DATA LAKEHOUSE – THE BASIC ELEMENTS

A presentation by
W H Inmon

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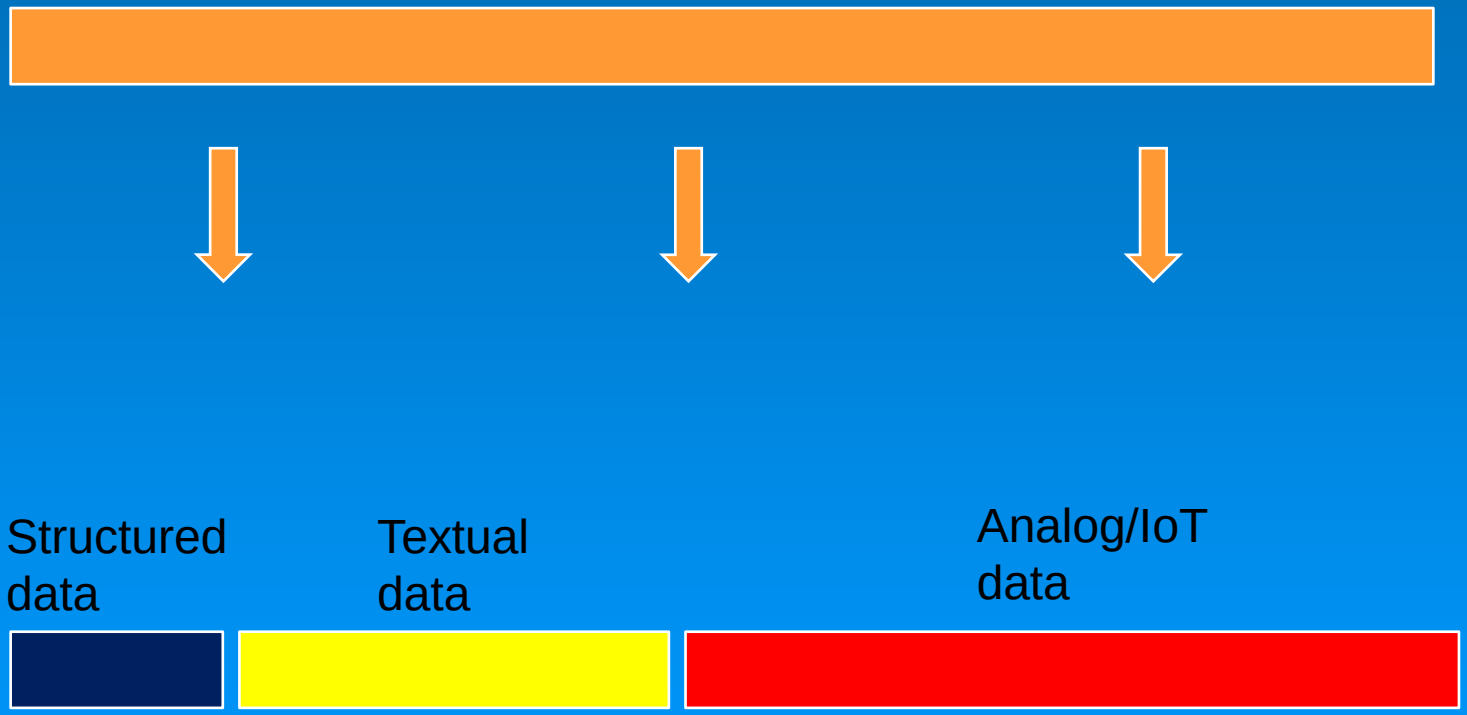
All data in the corporation



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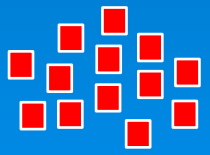
Structured data

Textual data

Analog/IoT data



Each of the different types of data have their own unique characteristics

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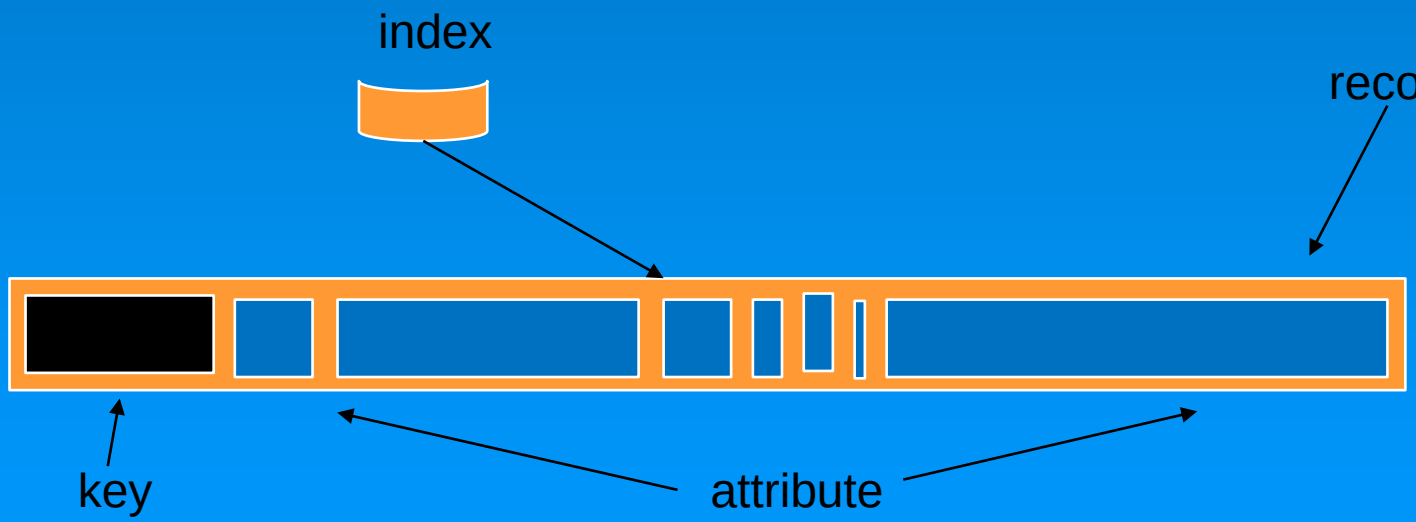
Structured data

Usually transaction based

Bank transactions
Point of sale
Telephone call
Payments made
Payments received
……



