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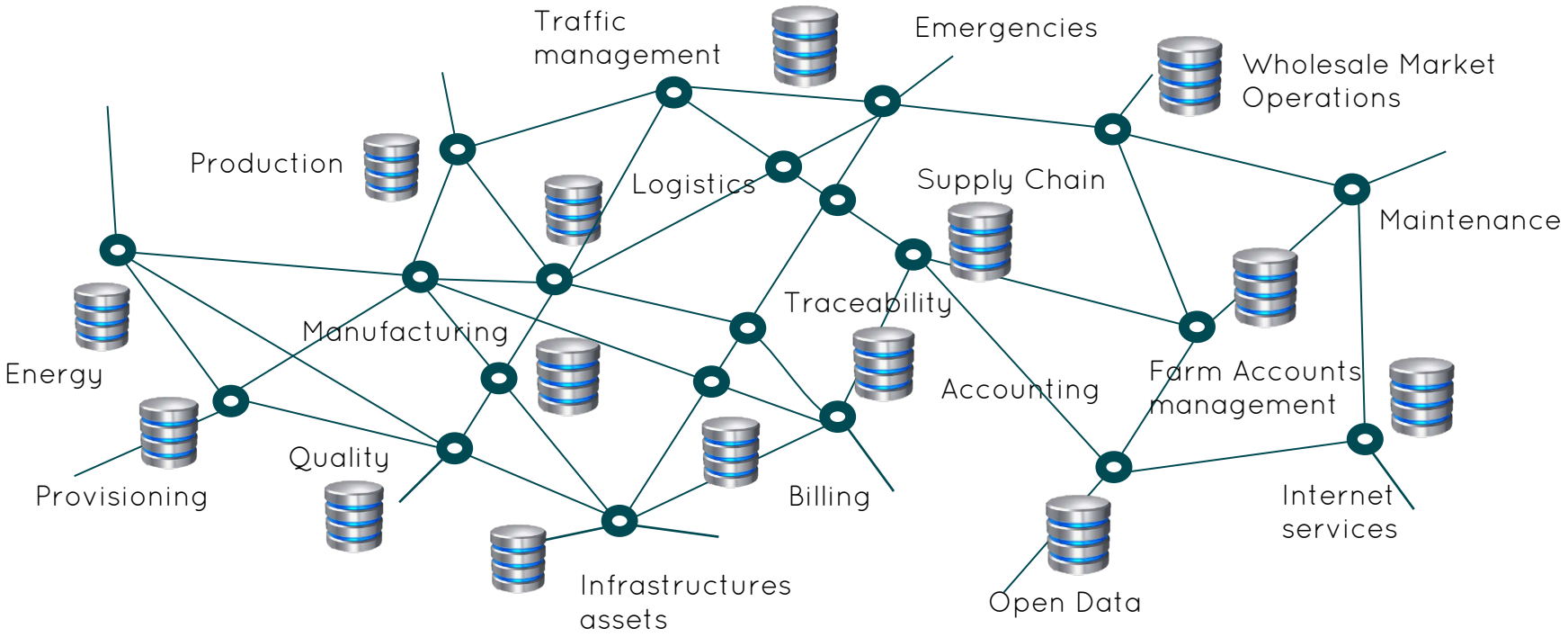
Interreg North-West Europe REAMIT
European Regional Development Fund

REAMIT Networking Symposium 2020,
Nottingham UK
9th January, 2020

Time Series The future of data in agrifood

Hervé Rannou - CEO - Herve.Rannou@senx.io

Legacy data management: a world of business silos



Relational databases (SQL)

