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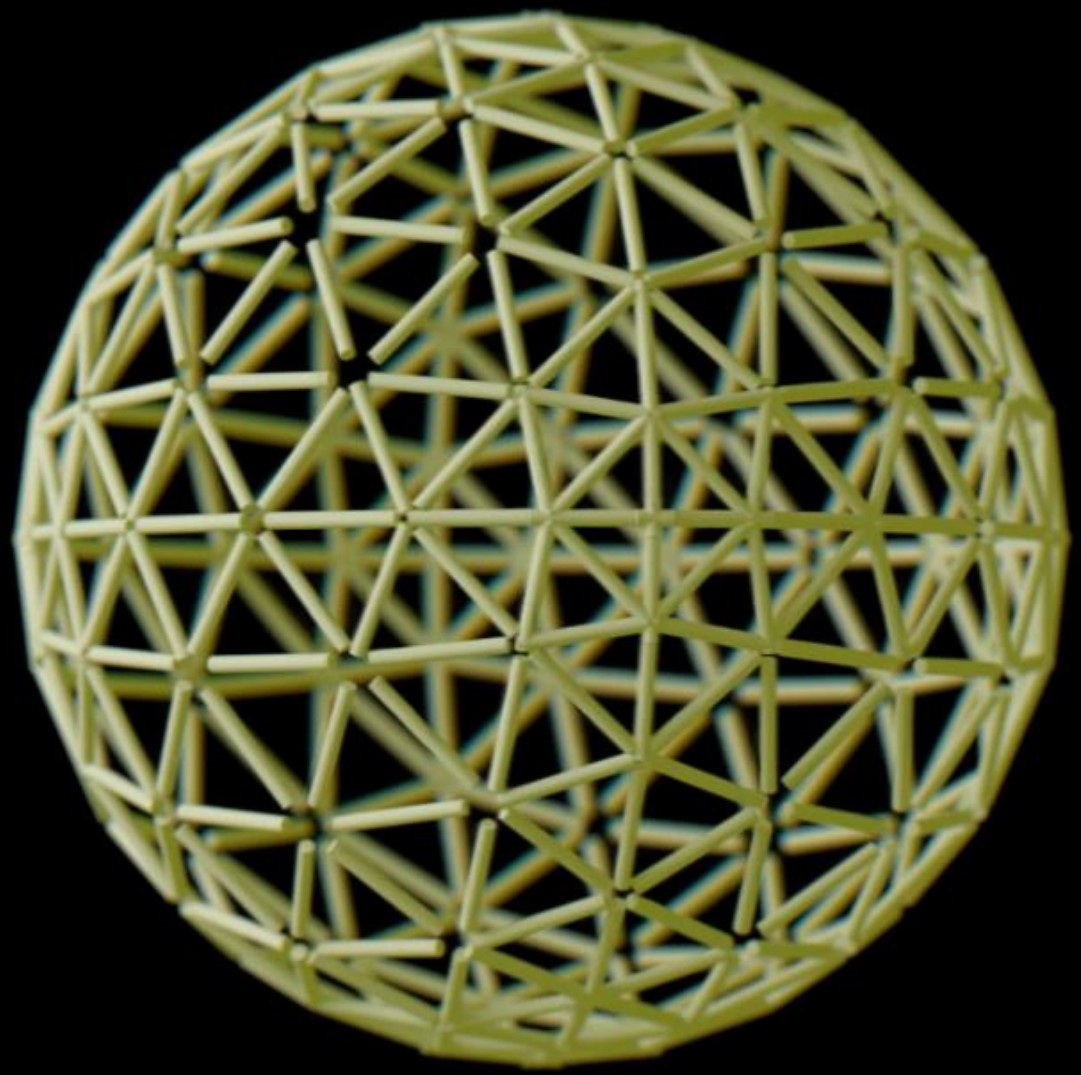


