	**Digital Transformation**
Outcomes	▪ Culture Change ▪ Breaking Silos ▪ Discover "*What*" ▪ Understand "*Why*"	▪ Prediction ▪ Optimization ▪ Automation ▪ Collaboration	▪ New Business Models ▪ Disruptive Technology ▪ Real-Time Decisions
Capabilities	▪ Self Service ▪ Reports ▪ Business Intelligence	▪ Models ▪ Visualization ▪ Applications	▪ Instrumentation ▪ Orchestration ▪ Integration

None of this is possible without the right **hybrid data management** strategy!

Drivers	Cost Reduction Modernization	Competitive	Market Leader

Value from Data

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Essential elements of a hybrid data management strategy

Access your data
All sources and all types

Flexibility
Support all data types, all workloads, all consumption models

Machine Learning
Make better decisions, provide smarter capabilities

Gain value from your data, without limits

Democratize access
Provide data-driven decisions to everyone

Simplicity
A unified experience in managing your data landscape

Cloud journey
Support your data regardless of location

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What is Hybrid Data Management?

Hybrid Data

**Hybrid
Data**

| Structured | Semi-Structured | Un-Structured |

on any platform

**Hybrid
Deployment**

| On-Premises | Cloud |

for any workload

**Hybrid
Workloads**

| Transactional | Analytical | Other … |

- Global data will reach 40 zettabytes by 2020
- Structured data is growing at the rate of 40% every year
- Content is growing at a rate of about 80% annually
- Data generated from machines will increase by 15 times by 2020

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Hybrid Data Management & **Data Structures/Types**

1 **Hybrid Data**

| Structured | Semi-Structured | Un-Structured |

- Embedded DBs
- Transactional DBs
- Data Warehouse
- OLAP Engines

- NoSQL
- XML Repositories
- File Systems
- Object Stores

- Content Systems
- Hadoop
- File Systems
- Object Stores

Enterprise Governance
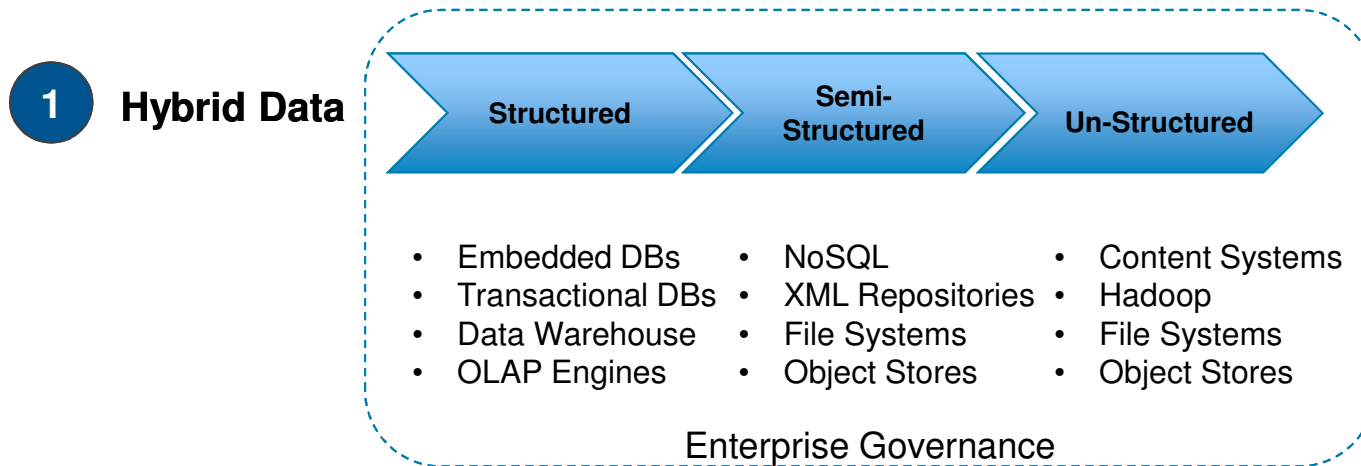
- **Key to Driving Down Costs:**
  - Use correct repository type for each data structure/type
  - Use appropriate analytical engines for each workload

- **The Industry has gone repository crazy! –** *We Need a Strategy*

- **Governance Strategy Makes it Searchable, Trusted, & Manageable**

Different Hybrid Data Strategies

- **Put everything in one place (e.g. Hadoop)**
  - *We know this doesn't work!*

- **Abstraction & Convergence**

Access Abstraction
- Exploit fit for purpose data stores
- Simplify access and portability of applications

