Information Builders

From Data Quality to Artificial Intelligence

James Cotton – Solution Director

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What is Artificial Intelligence and Machine Learning

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AI is all around us

- Personal assistants
- Autonomous driving
- Speech recognition and automated translation services
- Image recognition

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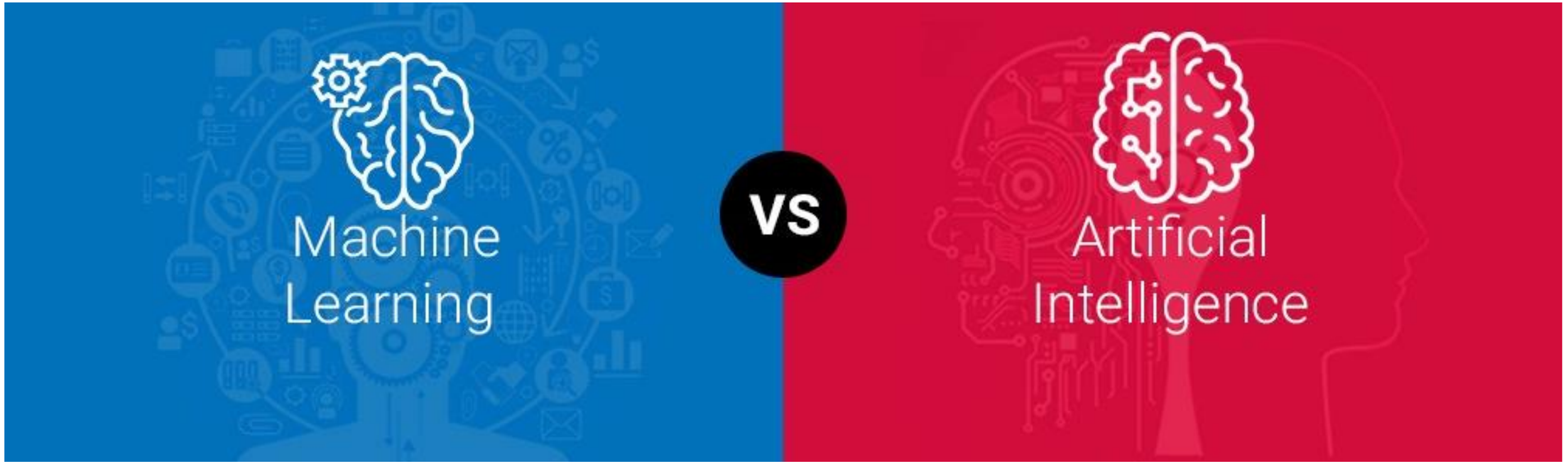

Machine Learning can be defined as a computer program is said to **learn** from experience with respect to some class of **tasks** and **performance** measure; its performance at these tasks improves with **experience**.

Artificial Intelligence has no standard definition so far, but it can be defined as the study of computations that makes it possible for machines or computers to **perceive**, **reason** and **act.**

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Artificial Intelligence

“Don’t be surprised that an AI beat dedicated chess software. Be surprised that it played 1,228,800,000 games in 4 hours”*

* Alistair Croll, It’s automation

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Machine Learning

You can use machine learning to solve certain kinds of AI problems. The basic difference between machine learning and other techniques in AI is that in machine learning, machines learn.

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Machine Learning

- **Representation**:

  how to represent knowledge.

- **Evaluation**:

  the way to evaluate candidate programs (hypotheses).

- **Optimization**:

  the way candidate programs are generated known as the search process.

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What can you achieve with Artificial Intelligence

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3 things AI can do for your company today

