HOCHSCHULE DER MEDIEN

Business Intelligence and Analytics

Architectures

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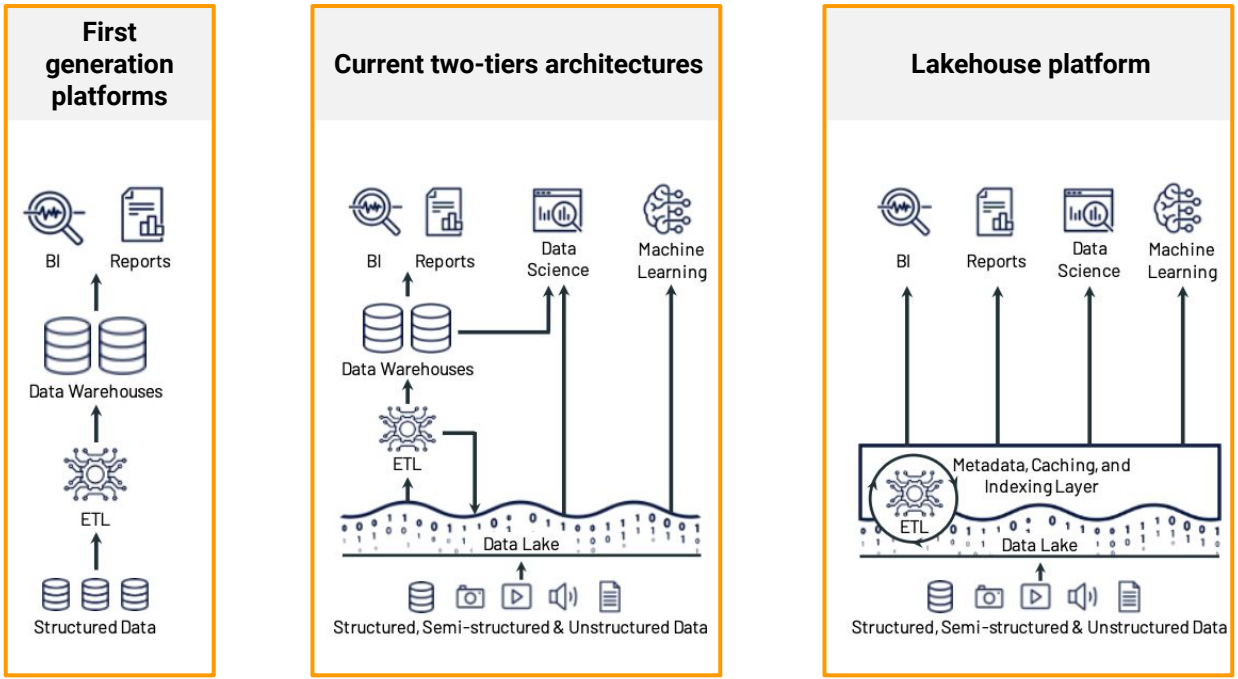
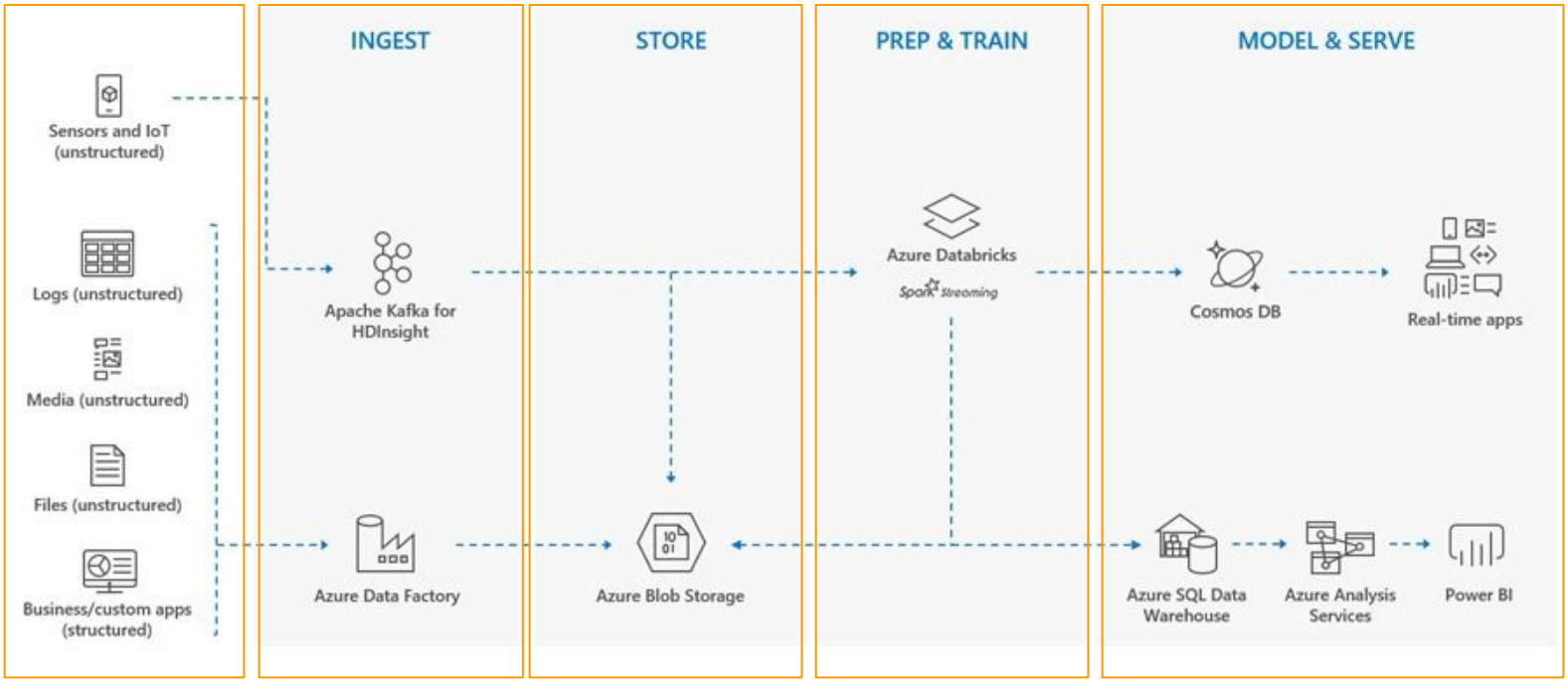
Evolution of data platform architectures