Access

Abstraction

| RDBMS | JSON Store | XML Store |
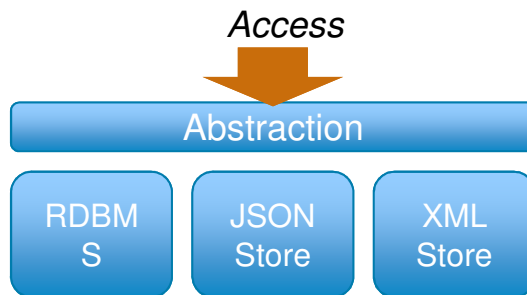
Repository Convergence
- Converge at the repository level
- Repositories often handle **one** key workload *very* well and other workloads *reasonably* well

Abstraction

| RDBMS | JSON Store | XML Store |

RDBMS that also processes JSON
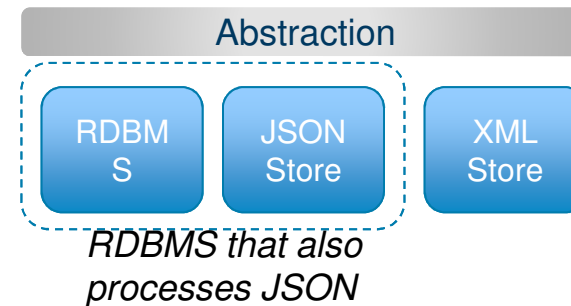
Analytics will live on both Private and Public Clouds

2 | **Hybrid Deployment** | On-Premise ⬌ Cloud

- Clients will take a staged approach to adopting public & private cloud
  - Requires a **safe passage** to the Cloud over time

- To succeed, common technologies are required across:
  - On Premise
  - Private Cloud
  - Public Cloud

- IBM delivers
  - Hybrid Deployments
  - Hybrid Ready Integration Technologies

Hybrid *Data Workloads*

(3) **Hybrid Workload**   [**Transactional**]   [**Analytical**]   [**Other..**]
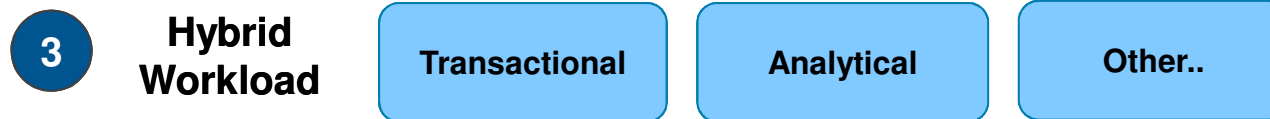
- Traditionally:
  - Data silos created based on workload
  - optimized performance and capability
  - Analytics workloads were separated out to protect transactional systems

- New technologies are driving opportunities for Hybrid Workloads
  - A convergence of transactional and analytics workloads

Organize

Hybrid Data Management

Write Once, Access Anywhere
with a common access layer to promote application independence

Govern

Unified Governance & Integration

Prepare, Publish and Protect
your data to drive insights while mitigating compliance risks

Intelligence

Data Science & Business Analytics

Descriptive, Predictive, Prescriptive
to understand the current, predict the future, and change the outcome

Infused with **Machine Learning**
Seamless between **On-Premise and Cloud**
Powered by **Open Source**

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Prepare	**Publish**	**Protect**
Make Data Useable	Make Data Available	Make Data Trusted
Integrate, Transform, Cleanse & Move all types of data no matter where it resides on-premises or on the cloud	**Empower Self-Service** with easy methods to catalog, find and understand data with a 360° view of all the data	**Preserve Privacy and Protect** data with proactive measures to comply with regulations and preserve sensitive information

Infused with **Machine Learning**

← Seamless between **On-Premise and Cloud** →

Governs your **Structured and Unstructured Data**

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Library Analogy

CATALOG
- How to easily find relevant information ~ books, authors ?

ARCHIVE
- How to go about archiving important content – Micro Film ?

DISPOSE
- How to go about Life Cycle Management of books ?

ACCESS
- How to restrict access to important content (Policy Mgmt.) ?

Data Science is Everywhere

Banking

Improve customer retention, reduce financial crimes, and prevent fraud

Financial Services

Gain insights to reveal trading and client behavior, and manage portfolios and regulatory compliance.

Retail

Personalize the customer experience, optimize merchandising, pricing, supply chain, and staffing.