- ‘Robotic’ Process Automation
- Cognitive insight
- Cognitive engagements

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Robotic Process Automation

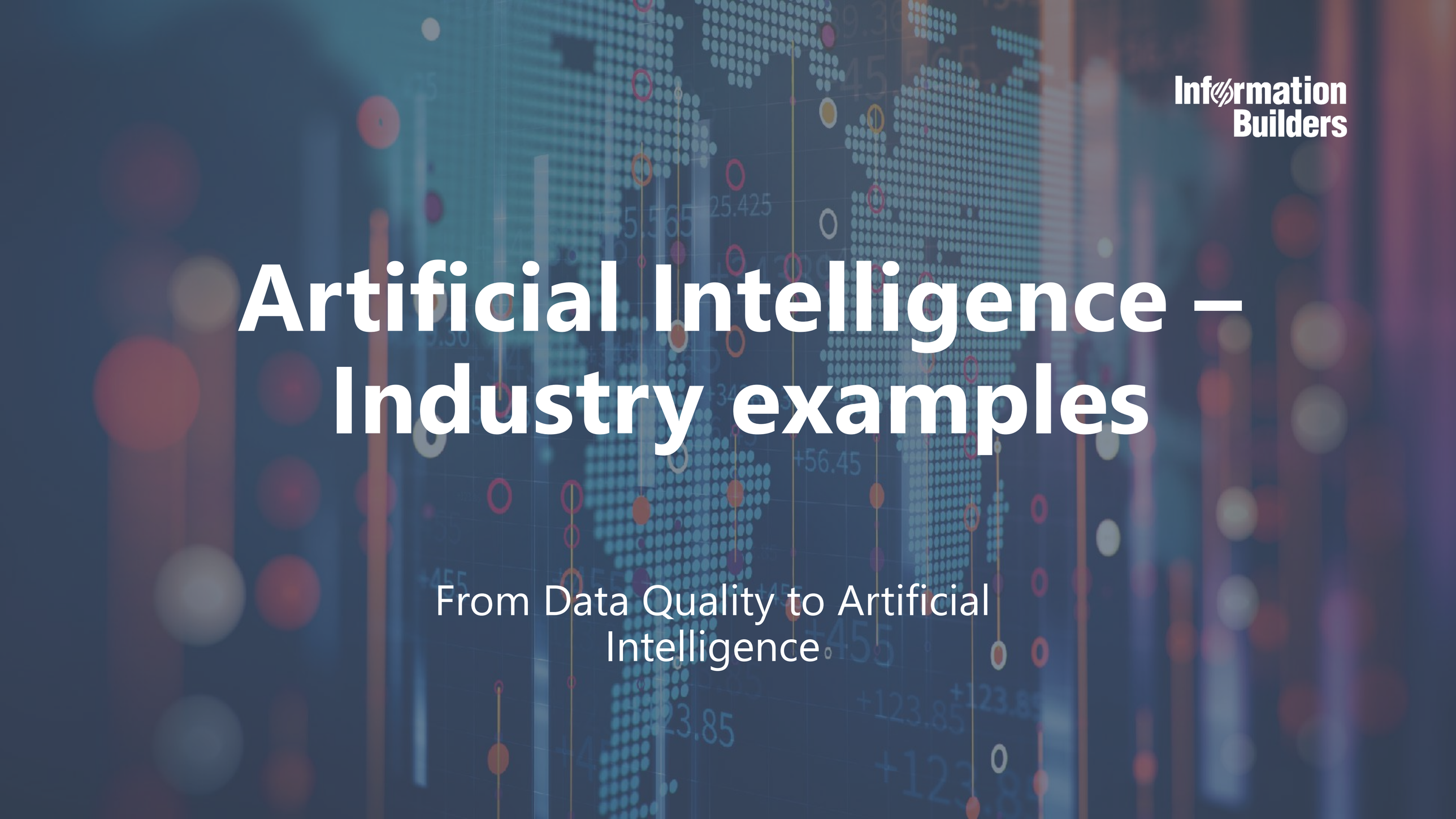
- Transferring data from e-mail and call center applications into systems of record
- Reconciling failures to charge for services across billing systems
- ‘Reading’ legal and contractual documents to extract provisions and highlight key clauses

Cognitive Insight

- Predict what a particular customer is likely to buy
- Identify credit fraud in real time and detect insurance claims fraud
- Analyze warranty data to identify safety or quality problems in manufactured products

Cognitive Engagements

- 24/7 customer service – all in natural language
- Internal sites answering questions on IT, employee benefits and HR policy
- Health treatment recommendation systems that take into account previous treatments and current health status



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Artificial Intelligence – Industry examples

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Healthcare

- Radiology departments use AI to interpret imaging results
- Remotely monitor patients (telehealth) and determine which information should be transmitted to physicians
- AI’s in intensive care can spot patterns in the data before a patient goes into cardiac arrest

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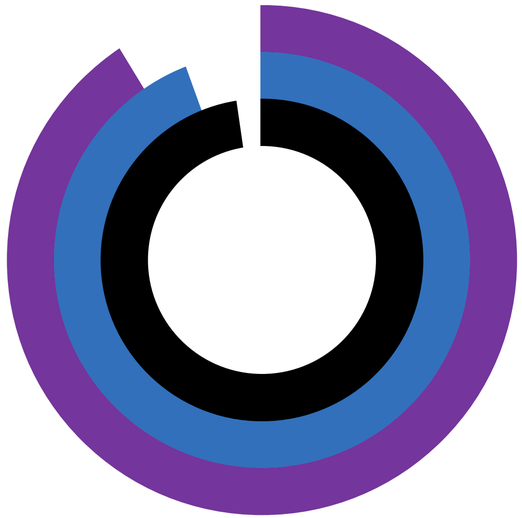
Healthcare