Big Data at Deloitte

MAEBD

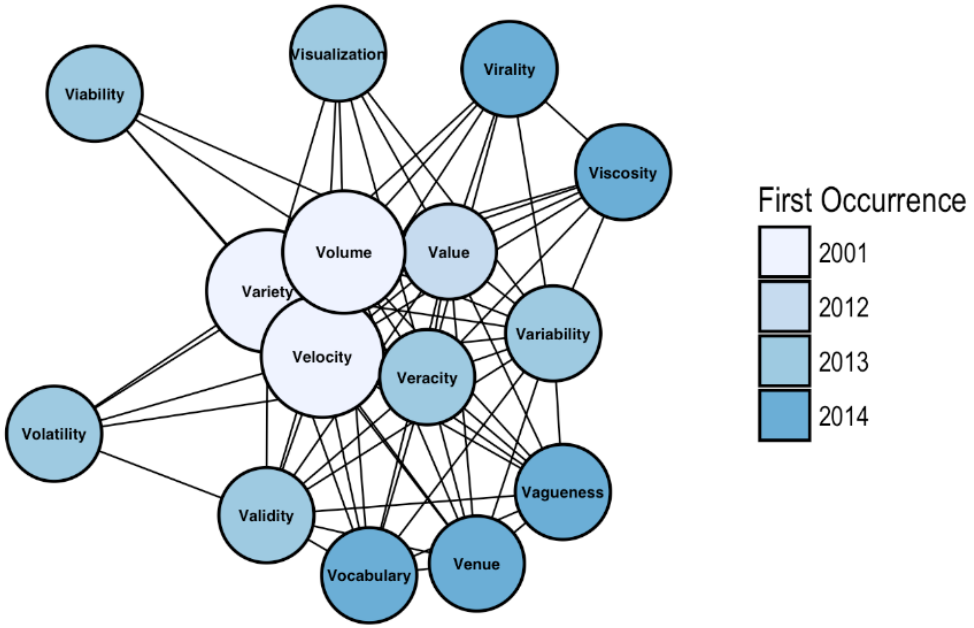
March 2018, Deloitte

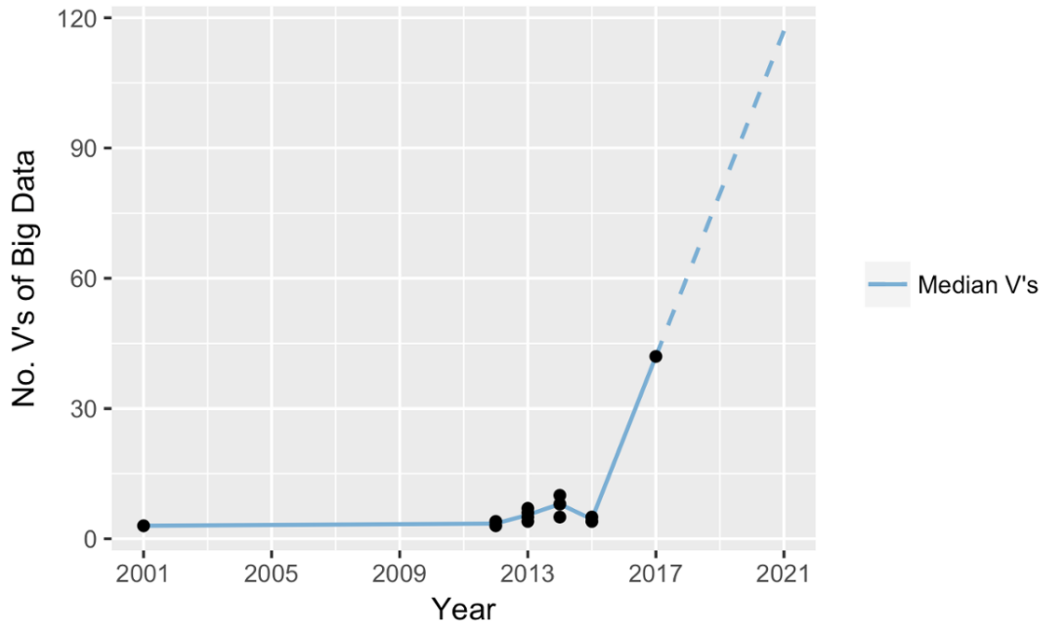
Big Data

"How Many V's?"

Big Data
How many V's?

The 42 V's of Big Data by Tom Shafer





Ref: https://www.elderresearch.com/company/blog/42-v-of-big-data

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Deloitte

Who are we?

Deloitte
Who are we?

Deloitte.

- Deloitte is one of the Big Four, accounting and consulting firms.
- Considered the biggest consulting firm since 2015

	2017	2016	2015	2014	…
Revenues (000 000 000 of dollars)	$38.8	$36.8	$35.2	$34.2	…
Nº of professionals	263,900	244,400	225,000	210,400	…

Deloitte is present in more than:

150 Countries worldwide

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Deloitte
Who are we?

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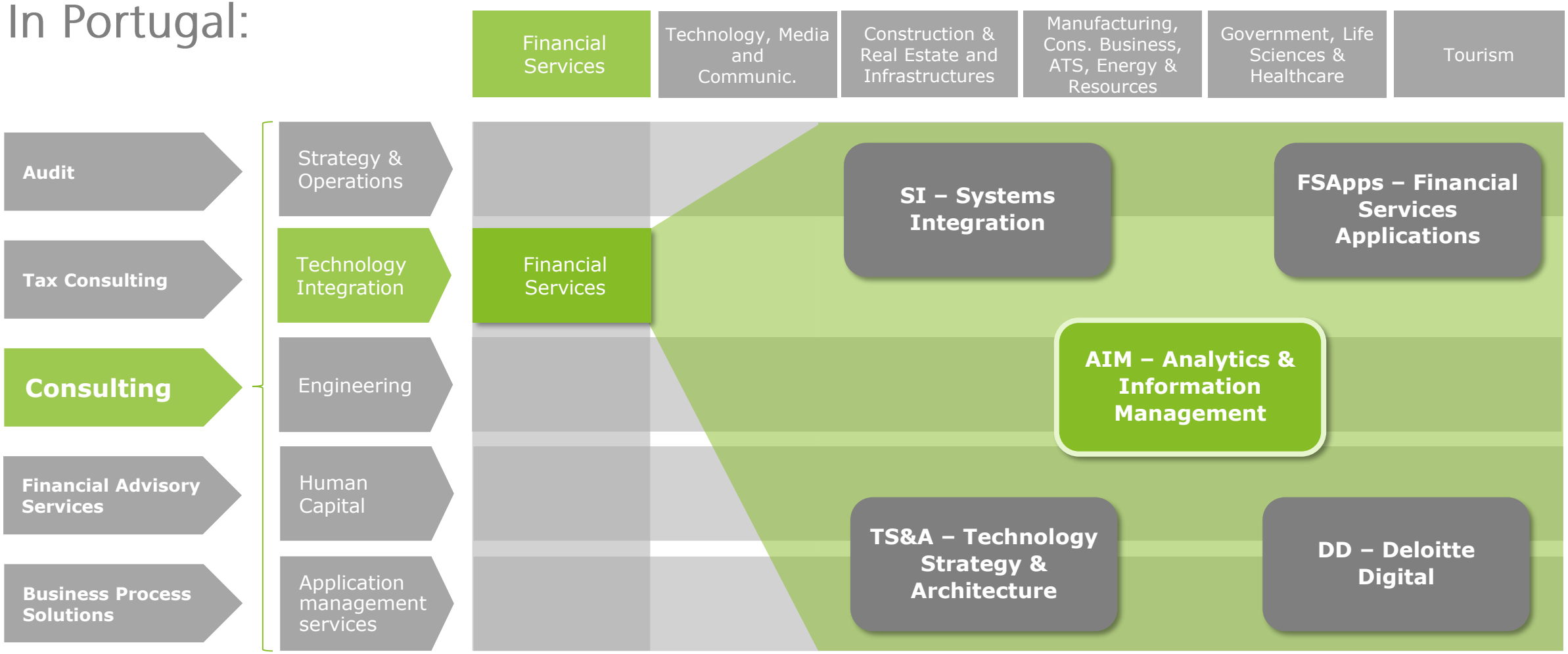
In Portugal:



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Deloitte
Our AIM Group

Deloitte.

Focusing on Financial Services Industry, we are specialists in providing comprehensive, **integrated solutions to the banking and insurance industry**.