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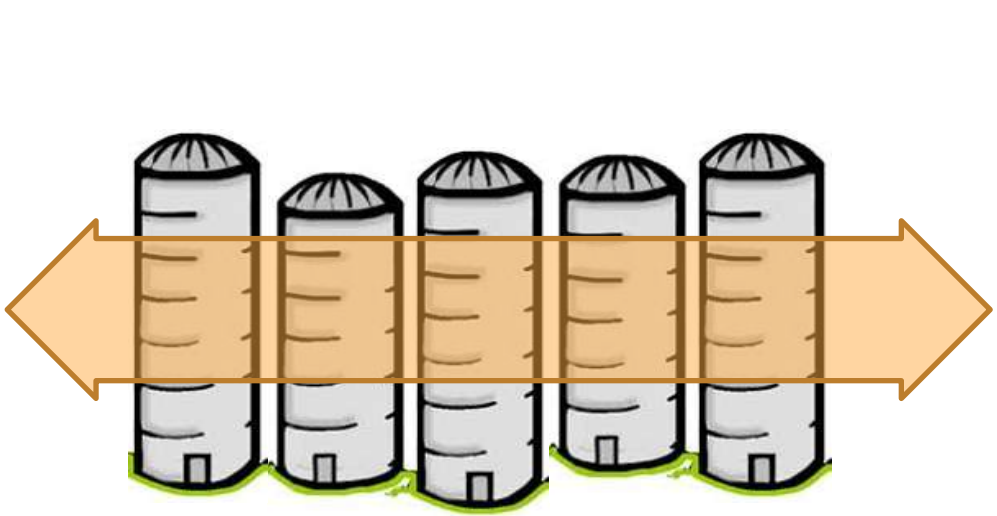
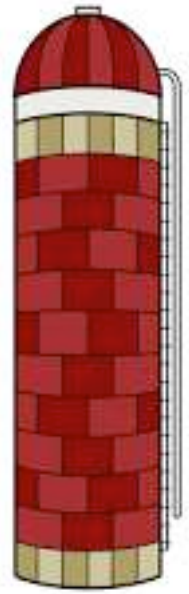
Data management in legacy IT systems



ETL
(Extract-transform-load)



Data
Warehouse

BI Tools

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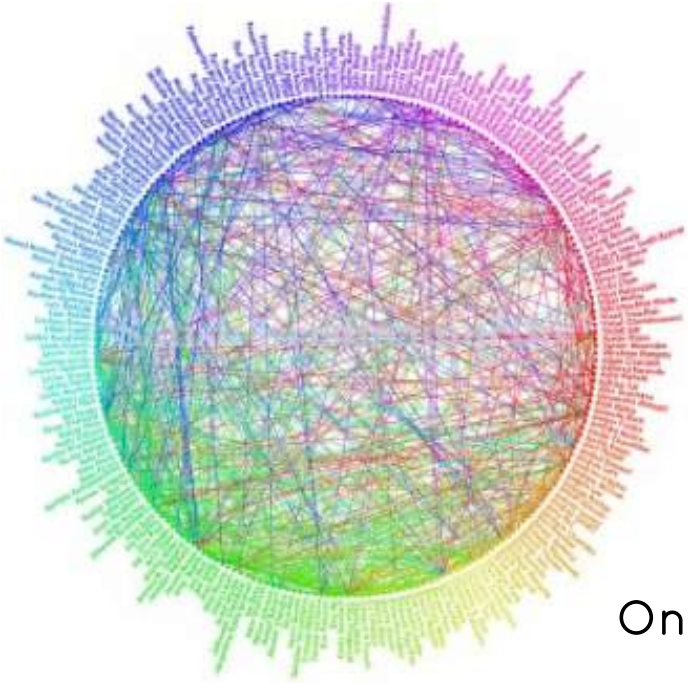
Interoperability: the dream of Semantic Web