AI & Humans working together



Cancer Detection Accuracy

AI working alone	91%
Pathologist working alone	93%
AI + Pathologist together	99.5%

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Finance

- AI powered portfolio advice and wealth management for investors
- Automated review of legal documents and commercial credit agreements
- Determine the current value of objects and brands without human bias

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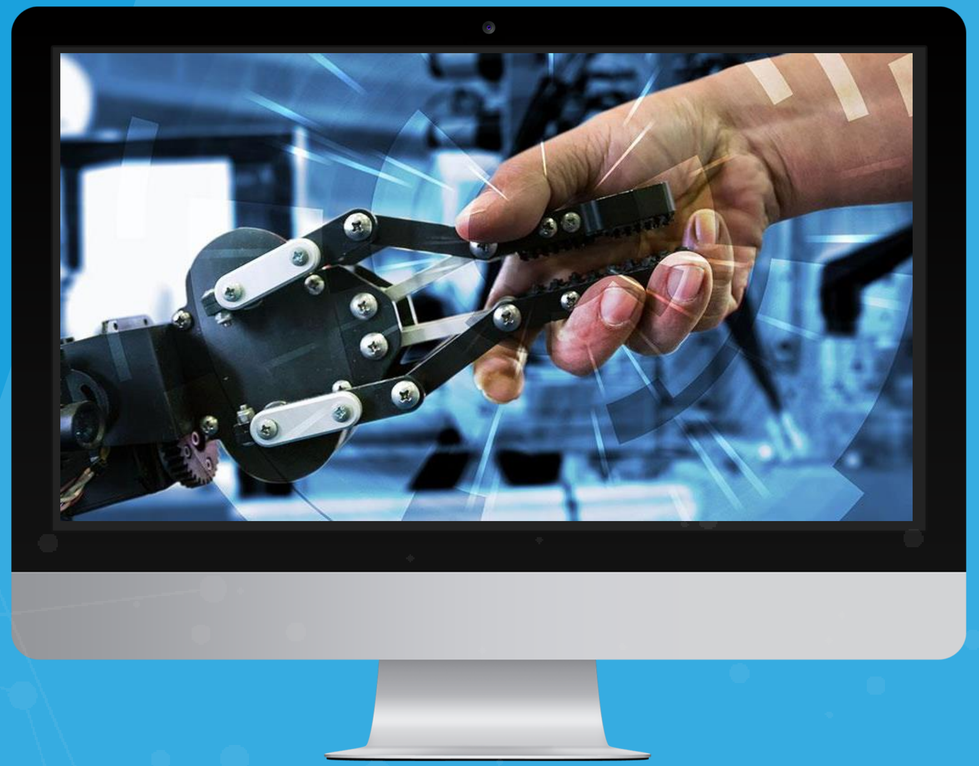
Manufacturing

- AI and Augmented Reality to find defects early on in the manufacturing process
- Align production and raw material intake with predicted demand
- Continual product monitoring with IoT sensors will allow AI to recall early and design better iterations of product.



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What is needed for Artificial Intelligence

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Data

Artificial Intelligence and Machine Learning rely on data. **Your data.**
The data that accurately represent your business, your customers and their needs.

> “If your data is bad, your machine learning tools are useless*”

* Thomas C. Redman, Harvard Business Review

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Data

- More Data sources lead to better AI
- Models derived from non cleansed data are less reliable
- Deduplication of data points increases reliability