We deliver technologies and applications to support **data management, performance management and advanced visualization mechanisms, enabling the investigation of past business performance** in order to gain insight and drive business strategy for our clients

OUR MISSION

3 AREAS OF FOCUS

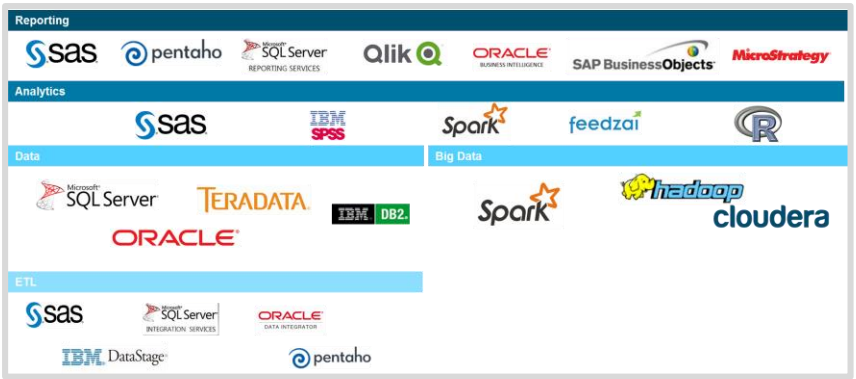
PROJECTS IN 12 COUNTRIES LAST YEAR

OVER 50 PROFESSIONALS FOCUSED IN AIM

Area	Description
BI Foundation	Traditional Information Management activities such as Data warehousing, Reporting, Business Applications like Finance, Risk, Marketing
Big Data & Real Time	New technology to handle huge amounts of information, structured and unstructured data, both in batch and real time mode
Data Science	Advanced analytical modelling technics, cognitive engines and artificial intelligence and machine learning algorithms

Low investment

Medium and high investment



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Our Interest in Big Data

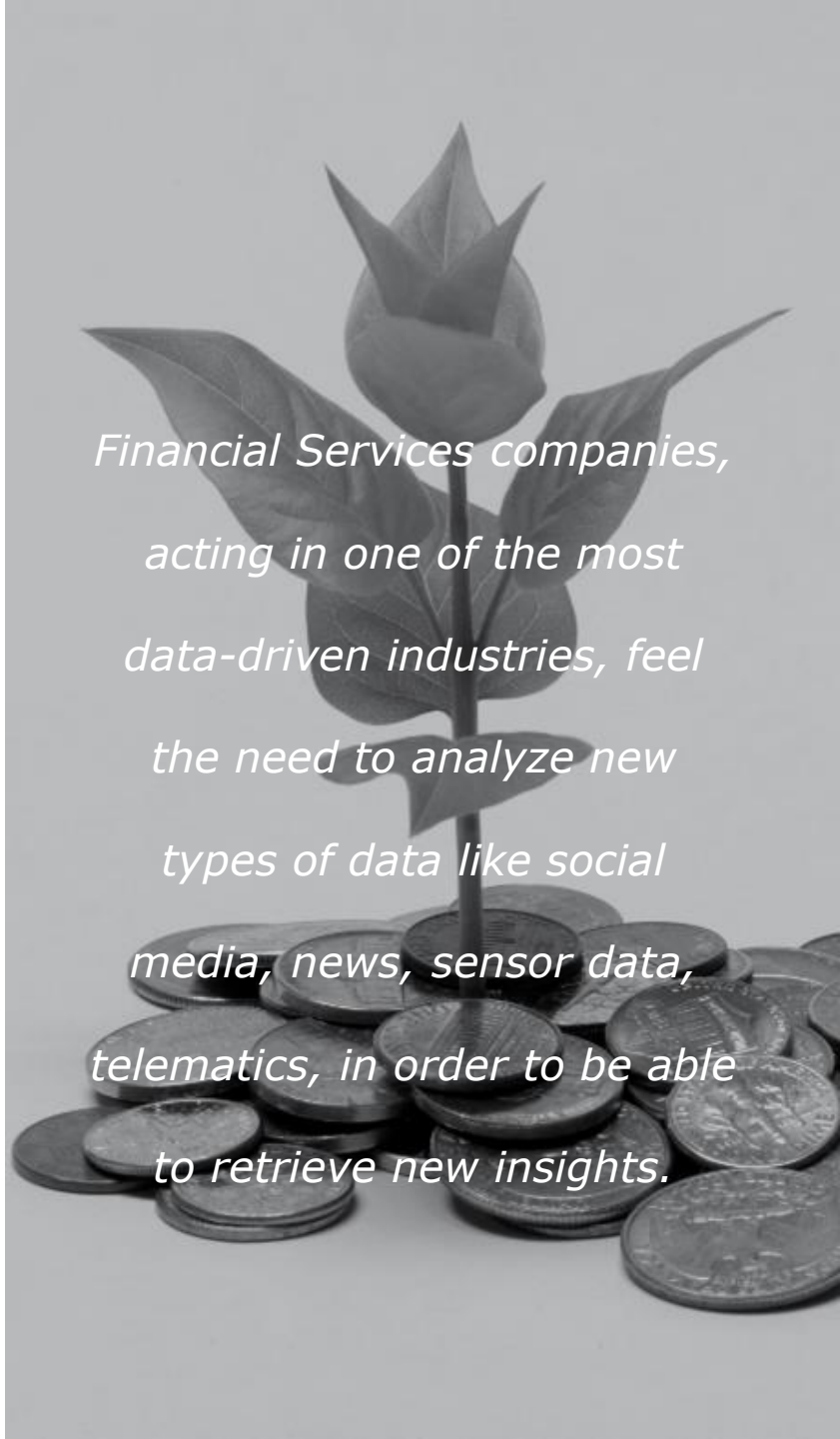
"It's not about ideas. It's about making ideas happen."

Big Data Applied

Relevance of Data across industries

Industry Segments	Relevance of Big Data			
	Overall	Volume	Velocity	Variety
Banking & Securities	High	High	High	Low
Industrial Products & Services	High	High	High	Medium
Insurance	Medium	Medium	Medium	High
Retail	Medium	High	Medium	Low
Media	Medium	High	Medium	High

Low Medium High



Financial Services companies, acting in one of the most data-driven industries, feel the need to analyze new types of data like social media, news, sensor data, telematics, in order to be able to retrieve new insights.