Businesses



Data

Ontologies

Semantic Web:
A reality for researchers
A long time perspective for businesses

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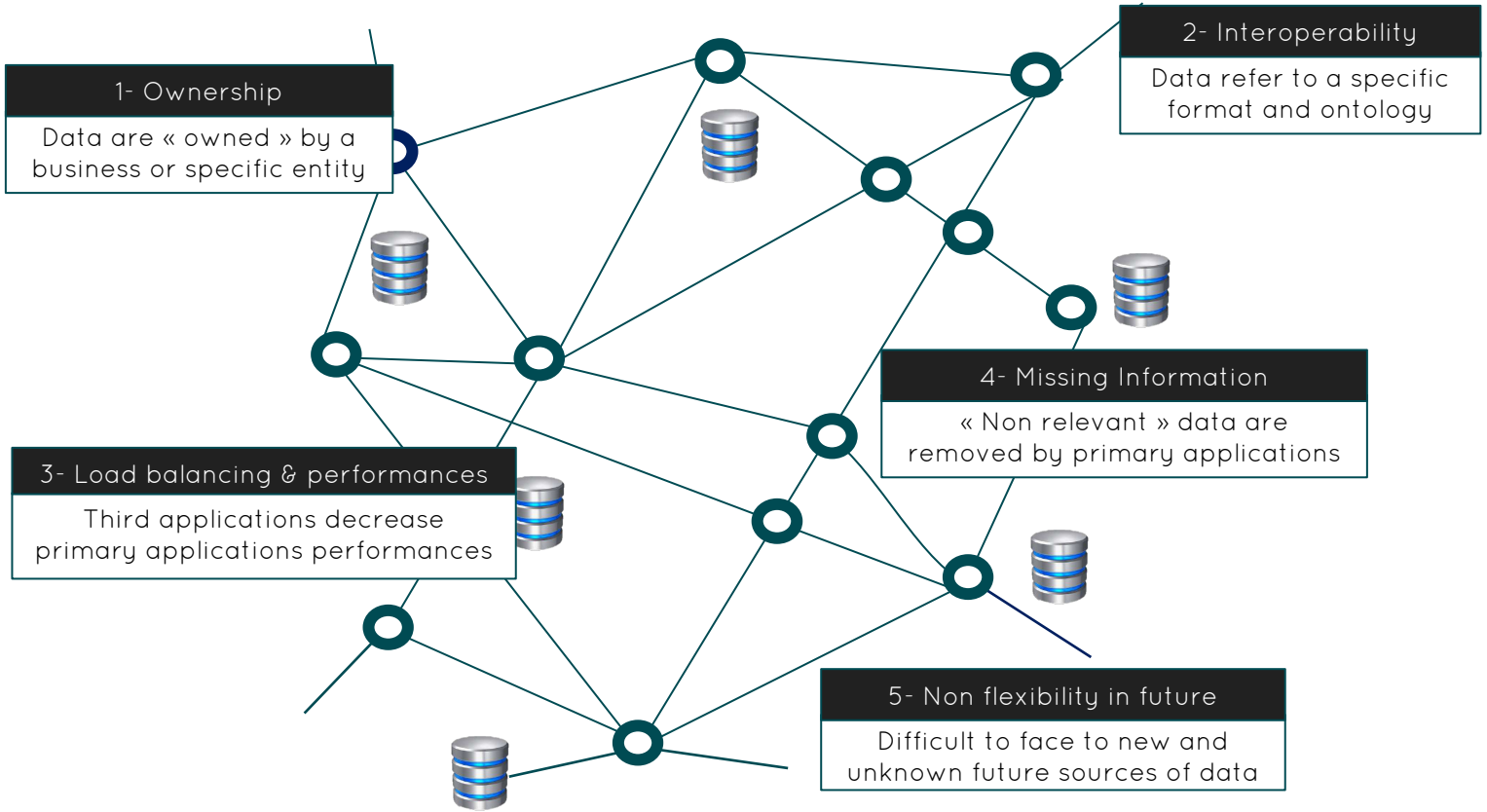
Source: http://blogs.bmj.com/bmj-journals-development-blog/tag/semantic-web/

Legacy data management: Too many barriers



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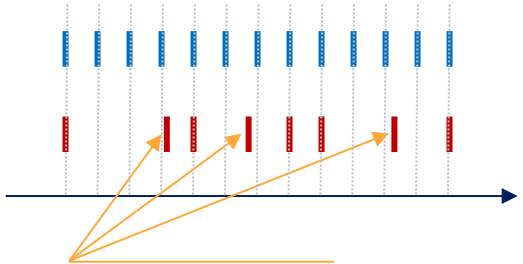
Time Series: a different approach for sensors / IoT data

Sensors have different behaviors

Telecom router: 1 000 measures / sec
Vibrations : 100 measures / sec
GPS Tracking : 1 measure / sec