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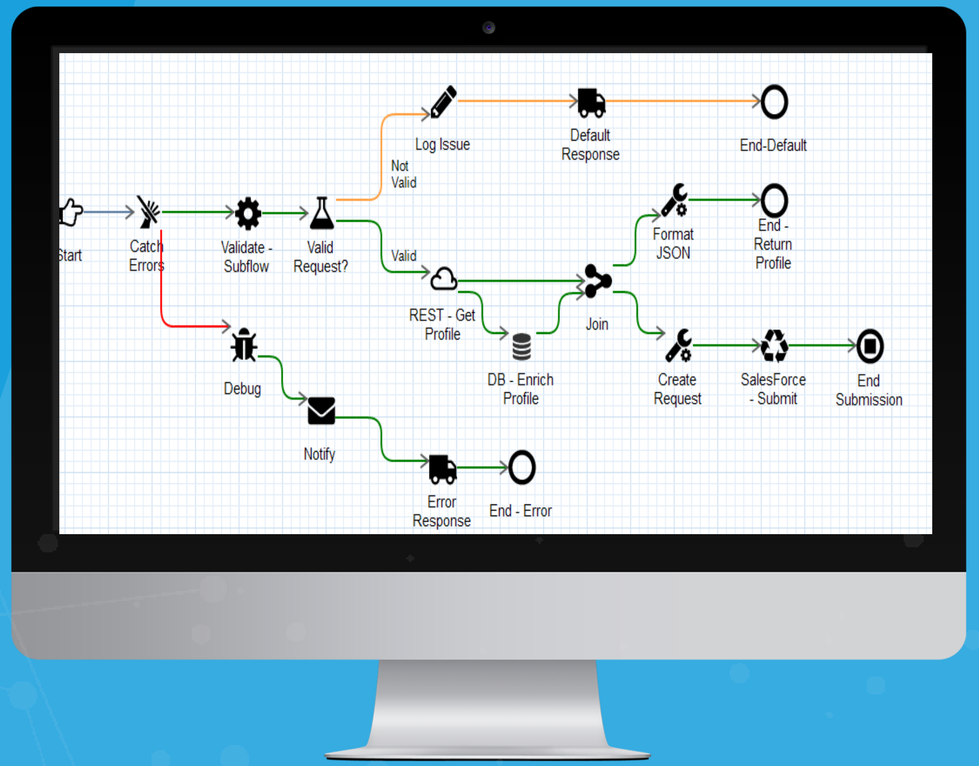
Data - Integration

More Data sources lead to better AI

- Integrate any source of (big) data
- Real time and batch
- Delta processing, data at rest, streaming data



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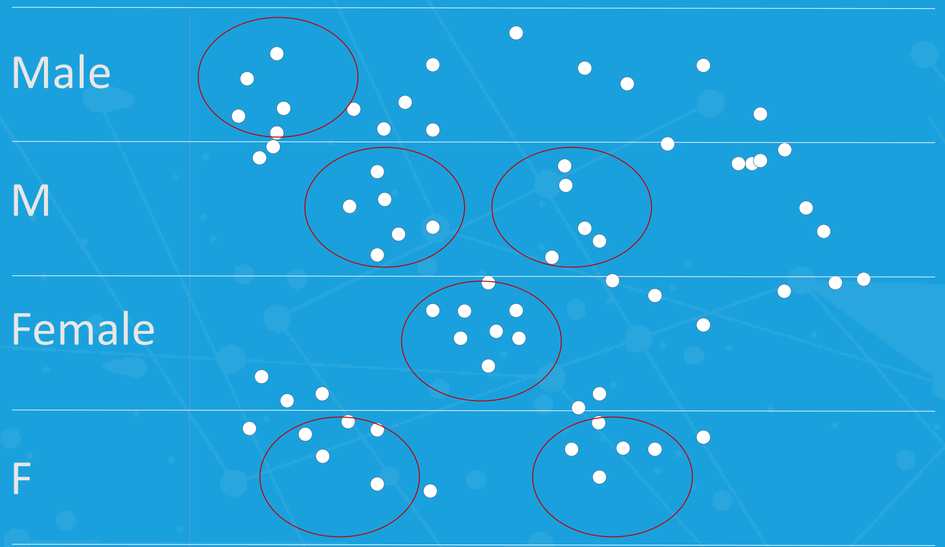
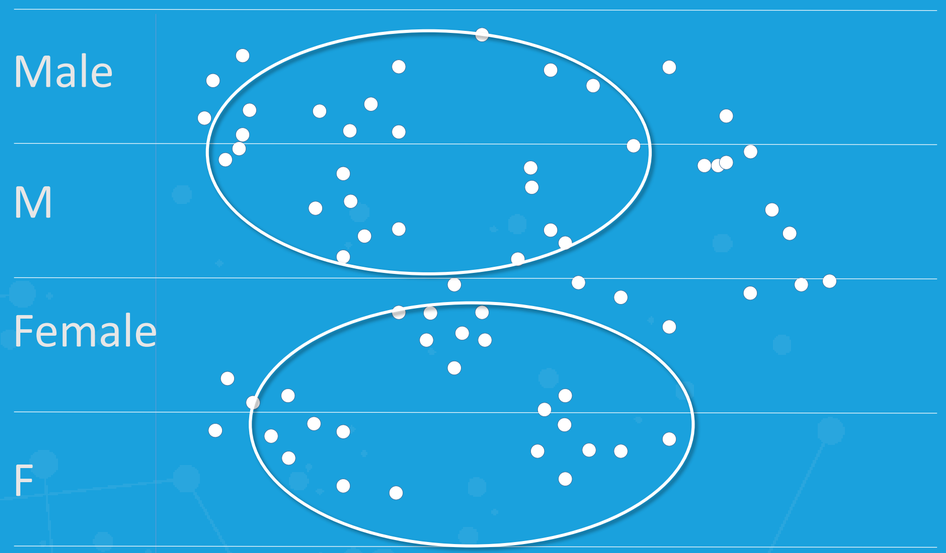
Data Quality