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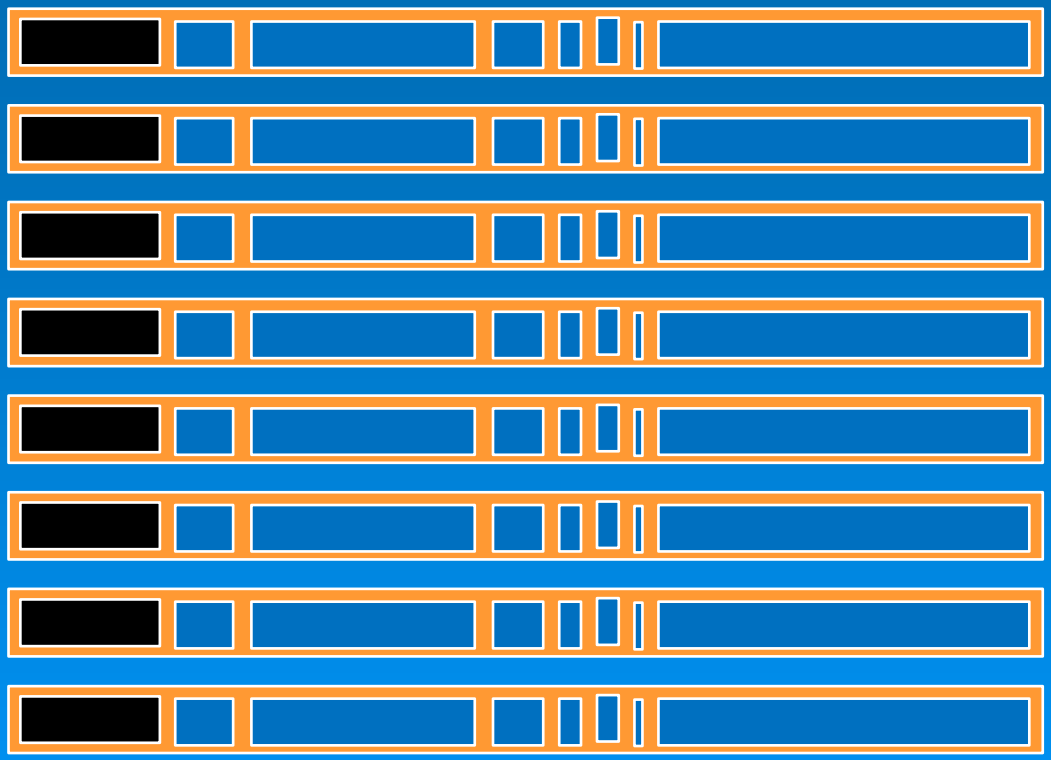
Structured data



The same record type is repeated
Each record has different contents

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Textual data

Text is found everywhere

Medical records
Contracts
Internet
Call centers
Warranty claims
Insurance claims
Email
……..

Voice
Written
Internet
Video
……..

English
Spanish
Portuguese
French
Mandarin
Korean
German

Formal language
Slang
Acronyms
……..

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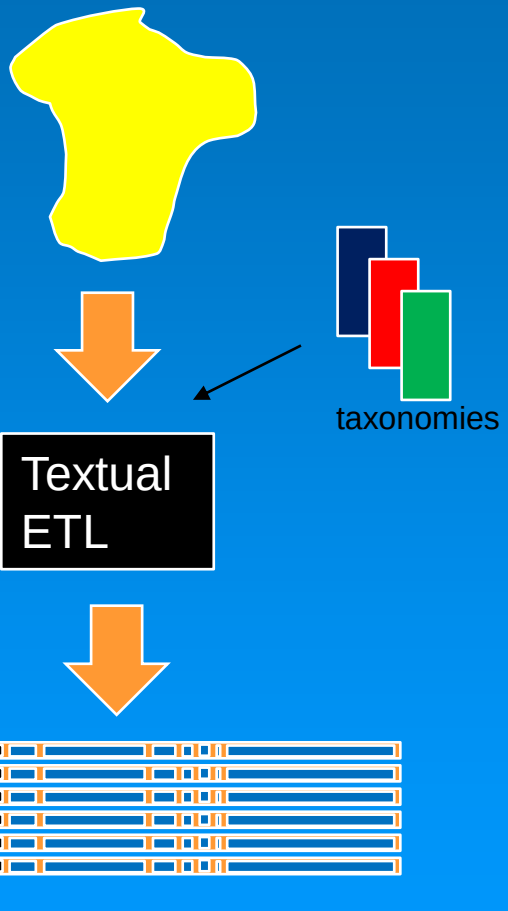
Textual data

Text is transformed Into a structured format



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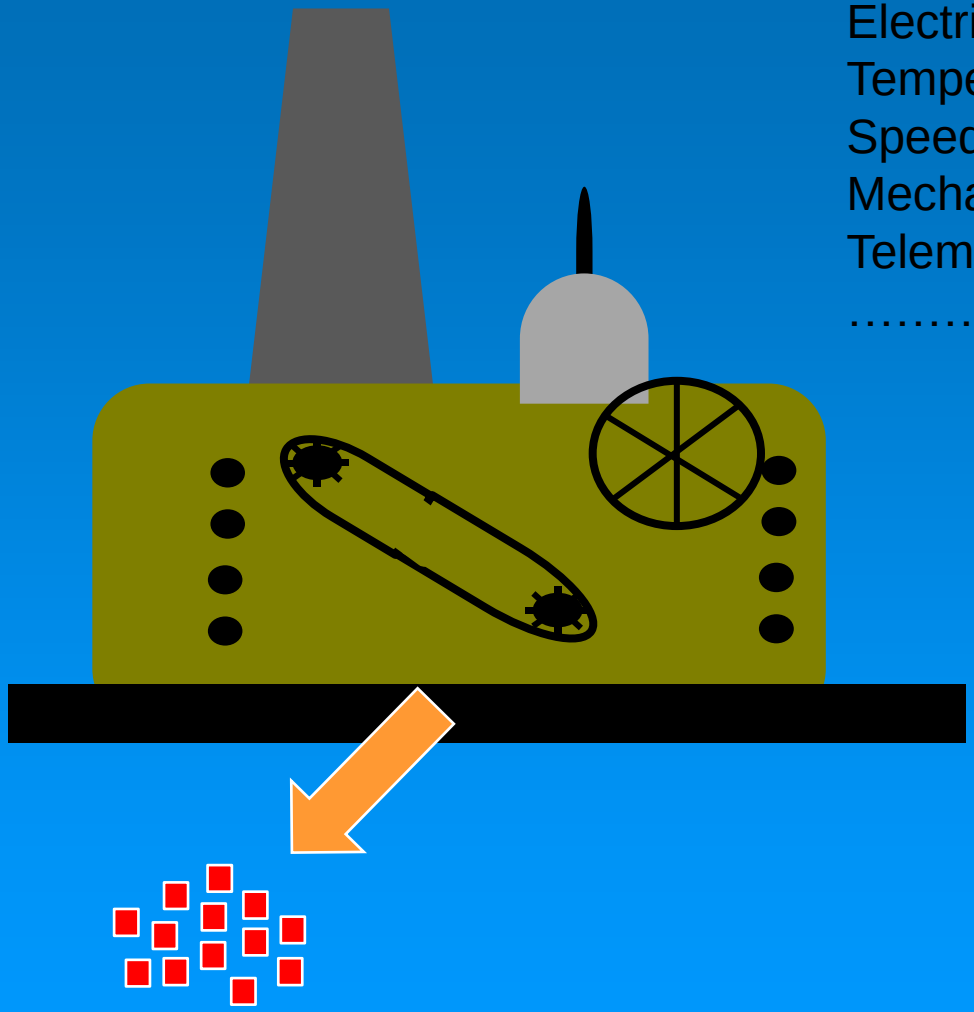
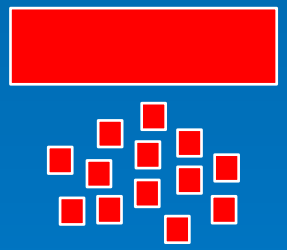
Analog/IoT