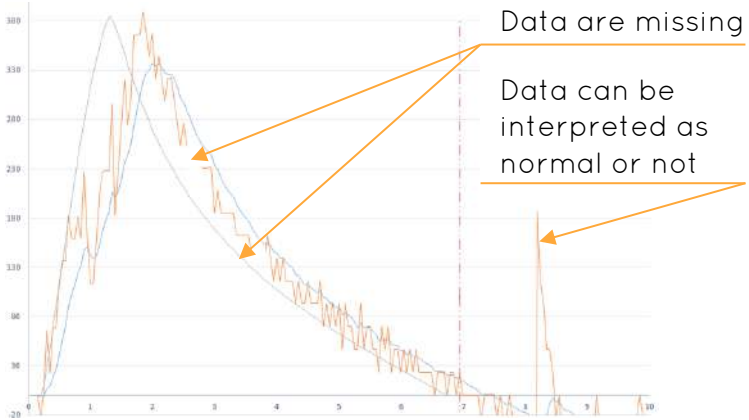
Logistic operations: irregular



Sensors data Challenge #1: Irregular, erratic and numerous data

Sensors can generate huge volume of data

200 Gigabytes / day for a wind turbine



Sensors data require advanced software tools

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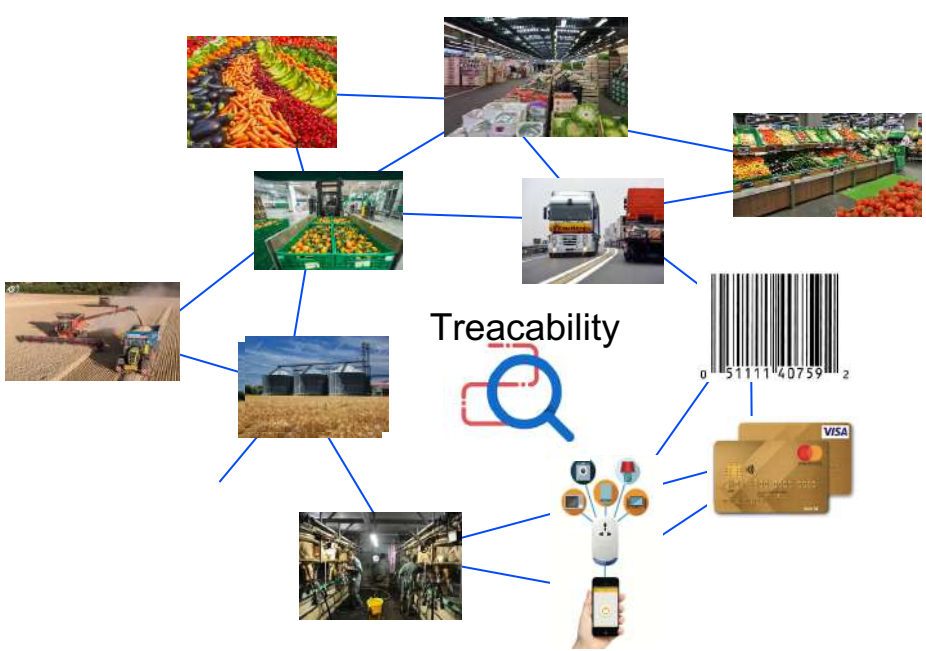
Advanced data applications requires to cross a large range of sensors. Time Series simplifies interoperability issues.

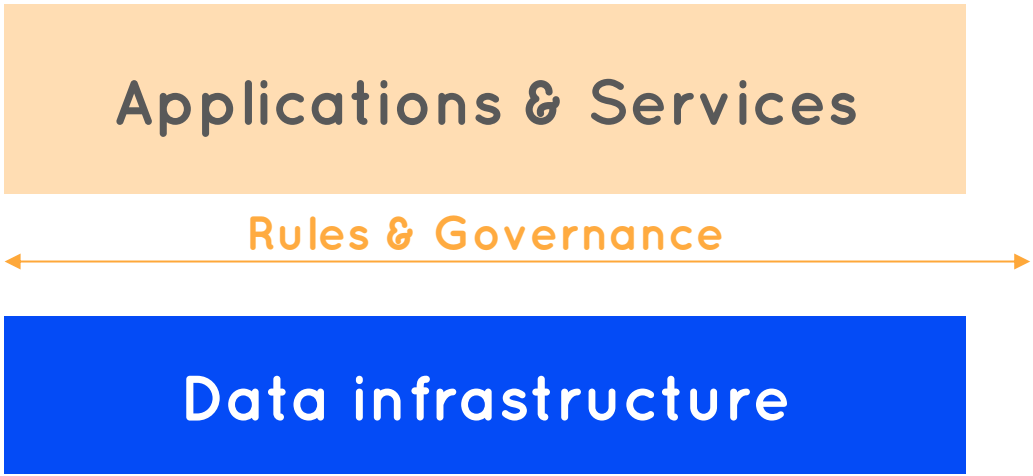


Food: From the farm to the consumer

Mobility / MaaS Use case

A gap from innovative demonstrators to operational processes

Time Series technology allows to build up a neutral and secured data infrastructure