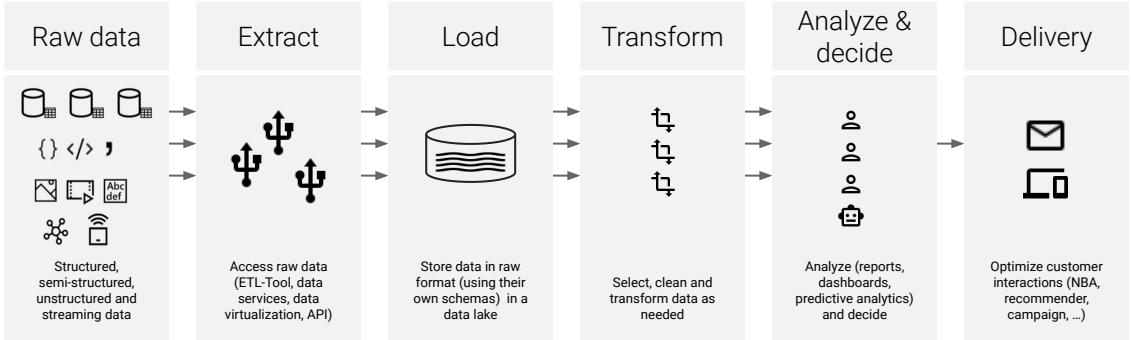
Source: Armbrust et al. (2021)