Machine generated



Drones
Electric eye
Temperature gauge
Speed
Mechanical
Telemetry
……

Analog/IoT



Surveillance camera

99.999% of data is not useful
.001% of data is really useful

Surveillance data must be distilled before it is useful
You don’t want to store vast volumes of data that are useless

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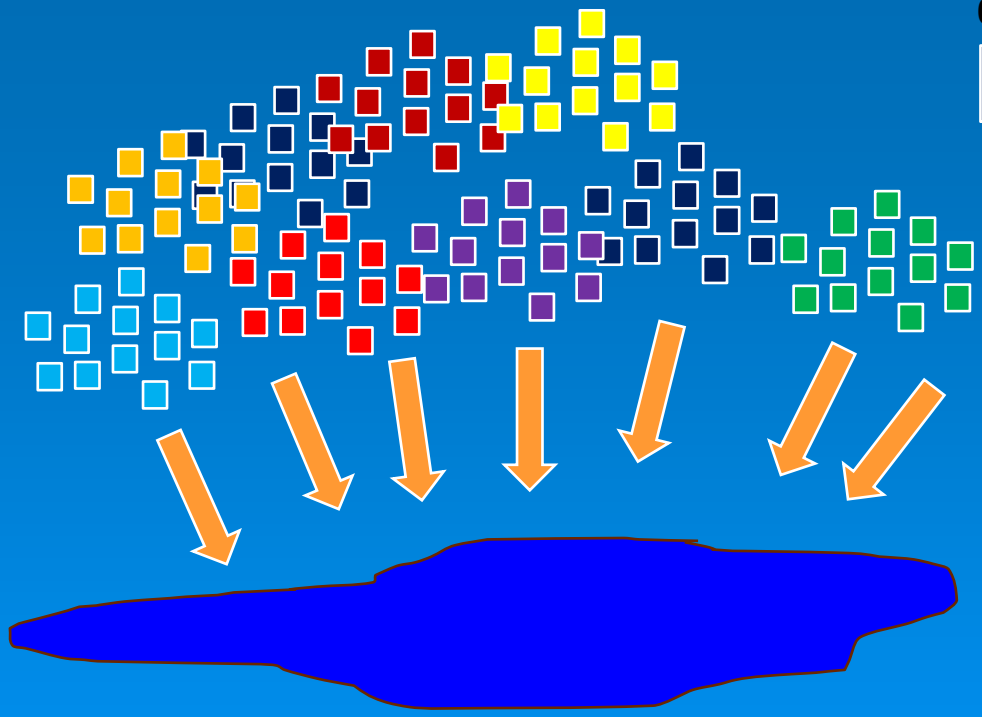
Analog/IoT

Structured data

Textual data



The data lake is created by throwing data into the lake

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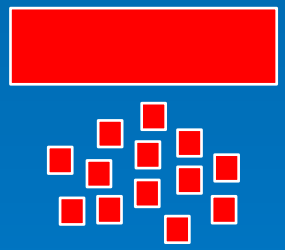
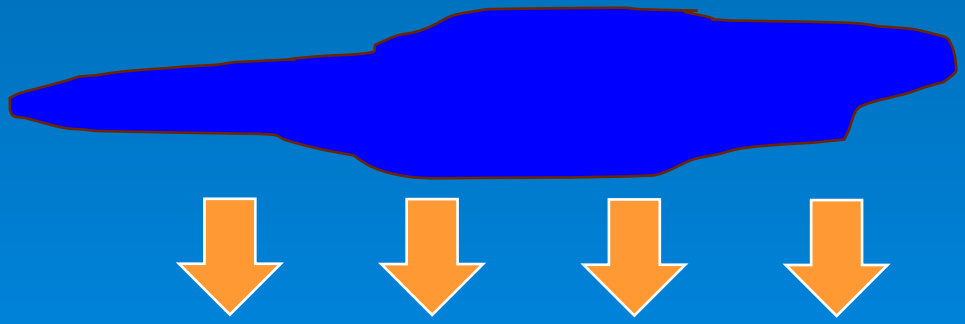
Analog/IoT