Models derived from non cleansed data are less reliable



Red groups : before cleansing



White groups: after cleansing

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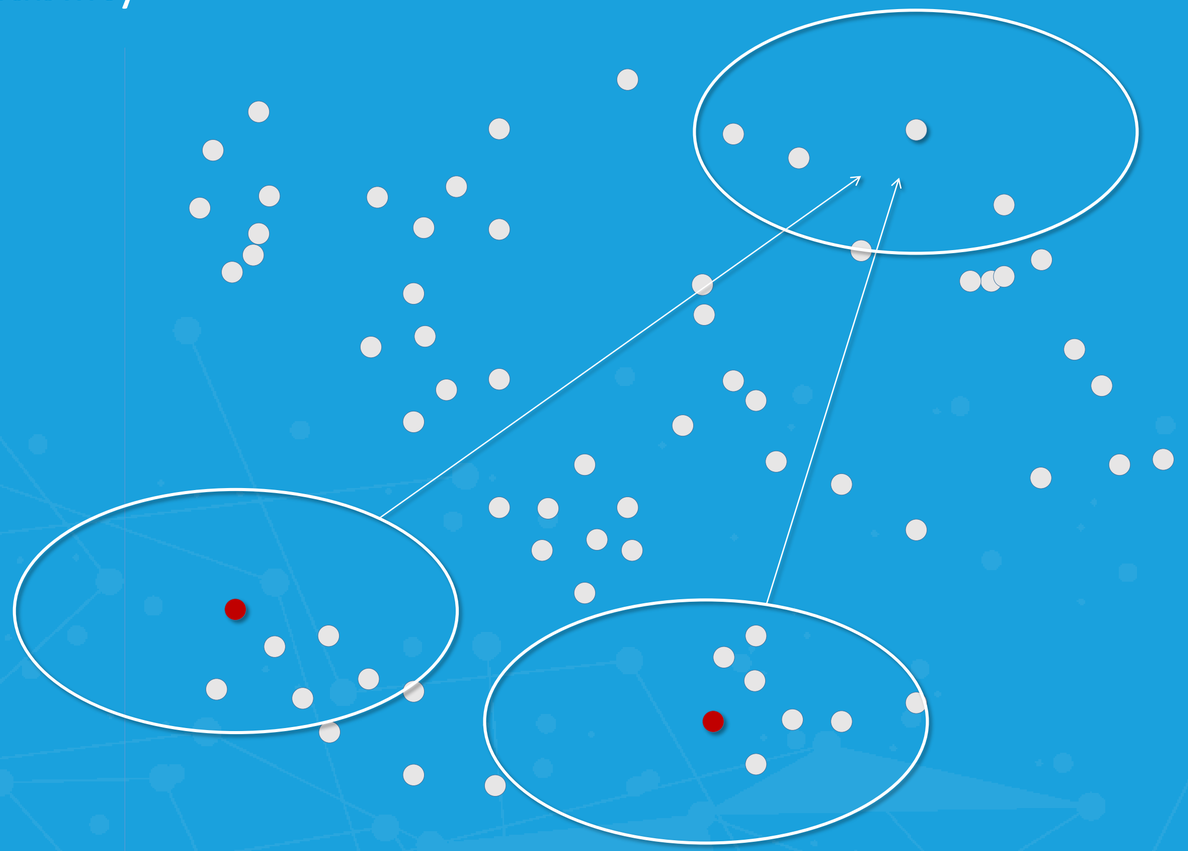
Data Quality

Deduplication of data points increases reliability



- Before Match and Merge
- After Match and Merge

Butterfly effect in AI

- Small variations or errors in input data can massively skew the results

> “The number and complexity of contextual variables mean that Deep Patient simply cannot explain its diagnoses as a conceptual model that its human keepers can understand.*”

* David weinberger, – “machine learning widens the gap between knowledge and understanding”

Thank You

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