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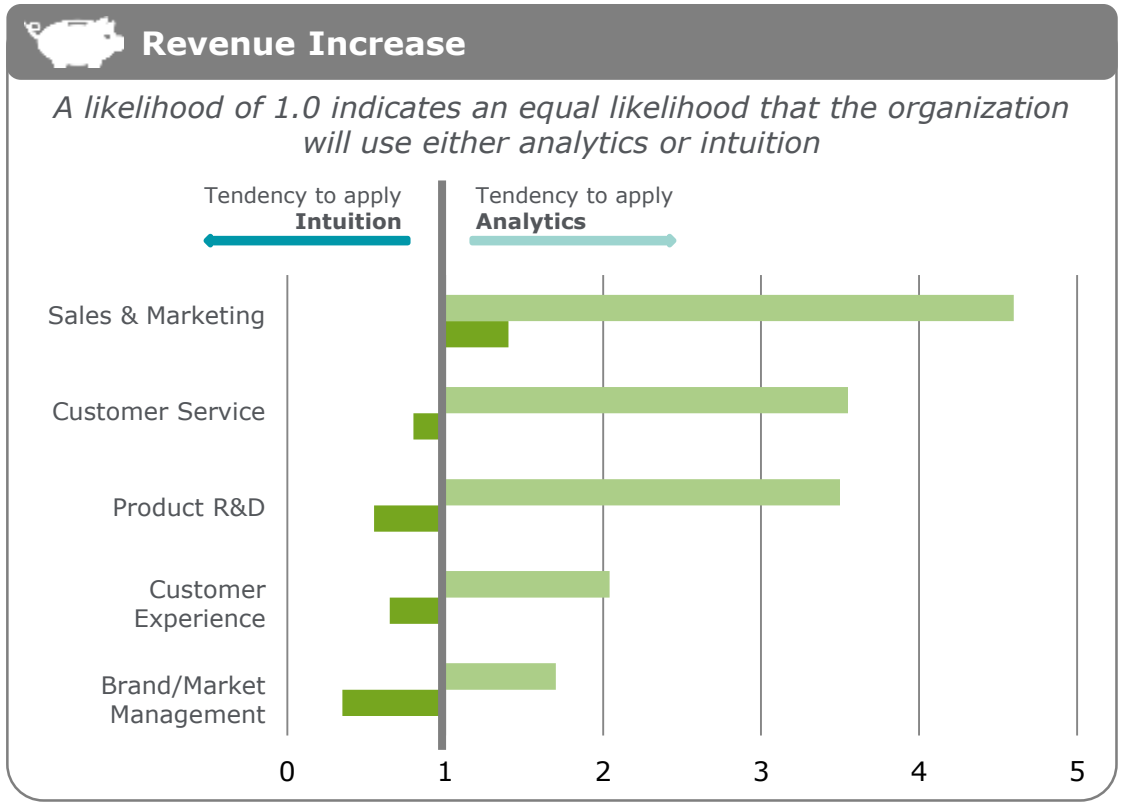
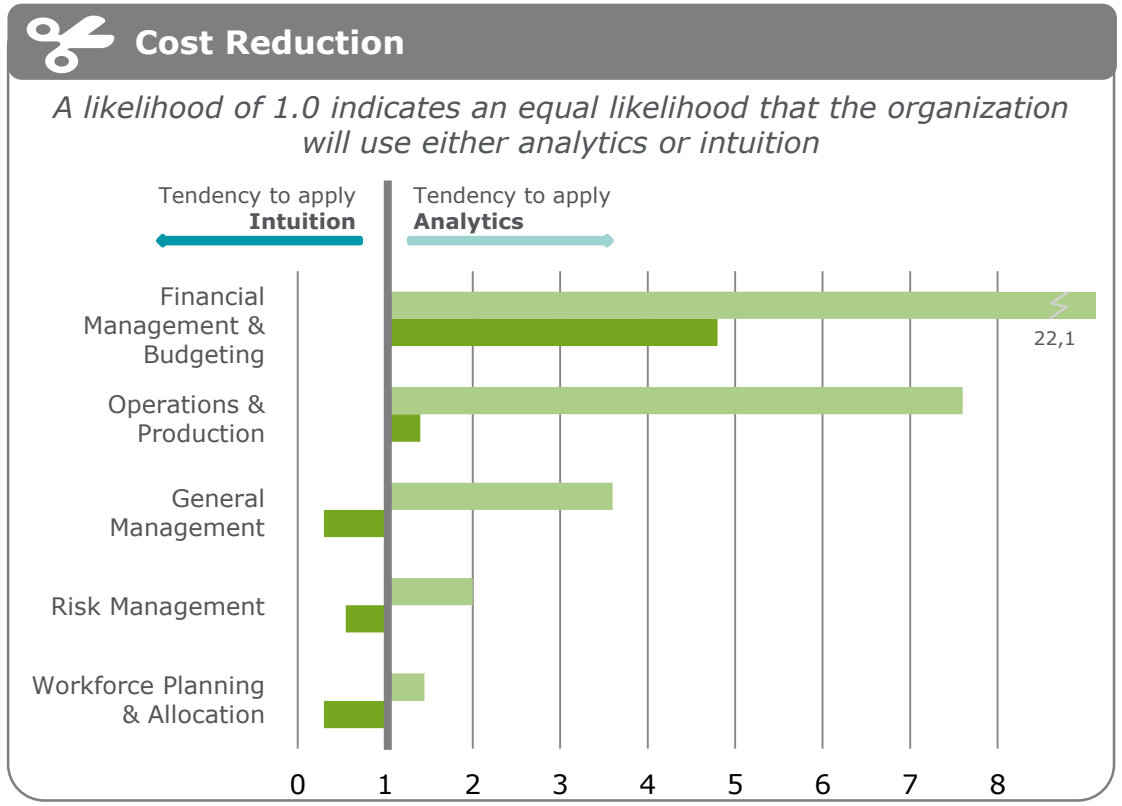
Big Data Applied
Financial Services Context