Soon the data lake
turned into a swamp

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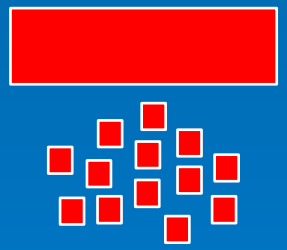
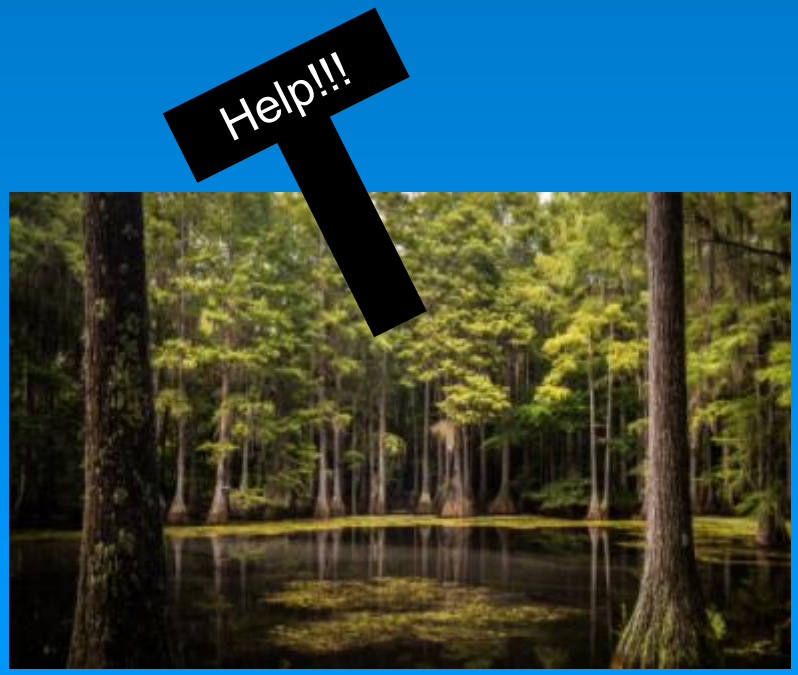
Analog/IoT



The data swamp was not good for anyone….



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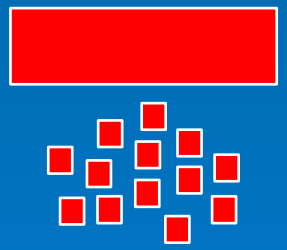
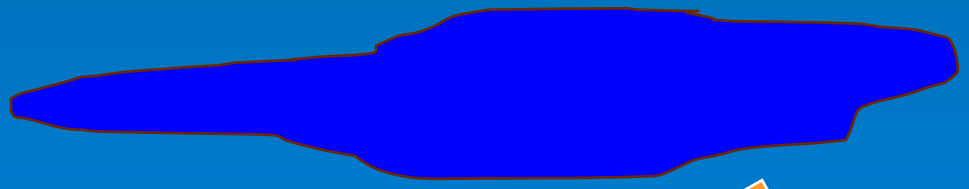
Analog/IoT





The data lake needs to be transformed into a lakehouse

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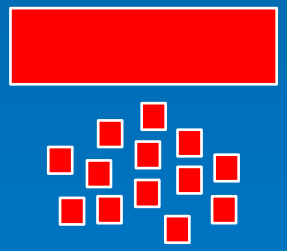
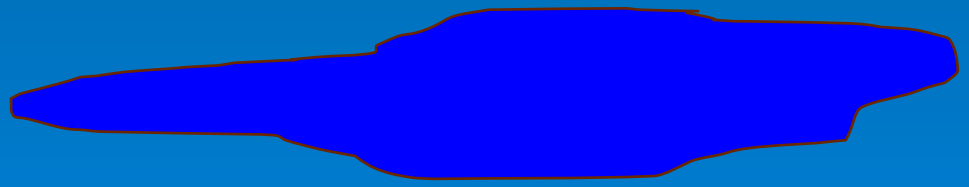
Analog/IoT





Data scientist

All this education and 95% of my job is being a data garbageman

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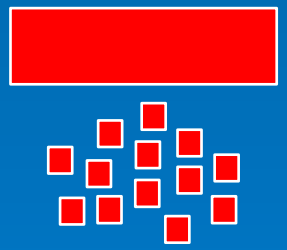
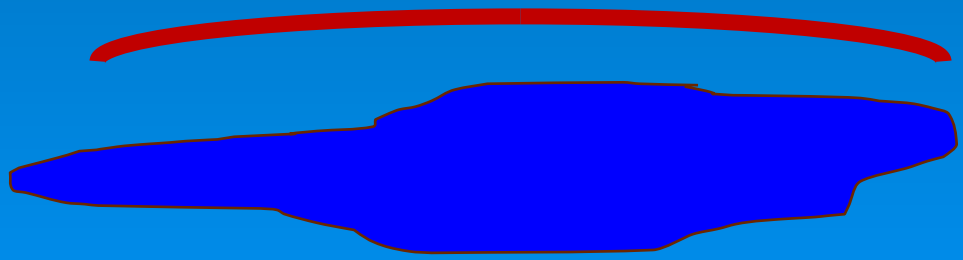
Analog/IoT