Concurrent applications
Multiple service providers

Flat data formats
Data historians

Time Series Data Infrastructure:
the most efficient way towards Artificial Intelligence

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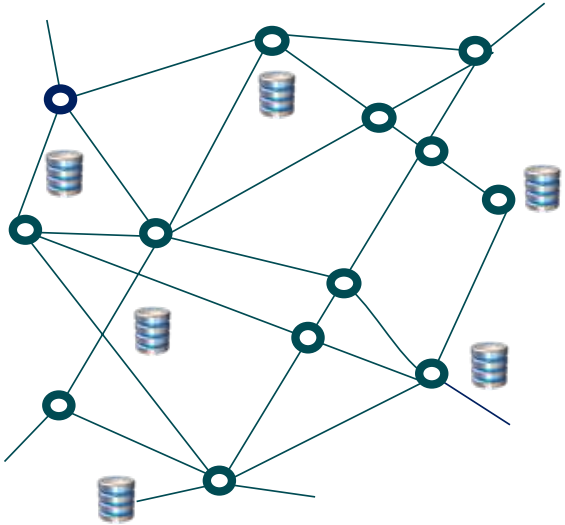
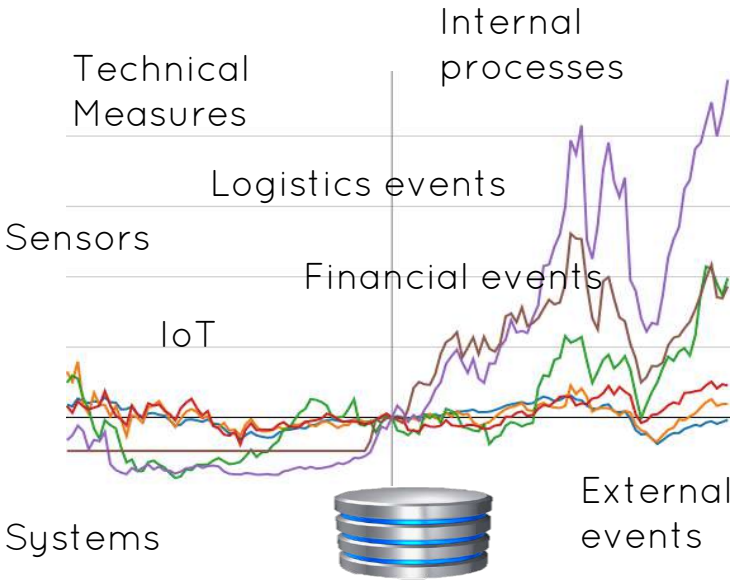
Time series: data is not managed related to the business content but just to a flow of events and measures



From classic data understanding ...



... to data streams of events (systems, process, human actions ...)