Top performers are ~4 times more likely to apply analytics to activities related with revenue increase compared with lower performers



Top performers are ~5 times more likely to apply analytics to activities related with cost reduction compared with lower performers



Source: MIT Sloan

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Big Data Applied
Financial Services Use Cases

Relevance of the Use Case

	Banking	Insurance
IoT	• N/A	• Pay-as-you-drive solutions • Prototyping on Health Insurance with activity bands.
Fraud Detection	• Analyse all the transaction to detect fraudulent payments and money laundry activities.	• Detection of Fraud rings • Frauds exposed on social media
Improve Customer Experience	• Optimization of account-opening.	• Simplify the process of claims submission and insurance quoting
Personalized Offers (Cross / Up Sell and Next Best Offer)	• Use all the data available to suggest the best options to customers on a day-to-day base.	• Customized every insurance policy with the specificities of the particular customer.
Cost Reduction	• Optimization of the DW • Solutions that require big data crunching (e.g. Impairment).	• N/A
Explore new types of data (Unstructured)	• Leverage on social media to better engage with the clients.	• Take advantage of images for claim processing and voice for call-centre operations.

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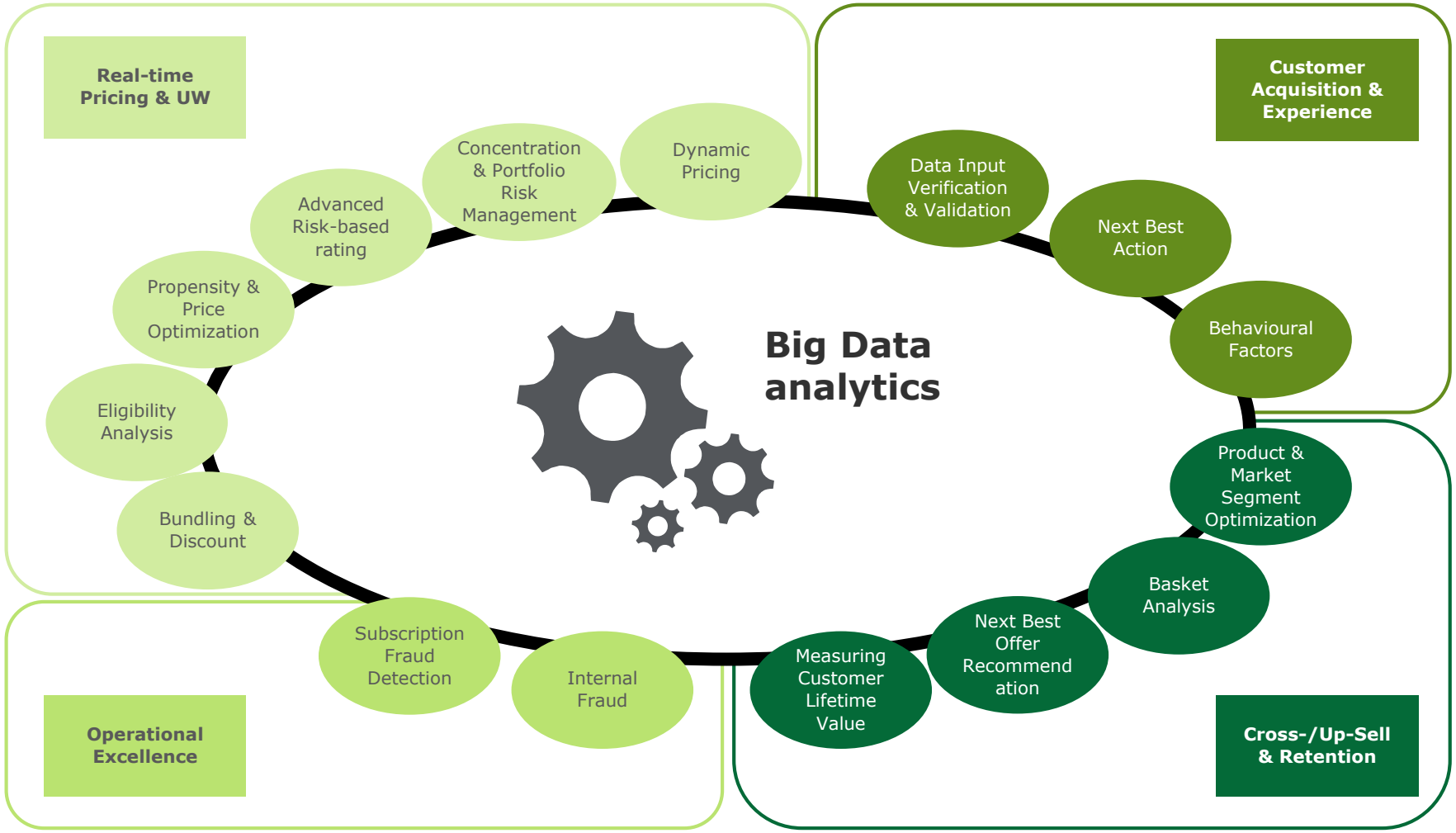
Big Data Applied