infrastructure



Data scientist

Ah, that’s more like it

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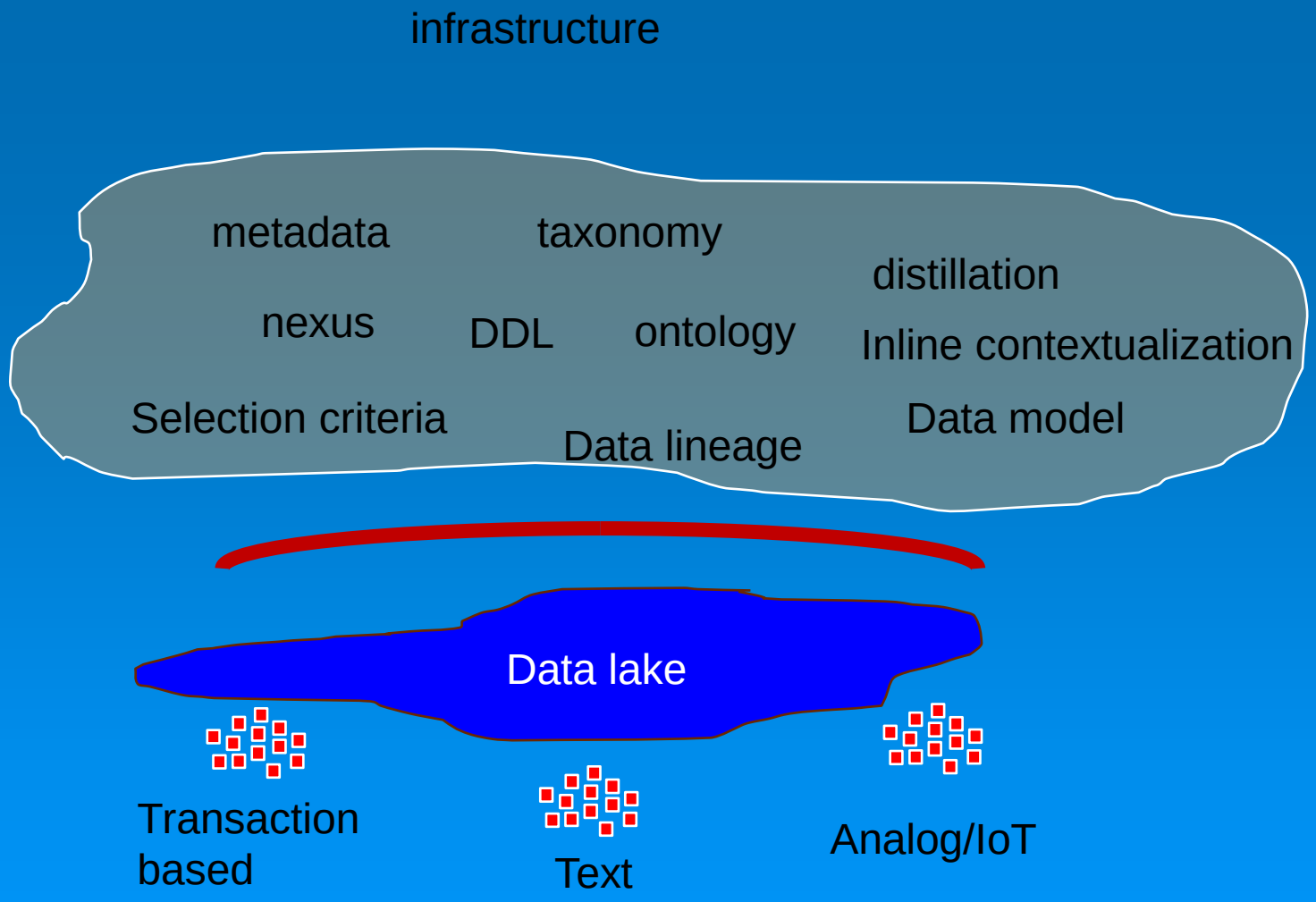

Turning the data lake into a data lakehouse

infrastructure

metadata taxonomy distillation

nexus DDL ontology Inline contextualization

Selection criteria Data lineage Data model

Transaction based

ETL

Data lake

Getting transaction based data into the data lake

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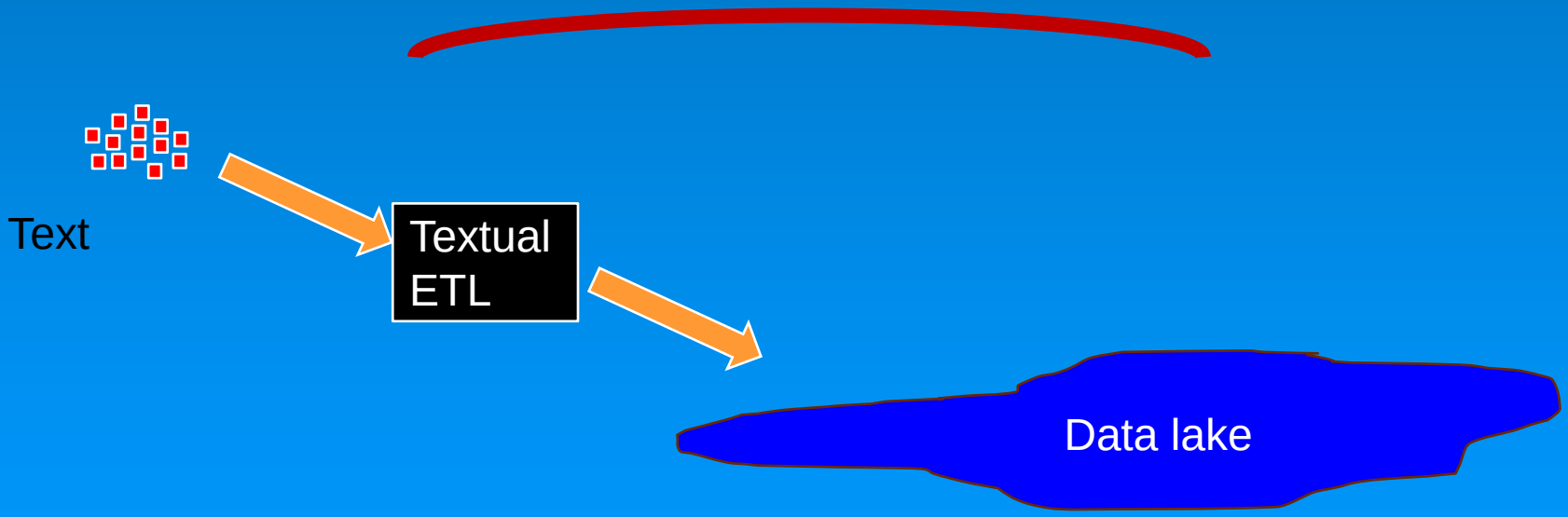
infrastructure