Everything is Time series

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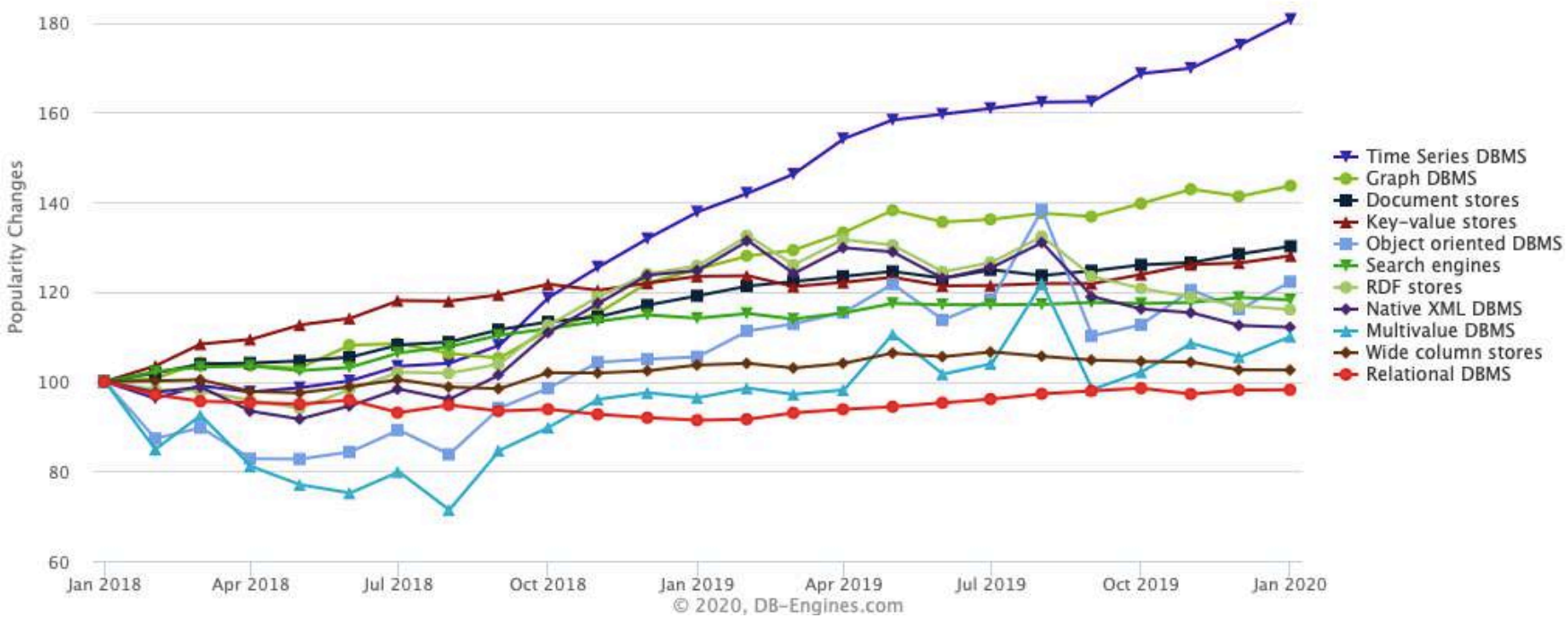
Time Series: the growing technology in data management to address sensors/IoT data



https://db-engines.com/en/ranking_categories

Time Series technology addresses all these challenges

1- Ownership

Data close to row data are easier to be managed regarding ownership

2- Interoperability

Time series data are defined by a universal format

3- Load balancing & performances

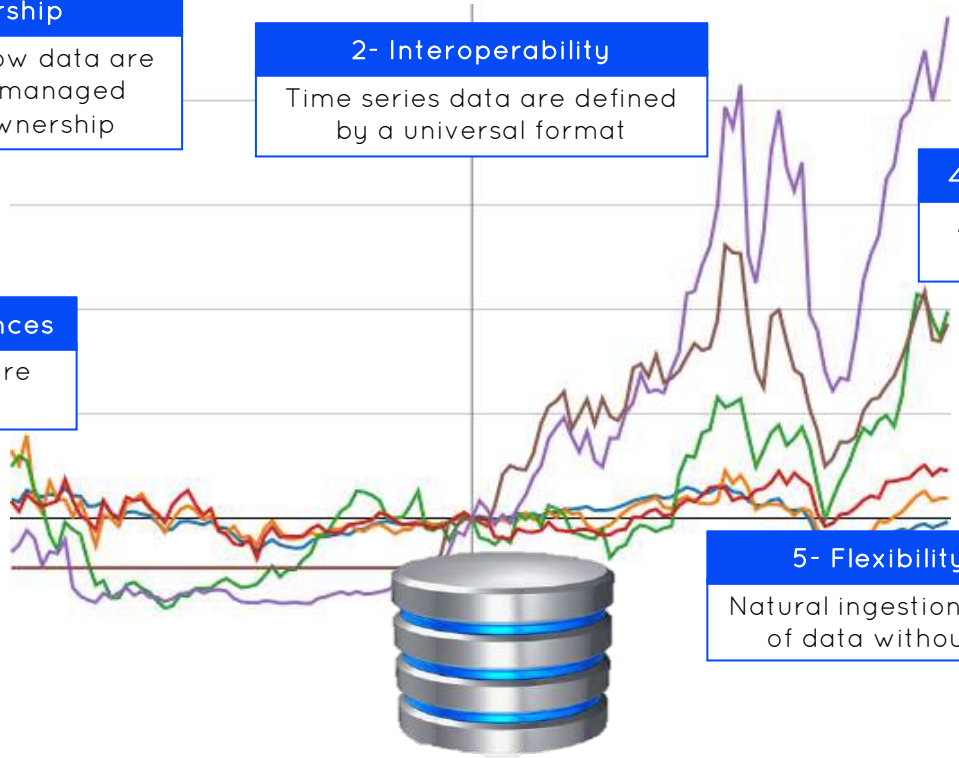
« Time series » architectures are scalable