How Big Data Analytics is Shaping the Future of the Financial Services Industry



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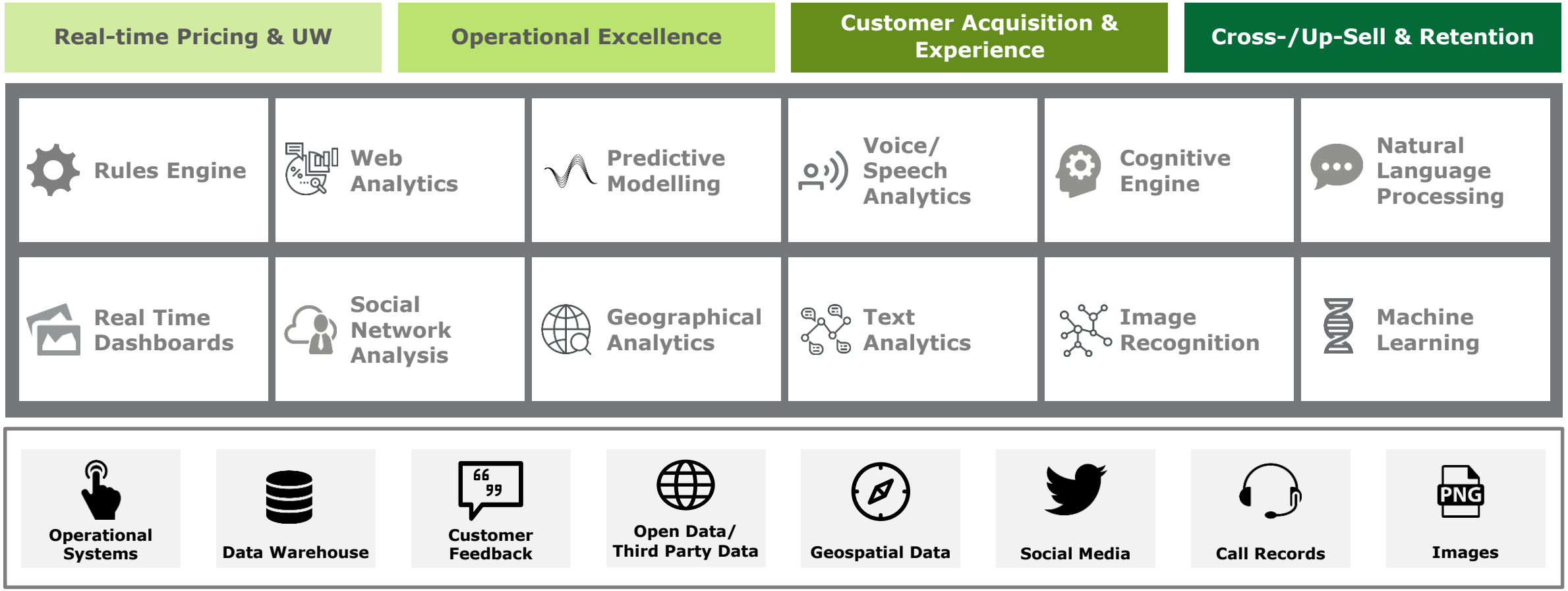

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Big Data Applied
Deloitte solutions

Delivered	Solutions	Prototypes

FAST

CIA call intelligence agent

esmi

Operational Systems

Data Warehouse

Customer Feedback

Open Data/ Third Party Data

Geospatial Data

Social Media

Call Records

Images

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Big Data Applied

FAST – Disrupting the quoting insurance process

insurance quoting process	**Expectation**	**Reality**	**FAST**
Customer perspective	• The customer just needs to provide basic information; • The customer assesses options and compares pricing.	• The customer considers the process too **onerous**, with **many questions** to answer; • The customer is required to have **full knowledge** of insurance products and usages.	• Part of the customer and risk data is automatically **pre-filled based on minimal input**; • A **tailored quote is presented** to the customer, considering his/her needs and profile.
insurance company perspective	• The company provides a quote, coverage options, and pricing to the customer based on collected information and risk factors.	• The company discovers **human errors** or **fraudulent information** when underwriting policies; • The company usually presents one of several pre-defined quotes or allows the customer to select among all the available options.	• The company knows the **information collected is correct**. • The company is capable of presenting the **best offer** to its customer.

Predictive Underwriting and Rating

An upstream engine that builds on top of traditional rating and underwriting modules, enabling data prediction, pricing optimization and agility.

FAST

Tailor-made Recommendations

A sophisticated engine to drive customers' decisions in the insurance space, by leveraging both content-based and collaborative filtering methods.

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Big Data Applied
CIA

The need for Voice Analytics

Customer experience is one of the fundamental shifts to traditional business models.

Deloitte's life insurance report 2015

60%

Contact centres are adopting data analysis

Dimension data report 2015

85%

Of organizations view Customer experience has a competitive differentiator in contact centres

Deloitte 2015, Global Contact Centre Survey

Emotions

9

FINAL EMOTIONS

RECEPTIVENESS
HESITATION
STRESS
UNCERTAINTY
UPSET
ANGRY
ENERGY
EXCITEMENT
PASSION

Use Cases

Willingness to buy

Agent Performance

Fraud

VOICE ANALYTICS

The CIA Solution

Signal options:

- Choose to analyze emotions of yourself (agent), the client or both. May also analyze a pre-recorded file.
- Use the application standalone (less accurate) or in a distributed approach

Traffic light:

- Gives an overall status of how the call is progressing according to a use case (e.g. Willingness to buy)
- It also presents a historical vision to evaluate progress.

Single Emotion Analysis:

- It shows the immediate analysis of the emotion (%), the historical progress (graph) and the average considering all emotions (bar).
- This analysis is present for 9 emotions: Receptiveness, Hesitation, Angry, Uncertainty, Upset, Stress, Energy, Excitement and Passion.

Big Data Applied
ESMI

Engine for Social Media Insights
The new generation of the Underwriting Process

An engine capable of extracting and processing specific user **Social Media Data** in an agile and fast way providing personality metrics about the customer and though improving the **Underwriting Process**

esmi provides a set of metrics for the rating system and a dashboard application that can be manually accessed by an **underwriter** or **claim handler**

ESMI Engine

Orchestration

cloudera

- Tailor-made rules
- Real-Time

Artificial Intelligence

IBM Watson

- Sentiment analysis
- Visual recognition
- Personality insights

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Big Data Challenges

“If it doesn’t challenge you, It doesn't change you”

