Data Archeogram

Mapping the datafication of work

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Industrial Internet of Things (IIoT)

Internet of Things (IoT)

The connected worker

The connected user

Data Mining

Algorithmic Governance

Digital primitive accumulation
Informational asymmetry

Behavioural predictions
User as product

Data-driven monitoring
Edge computing

Targeted marketing
Devices augmentation

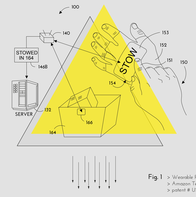


Fig.1 > Wearable RFID device
> Amazon Technologies Inc.
> patent # US9,881,955 B2, 07.17.2017

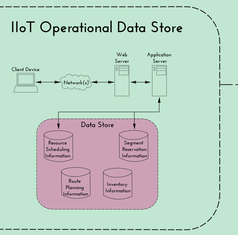


Fig.6 > Data store system for data collected from ultrasonic bracelet
> Amazon Technologies Inc.
> patent #US 9,881,076 B2, 30.01.2018

Visual Analytics
Streaming

Profiling

Data Extraction

The connected workplace

e.g. the smart warehouse or factory

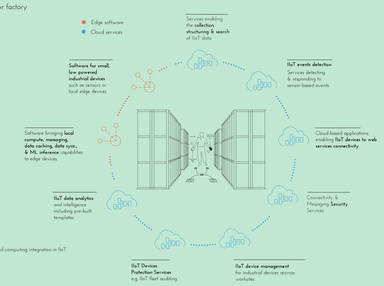


Fig.4 > Edge & cloud computing integration in IIoT

The connected social factory

e.g. the connected domestic or social sphere

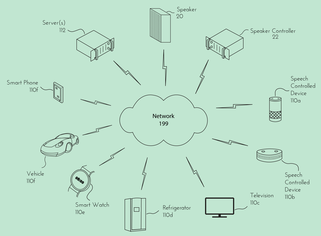


Fig.5 > Processing spoken commands
> Amazon Technologies Inc.
> patent # US9858927 B2, 02.01.2018

Employer

Data Collection

Multiple Collectors

Choice architectures
Nudging

Profiling

Edge Deep Learning on IoT devices

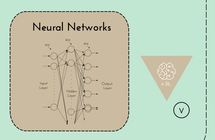


Fig.7 > Adaptive neural network speech recognition models
> Amazon Technologies Inc.
> patent # US9,153,231 B1, 06.10.2015

Internet Infrastructures

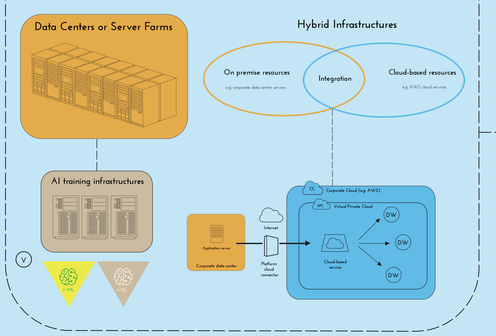
Internet Infrastructures

Infrastructures of Storage, Processing, & Analytics

Cloud computing
Analytics

Predictive modelling
AI design

Data Storage & Analytics Infrastructures



Data Landing

> Terminology obscures active strategies

Analytics

Data Warehouses
> designed for data analytics
> pattern recognition across large datasets
> data organized in tabular formats through schemas
e.g. to implement *SQAL queries
> big data analytics, full text search, and machine learning,
can access semi-structured or unstructured data

*SQL - structured query language is a standard language for storing, manipulating & retrieving data

> e.g. Amazon Redshift; Microsoft Azure Synapse; Google BigQuery; Snowflake

Data Migration

Pre-analytics:
> selection
> labeling

Data preparation:
> by hand (clickwork)
> by algorithms

Data Lakes
> a repository that can store data in their native format: structured, semi-structured, and unstructured
> can be built by customers using cloud-based services where they can run their own analytics incl. open source tools
> data analytics using programs such as U-SQL, R, Python and .NET, Apache Hadoop
> architecture elements, enterprise IT data exchange, catalog services, governance, self-service access

> e.g. Microsoft Azure; IBM & Redhat; Hadoop; AWS

Databases
(relational or transactional)
> designed to capture and store data from transactional systems
> workloads : transaction processing
> optimized for running production systems
> source : data captured as-is from a single source
> continuous write of operations for transactions throughput
> highly normalized, static schemas

> e.g. Amazon RDS, Single Store, MySQL

data normalization

Data Warehouses

Analytics

Data Marts
> a data warehouse that serves the needs of a specific team or business unit, e.g. finance, marketing, or sales

Data Lakes

Databases

Data Swamps
> ungoverned data lakes

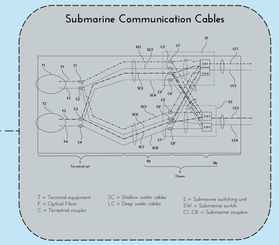


Fig.8 > Equipment for long range submarine optical communication
> Alcatel Submarine (FR), Nokia Solutions & Networks Oy (FI)
> patent # EP3710065A1, 23.09.2020

Platforms

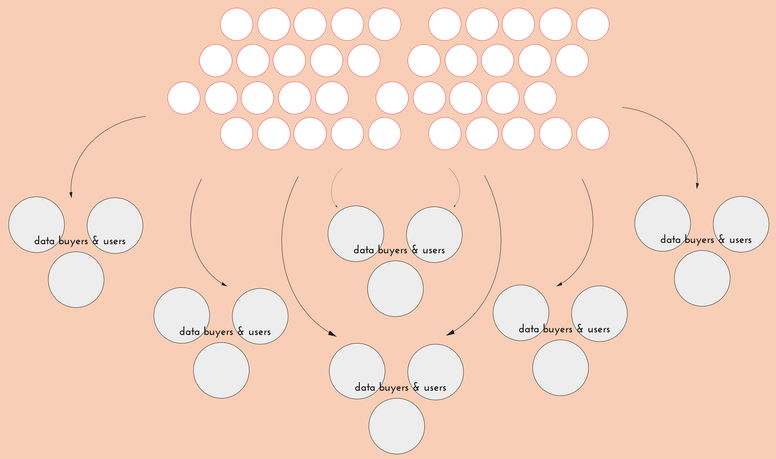
Market Leaders:

> Amazon
> Microsoft
> Google
> IBM
> Siemens
> Alibaba

Platforms

Infrastructures of Data Rent & Usage

Data Marketplaces



Data warehouses users:

> Business analysts
> Data scientists
> Data developers

Types of analytics:

> Batch reporting
> Business intelligence
> Data visualisation

Data Lakes Users:

> Business analysts
> Data scientists
> Data engineers
> Data architects

Types of anlytics:

> ML
> Exploratory analytics
> Data discovery
> Streaming

Legend

- (DC) Event of data capture
- (V) Data Valorisation
- (I) Issue warning: e.g. data rights breaches, security risks, etc.
- (T) Technology for: data capture ; sale/rent ; process ; storage ; etc.
- (I) Invisible forms of labour
- (DW) Data warehouse
- Data Capture Devices
- Data Marketplaces
- Cloud Computing
- Edge Computing
- Machine Learning
- Deep Learning Neural Networks
- Notice-and-Consent Mechanisms
- Internet Infrastructures

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