Health Care

Improve patient care and accuracy of diagnosis, ensure regulatory compliance and auditability.

Manufacturing

Predictive maintenance, improve production throughput, and reduce in process inventory.

Telecommunications

Increase customer loyalty and advocacy by measuring and improving customer experience.

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Data Science in Every Day Life

Personalization
Customize the offers based on preferences
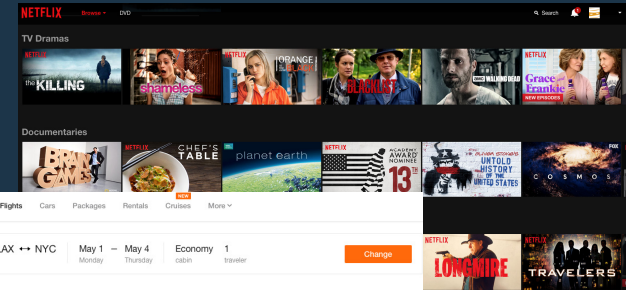
Dynamic Pricing
Pricing changes based on market conditions
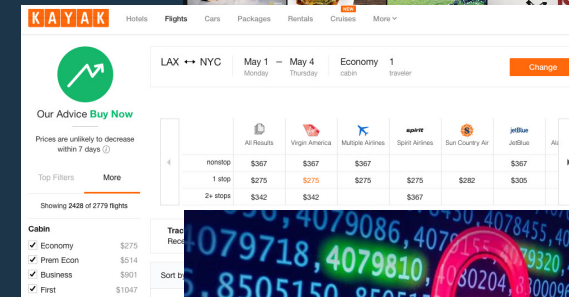
Fraud Detection
Detect credit card misuse

Business Planning

- **Planning, budgeting, and forecasting** for strategic, financial and operational needs

- **Single platform for business planners** to load data, model their business across multiple dimensions, and manage results in real-time

- Replaces or automates manual, disconnected spreadsheet-based planning with a more powerful and collaborative approach

Modeling that Adapts to your Business	Intuitive Collaborative Planning Processes	What-if Scenario Analysis & Projection
Native Excel Integration	Real-Time Answers To Complex Questions	KPIs, Dashboards, Scorecards, Reporting

IBM **Planning** Analytics

REVENUE PLAN

ON CLOUD OR ON-PREMISES

Reinvented Business Intelligence

- **Integrated solution** for managed reporting and business user self-service

- Designed for **ease of use** with a graduated user experience that enables analytic consumers to progress to access and model data, and create visual dashboards and stories on their own

- **Smarter self service** uses built in intelligence to guide data modeling and authoring based on intent

- **Proven governed solution** for performance, security and scalability

INTUITIVE
WEB BASED
ON CLOUD OR ON-PREMISES

Smart Data Discovery

- **Easy to use analytics**
  - With natural language interaction for business user exploration and effortless visual discovery

- **Unbiased data discovery**
  - Out-of-the-box data patterning removes the bias from data discovery
  - Provides recommended starting points for analysis and targets for prediction

- **Sample use cases**
  - Sentiment, trends, retention, churn, productivity, effectiveness, etc. across Sales, Marketing, Operations, Finance, Support, HR and IT