Big Data Challenges
Data sources and types

Data Sources and types

Data Sources

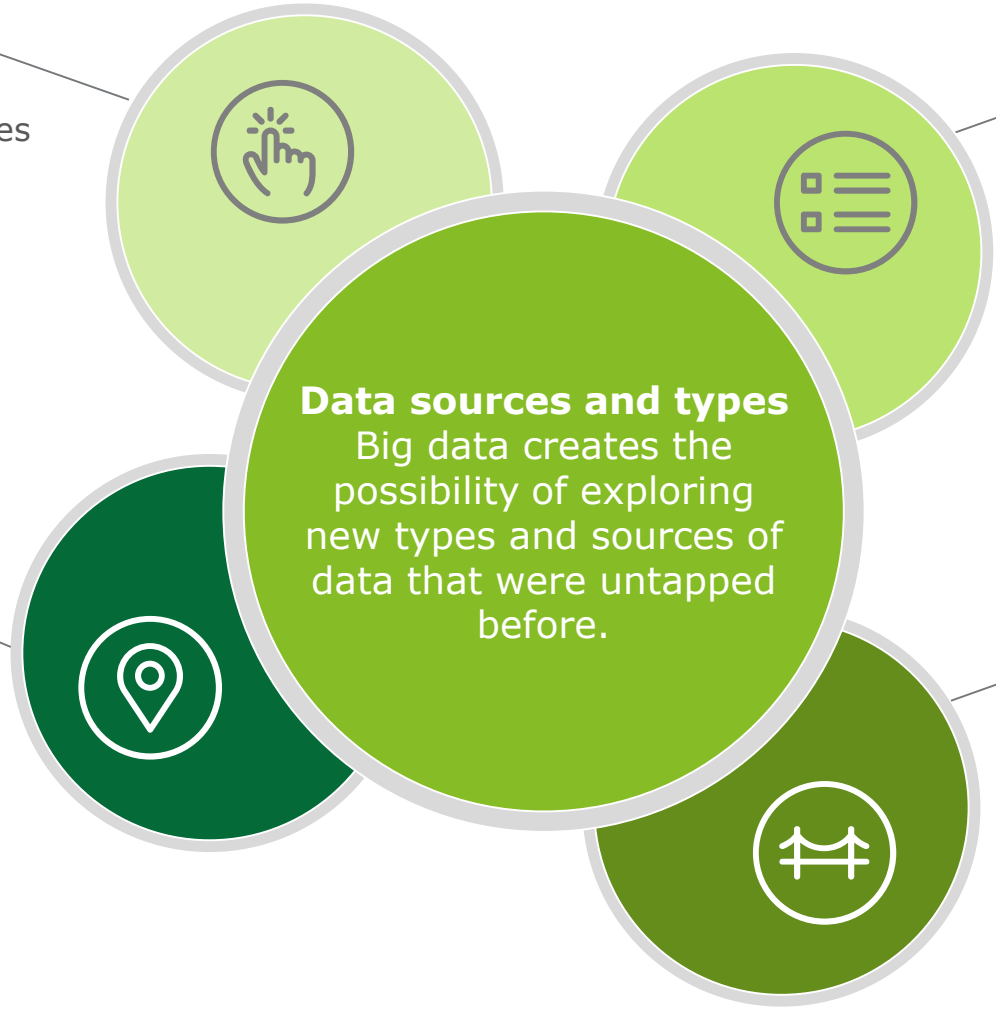
New sources of data, that were previously discarded due to high volumes or velocity, are know possible to be analysed and explored:

- Sensors
- RFID's
- IoT devices
- Streams
- Social data
- Machine logs

Where data resides

With these new tools and capabilities organizations started to look to **data that is outside of the organization perimeter**.

- Internal data
  - Mainly customer and transactions data
- External data
  - News & Social Media
  - All public web data



Data Structure

Big Data allows to tap into the information in **unstructured data** (without a predefined structure). **80%** of the data available is unstructured

- Structured
  - Tables structures
  - Some files (XML, CSV)
- Unstructured
  - Video, Audio, Images
  - System logs

New Competencies

New competencies are required to operate in this world. These cross several fields:

- Knowledge about the business
- Mathematical knowledge
- Computer science knowledge

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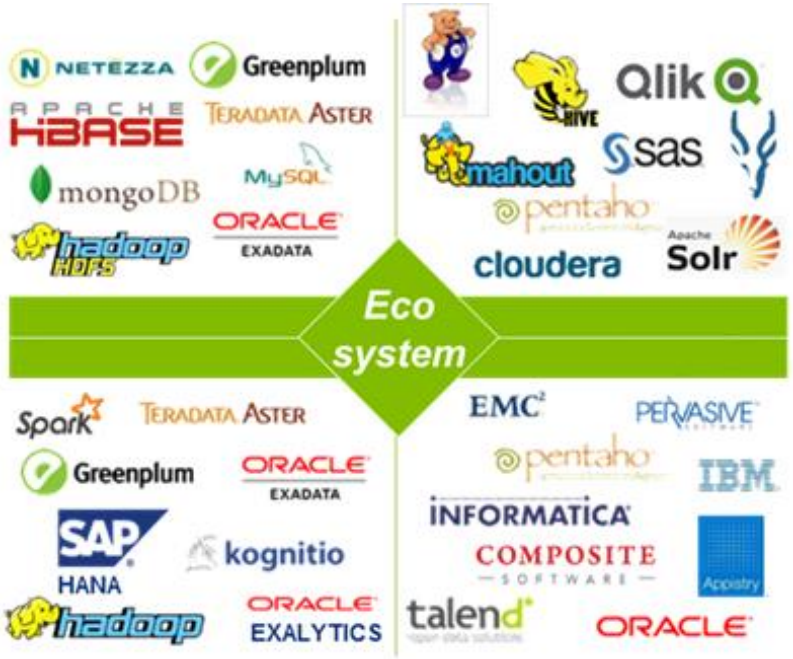
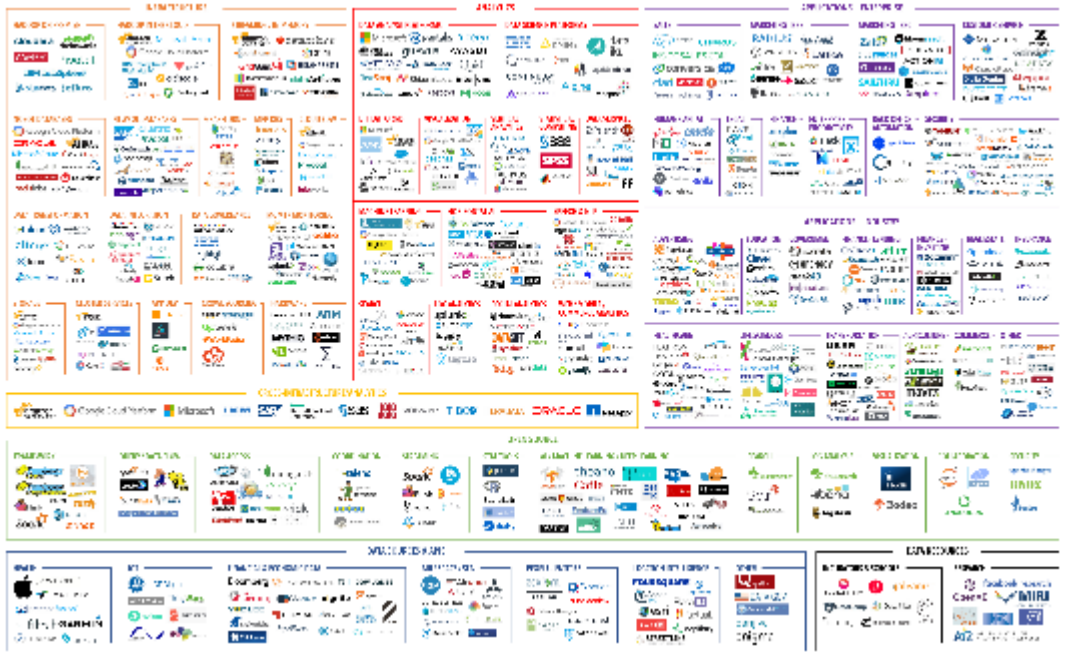
Big Data Challenges
Landscape