metadata taxonomy distillation

nexus DDL ontology Inline contextualization

Selection criteria Data lineage Data model



Getting text based data into the data lake

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infrastructure

metadata taxonomy distillation

nexus DDL ontology Inline contextualization

Selection criteria Data lineage Data model

Analog/
IoT

Distillation/
refinement

Data lake

Getting analog/IoT based data into the data lake

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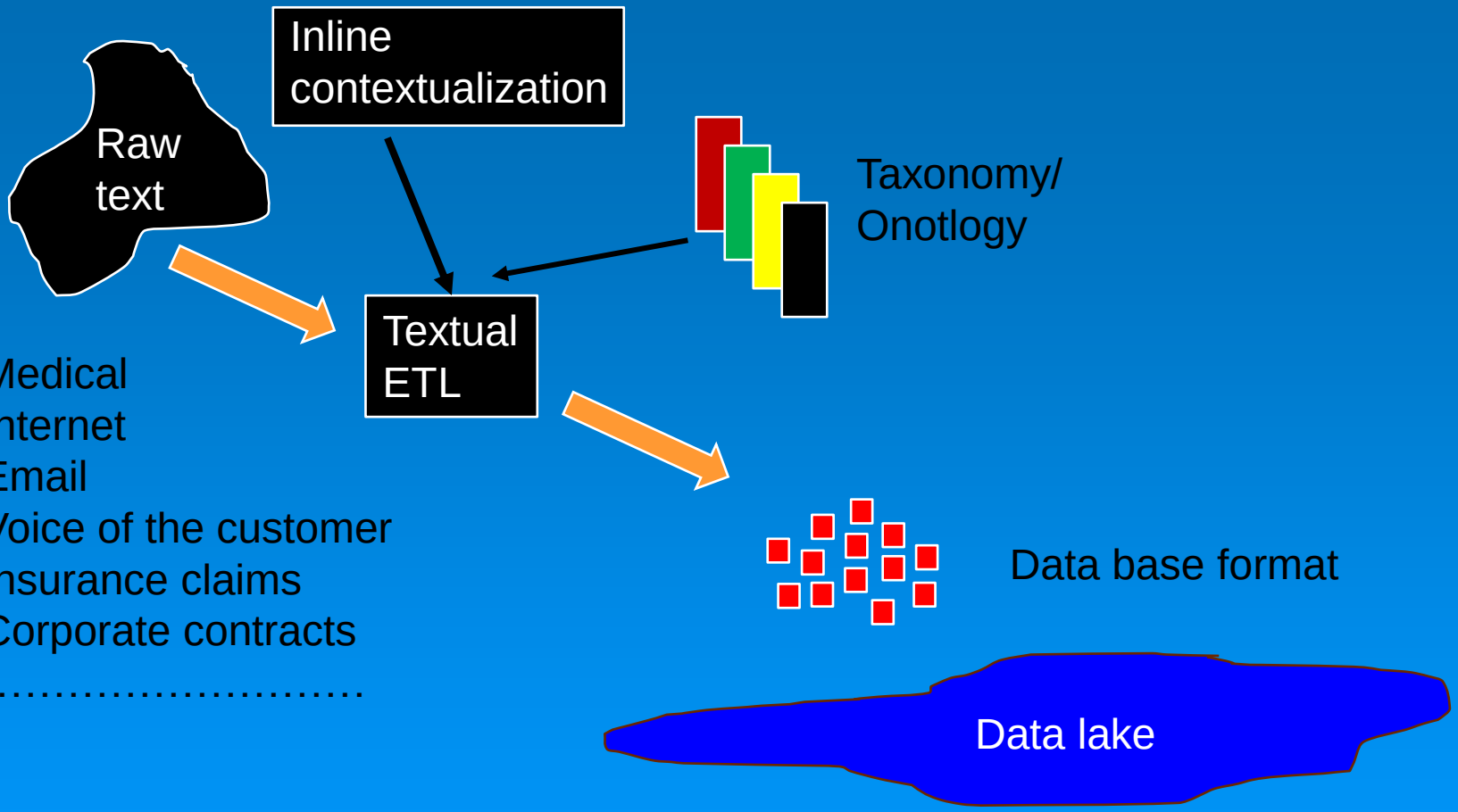

Bringing text into the data lakehouse

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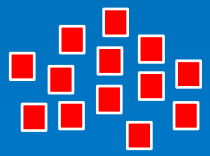
Analog/IoT

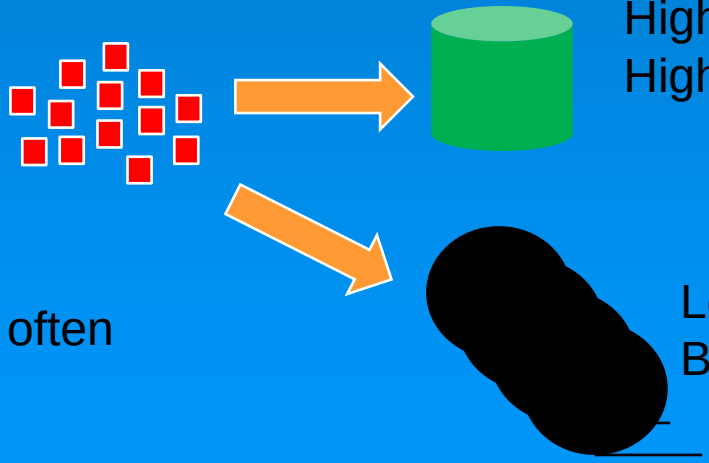
Machine generated



Basic, raw measurements

Time – 0912
Time – 0916
Time – 1002
Time – 1008
Time – 1017
…….