IBM **Watson**
Analytics

CLOUD BASED, DIGITAL
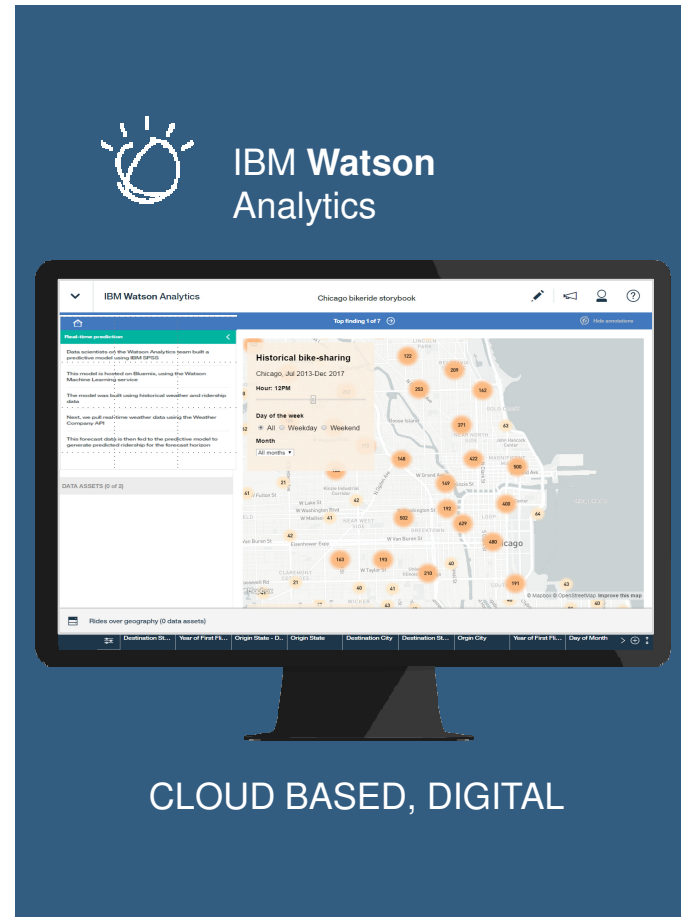
Content Analytics

- **Powerful Content Analytics**
  - Better decisions made by business users with the aid of trends, patterns and insights (both known and unknown) previously trapped inside unstructured data in enterprise systems, external sources, public and private clouds, etc.

- **Cognitive Exploration (aka "Enterprise Search")**
  - Leverages machine learning techniques such as Natural Language Query (NLQ) helps guide users by asking questions in conversational language to the information they seek

- **Hybrid cloud capabilities that link Watson Explorer with Watson Developer Cloud**
  - Enhances, scales and augments human expertise when using Watson Explorer

IBM **Watson** Explorer

Predictive Analytics

- **Easy to use:** "drag and drop" visual workflow

- Automated data modeling

- **Automatic data preparation**

- **Advanced capabilities:** text analytics, entity analytics, scripting

- Extended support for open source

- **Code-Free Deployment at Scale:** Activating Analytics
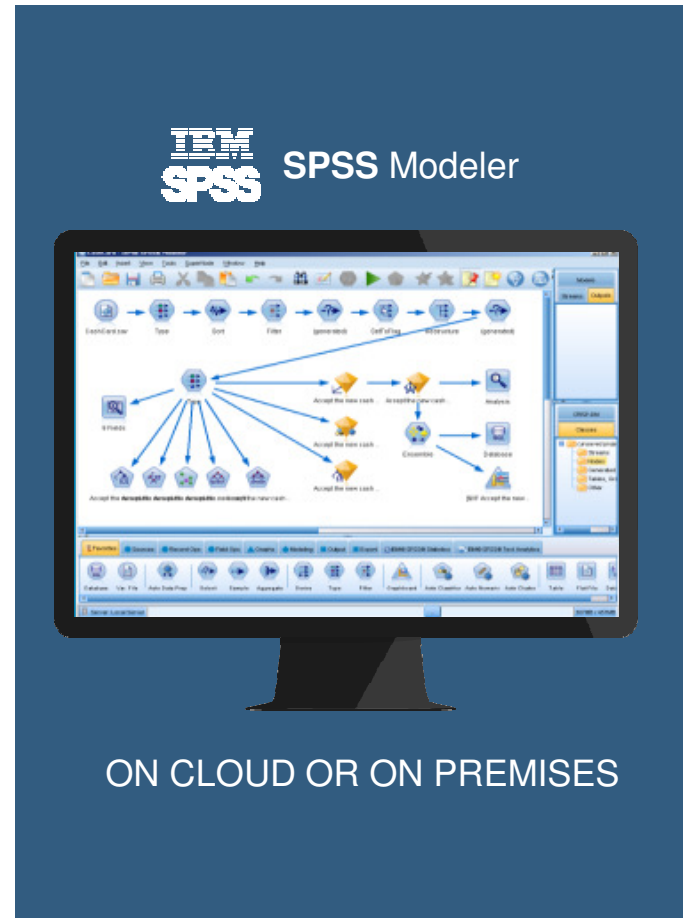
- Advanced Model Management
- In-Database/In-Hadoop

- Batch/Real-Time/Streaming
- Point of Impact (Analytical Decision Management)

Parallel
- ✓ Optimized for big data environments
- ✓ Reduce network traffic
- ✓ Improved processing speed

In-Database
- ✓ Reduce data movement SQL pushback
- ✓ Optimize performance with in-database adapters
- ✓ Increase analytic flexibility with in-database mining

IBM SPSS **SPSS** Modeler

ON CLOUD OR ON PREMISES

IBM Analytics

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https://ibm.onthehub.com/