Landscape Evolution

The number of Big Data solutions have exploded in the last few years:



Early days



Source: mattturck.com/bigdata2017

2017

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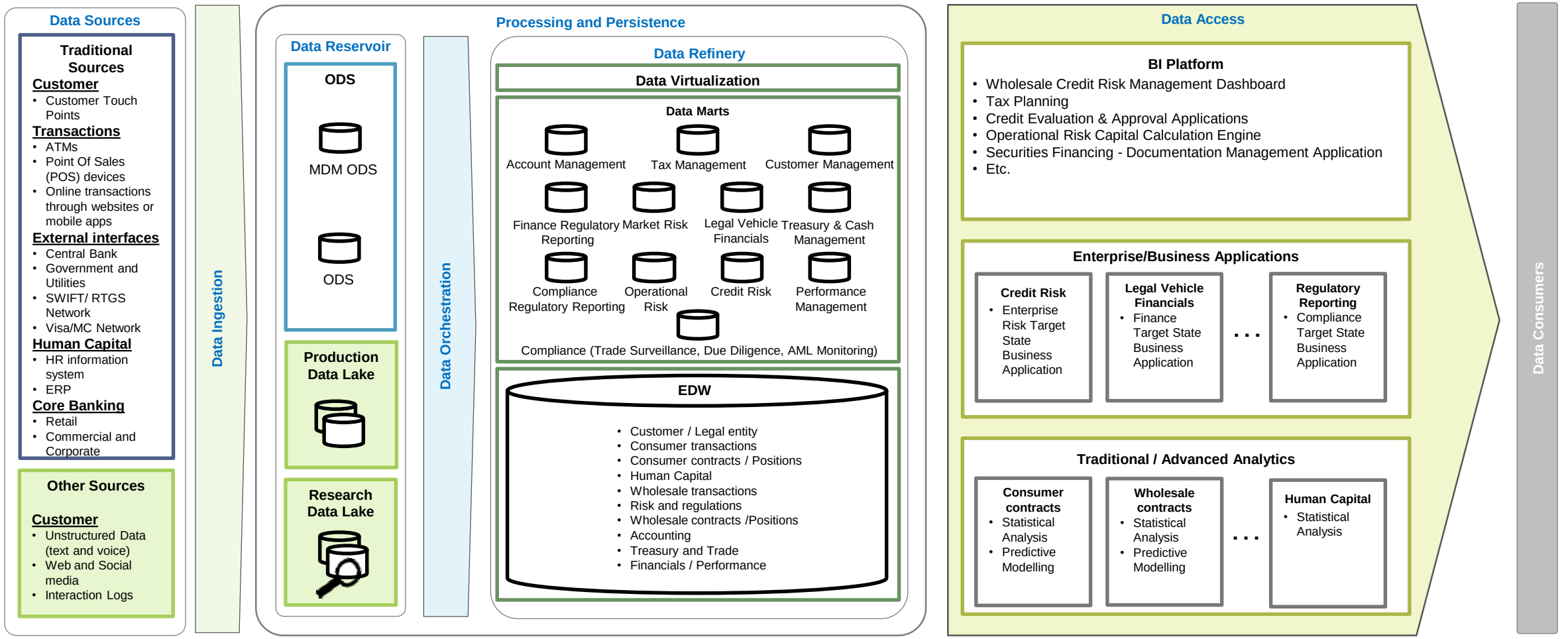
Big Data Challenges
Architecture

Data Architecture



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Big Data Challenges

Challenge for the audience

Challenge #1

Context: The new GDPR (General Data Protection Regulation) will bring changes to all data related activities. New requirements of (overview):

- Right to Access: the right for confirmation as to whether personal data is being processed, where and for what purpose.
- Right to Be Forgotten: the right to have the data erased, to cease further dissemination of data, and to have third parties halt processing of the data.
- Data portability: the right to receive the personal data, which was previously provided in a 'commonly use and machine readable format'.
- Privacy by Design: the inclusion of data protection from the onset of the designing of systems, rather than an addition.

Challenge: Please design possible solutions to comply with the previous GDPR requirements in Big Data solutions, considering approaches like: real-time data streams; ingest first-structure later; schema-out?

Challenge #2

Context: Several organizations are setting up a research lake where it's possible to explore existing data, without any particular objective but rather to try and identify correlations and patterns in the existing data that could help the business (supporting next best offer suggestions).

Additionally most organizations keep what they call a production lake to support all normal data related activities (data ingestion, data reporting).

The research lake typically has more computing intensive activities and usually is separated from production lake to avoid any disruption on normal operation.

- Production lake: Day-to-day usage
- Research lake: Discovery

Challenge: Define the best option of articulation (data transfers, deployments, infrastructure) between a research and a production lake?

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Big Data Challenges
Questions & Contacts

Any questions?

Contacts

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