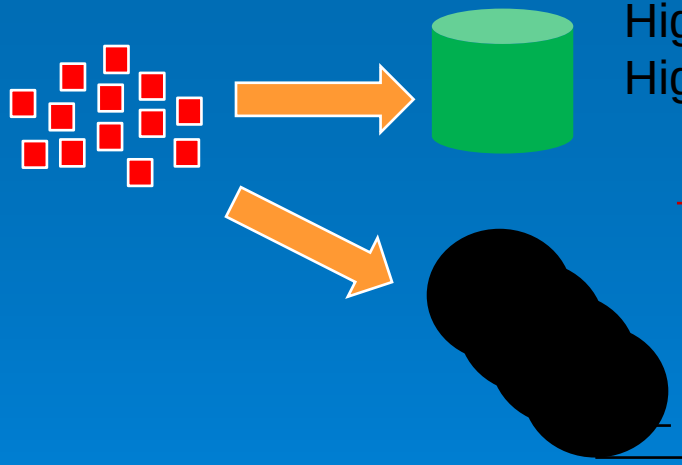
The distillation process



High probability
High performance

Low probability
Bulk storage

Analog/IoT data is often segmented



High probability
High performance

Robbery 6:31 am Tuesday
3.5 minutes
Accident 5:15 pm Thursday
1.0 minutes

Low probability
Bulk storage

Image 5:19 am
Image 5:20 am
Image 5:21 am
……

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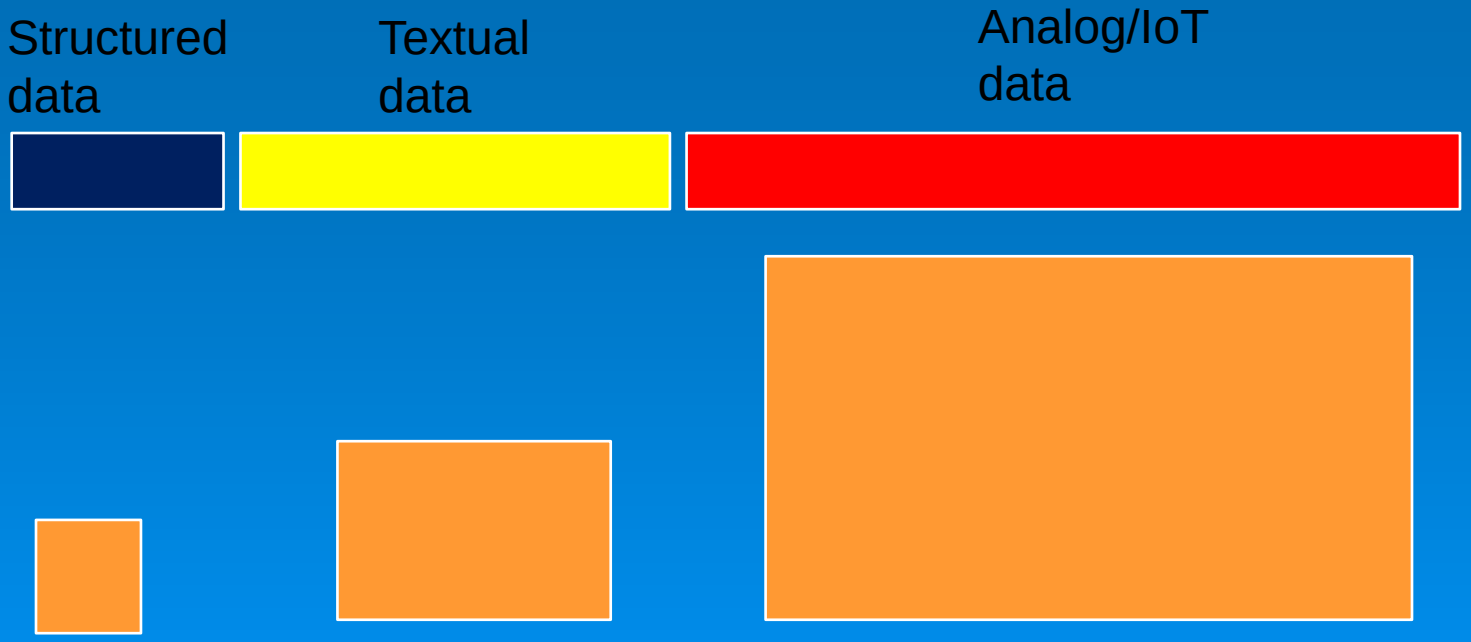

Relative volumes of data in each sector

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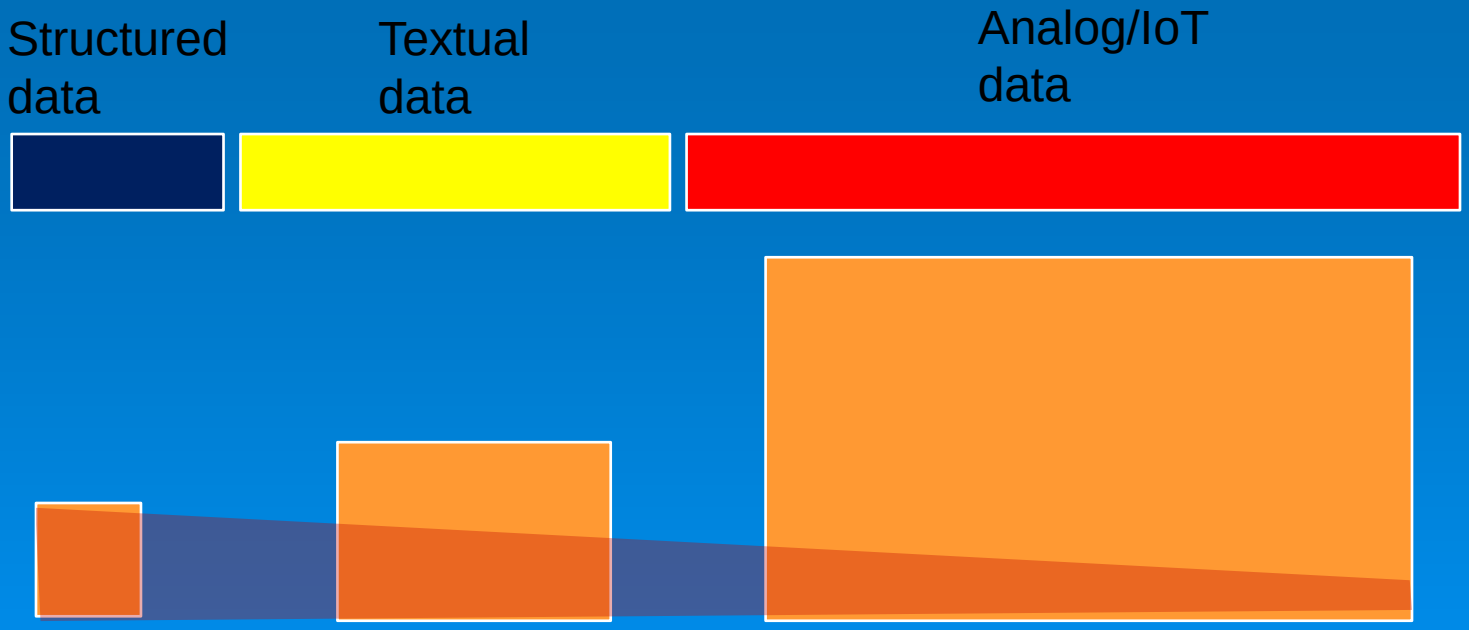

Business value and the volumes of data

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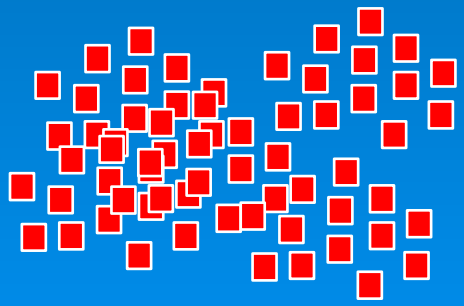
Format compatibility

Structured data

Textual data

Analog/IoT data



Relational format

Raw data format

From a format standpoint, the structured and the textual environments are very different from the analog/IoT environment