4- No missing information

All data – even mistakes – are stored

5- Flexibility for future

Natural ingestion of new sources of data without any impact



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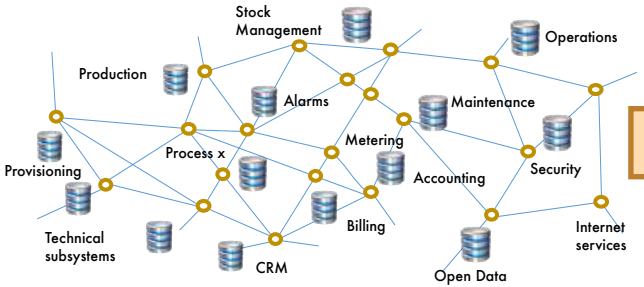
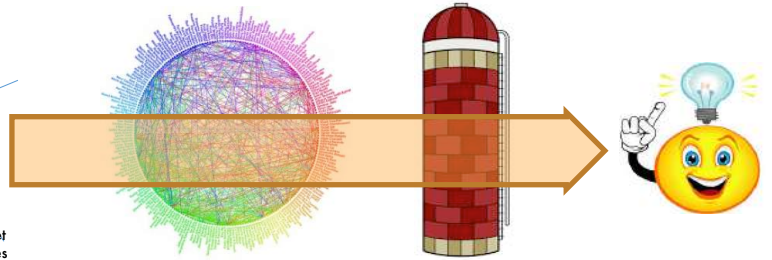
Time Series technology reverse the data vision …and its architecture

Legacy IT



Data asset = Business silos of data



Extractions (ETL)