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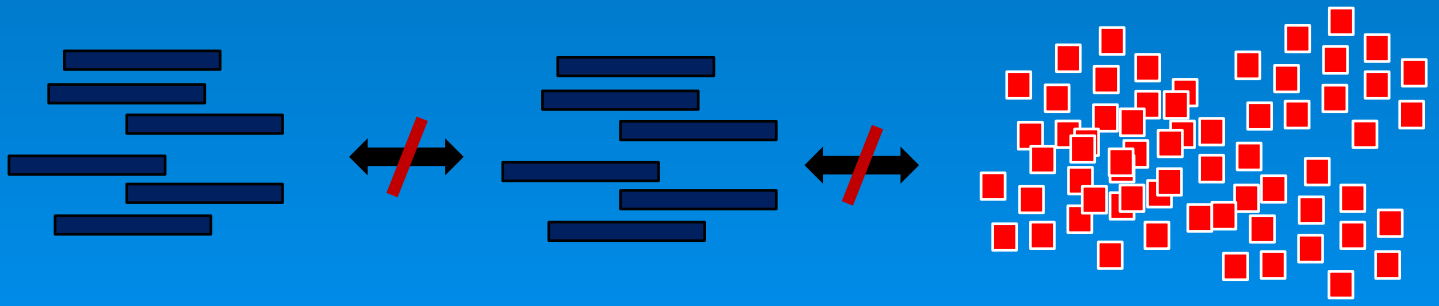
Content compatibility

Structured data

Textual data

Analog/IoT data



Key compatibility – very unintegrated

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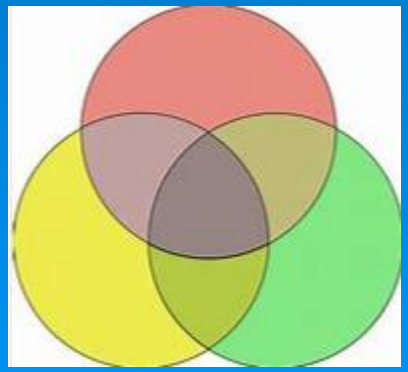
Structured data

Textual data

Analog/IoT data



In order to do analytics, there must be some common data on which to do a comparison

Without common data it is very difficult to do a meaningful comparison

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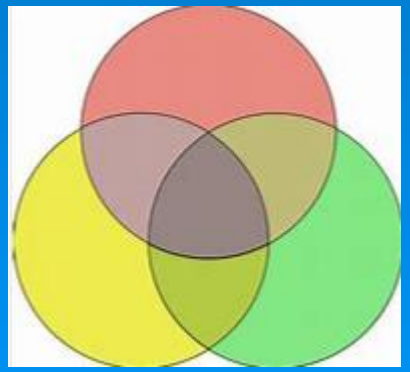
Structured data

Textual data

Analog/IoT data



The problem is that there may be no obvious, easy way to isolate common identifiers

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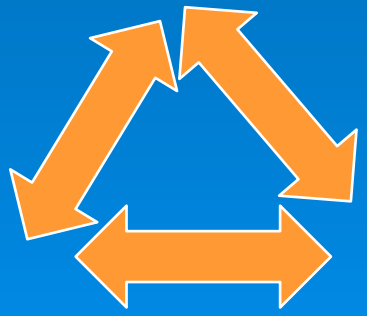
Textual data



Structured data

Analog/IoT data

Fortunately there are such things as universal common connectors

Universal common connectors exist regardless of the way that data has been collected

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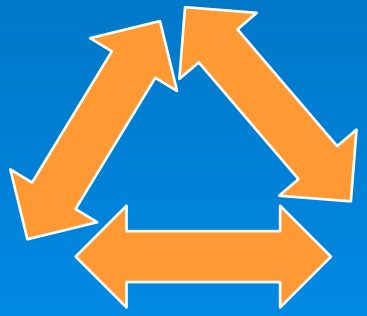
General common connectors

Textual
data



Structured
data

Analog/IoT
data

Universal common connector for anything

geography
time
dollar amount

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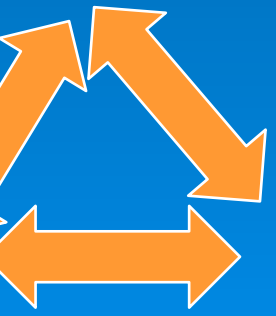
Common connectors for humans

Textual
data



Structured
data

Analog/IoT
data

Universal common connector for humans

gender
age
race

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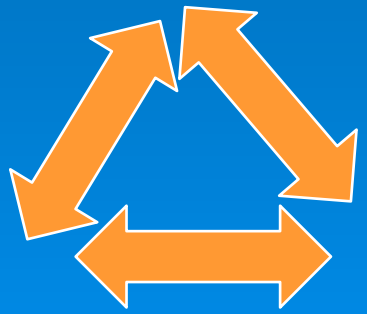
Common connectors for objects

Textual
data



Structured
data

Analog/IoT
data

Universal common connector for physical objects

weight
color
cost
size
shape

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Common connectors for objects

Textual data

Structured data

Analog/IoT data

All things considered, the universal connectors are a weak link for trying to connect and relate data

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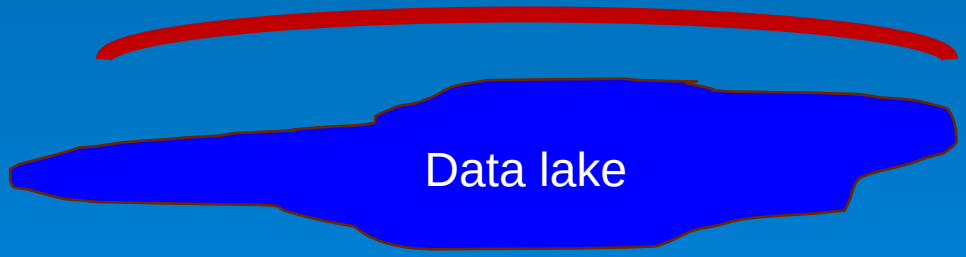
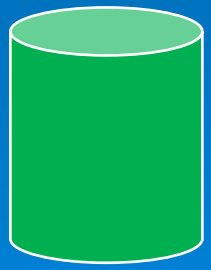
A frequently asked question…..

Is a data warehouse the same thing as the data lakehouse?





Data Warehouse

Are two cousins the same person?

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With analytics from the data lakehouse, you can improve the lives and livelihood of many people

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If you want to learn more – for FREE –
A book on bringing text into your lakehouse –

Go to www.forestrimtech.com, ebook, and tell us where to send it to

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