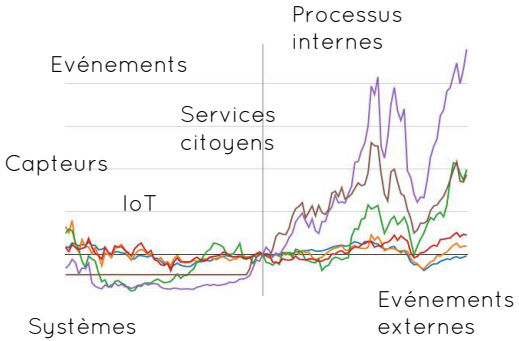
Standards

Data Warehouse

… Analyses / Business Intelligence

Analytics at the end of the chain is based on extraction of data

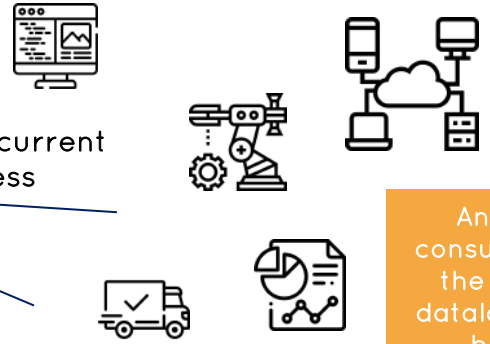
Big Data / Time Series



"data asset = Raw Data

Datalake "Time Series" de données brutes

Concurrent access



Data Science

Business applications

Anaytics is consubtancial to the raw data datalake to feed business applications

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Warp 10™ Storage Engine

EDGE | STANDALONE | DISTRIBUTED

LEVELDB RAM Datalog HA

Millions of series

100s Millions of datapoints

~10k datapoints/s

LEVELDB RAM Datalog HA

10s of millions of series

Billions of datapoints

~100k datapoints/s

APACHE HBASE

Billions of series

Trillions of datapoints

Millions of datapoints/s

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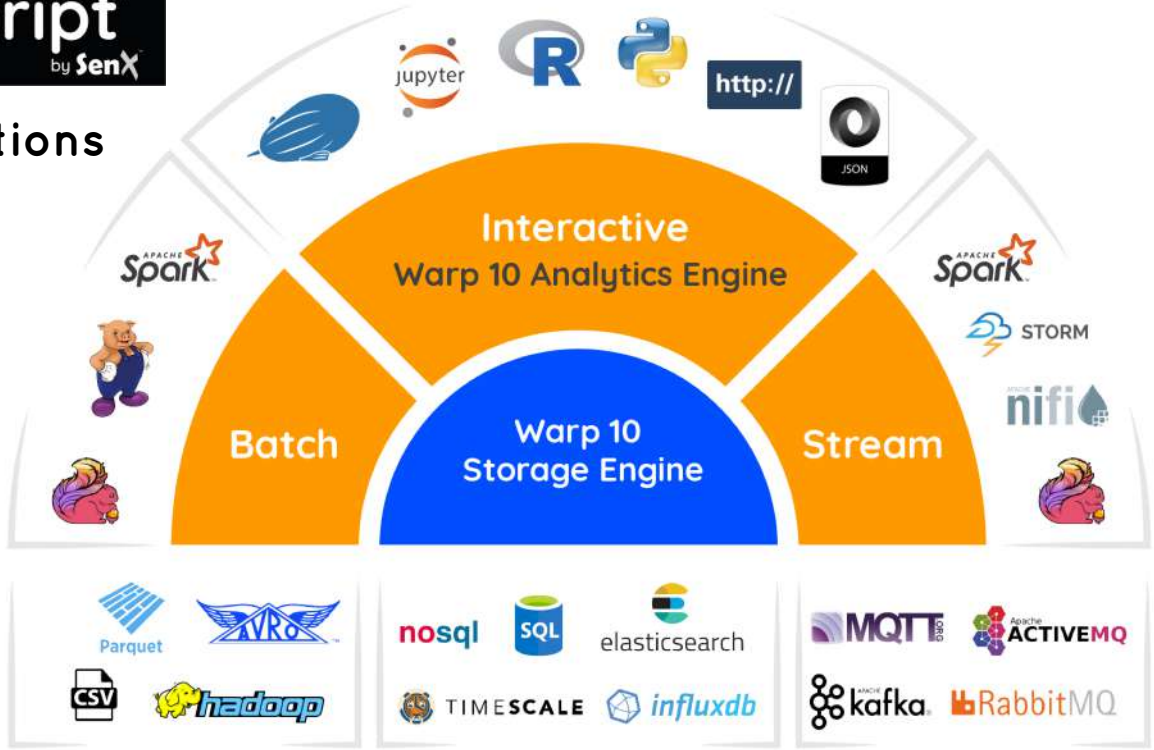
Warp 10 Analytics Engine

WarpScript™ by SenX

1000+ functions



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Use Cases

Active use cases in industry

ENERGY

AERONAUTICS & SPACE

SMART CITIES & BUILDINGS

OIL & GAS

IT & NETWORKS

AUTOMOTIVE

INDUSTRY 4.0

DEFENSE & SECURITY

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Smart Farming

Sensors / Data

Water & Humidity

Weather predictions

Tracking

Temperature

Crop Health

Air quality

Bionutrient Monitoring

Fertilizer Monitoring

Satellite data

Drone data

Machineries

Soil Health monitoring

Growth monitoring

Applications:	Yield optimization Quantity / Quality	Fertilizer/Nutrient Machine learning Anomalies forecast

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Indoor farming / Hydronics, Aquaponics ...

Sensors / Data

Lighting

Air quality

Growth monitoring

Water & Humidity

Health monitoring

Nutrients

Energy

Tracking

Temperature

Solar panels

Mechanisms monitoring

Security

IT Monitoring

Applications:	Yield optimization Quantity/Quality	Process learning Anomalies forecast

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Logistics: a combination of a large range of events

Sensors / Data

Logistics marketplace

Client orders

Shipping Time

Delivery Time

Distance

Cost status

Wheather

Tracking

Traceability

Damaged products

Trailer Temperature

Shock detection

Payments

IT Monitoring

Applications:	Time/Cost reduction Quality monitoring	Logistic operations learning Anomalies forecast

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senx.io | warp10.io

Mathias Herberts - CTO
Mathias.Herberts@senx.io

Hervé Rannou - CEO
Herve.Rannou@senx.io