Modern data warehouse

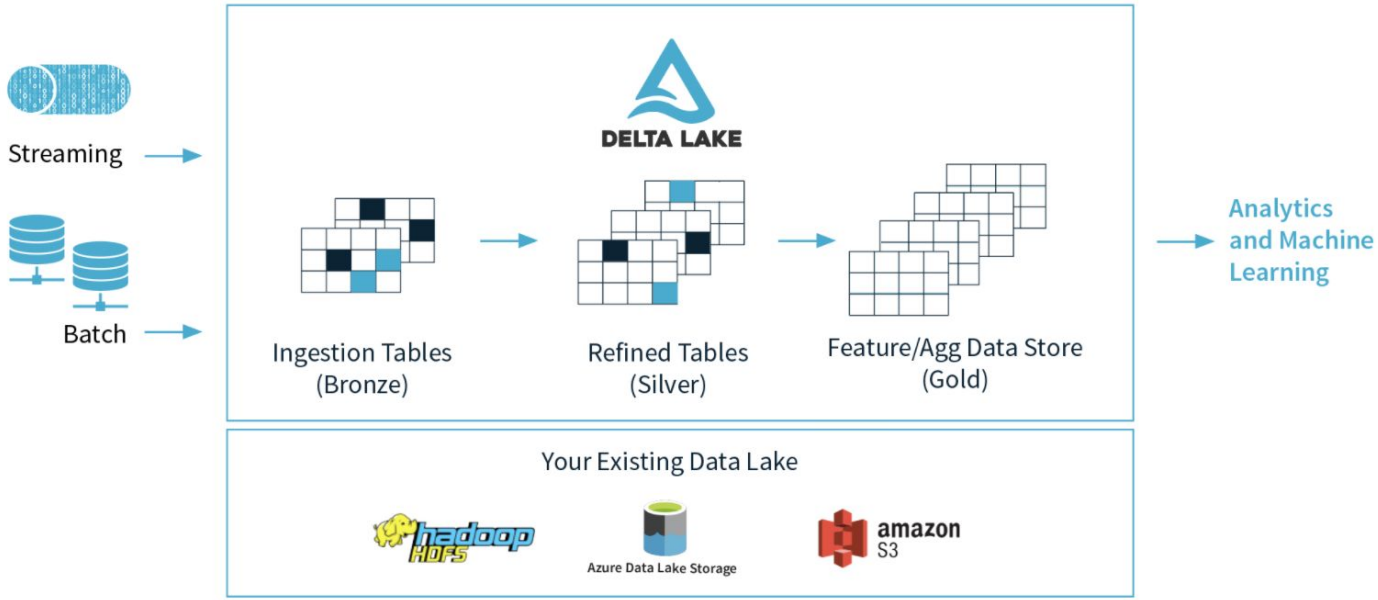


Source: Microsoft

Components of a typical data platform



Example of Lakehouse: **Delta** Lake



Source: Delta Lake (2021)

Architecture categories

Overview

Information architecture

Data architecture

Technical architecture

Product architecture

Overall architecture

Architecture categories

1. Information architecture
2. Data architecture
3. Technical architecture
4. Product architecture
5. Overall architecture

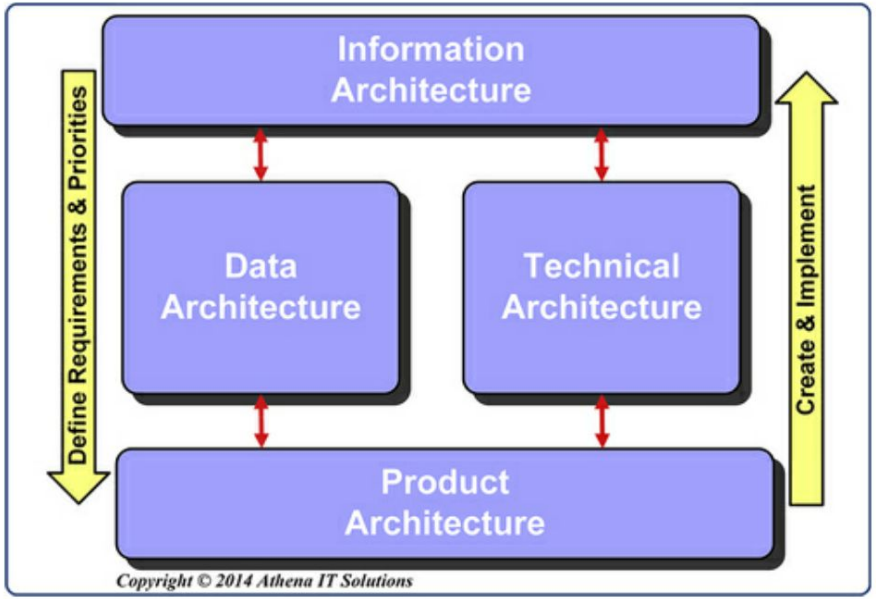


FIGURE 4.1 The four architecture categories.

Source: Sherman (2014)

Information architecture

- Purpose of the project
- Business processes and analytics
- Who will have access
- Where the data is
- How it will be integrated, transformed, stored and consumed: data integration framework (DIF)

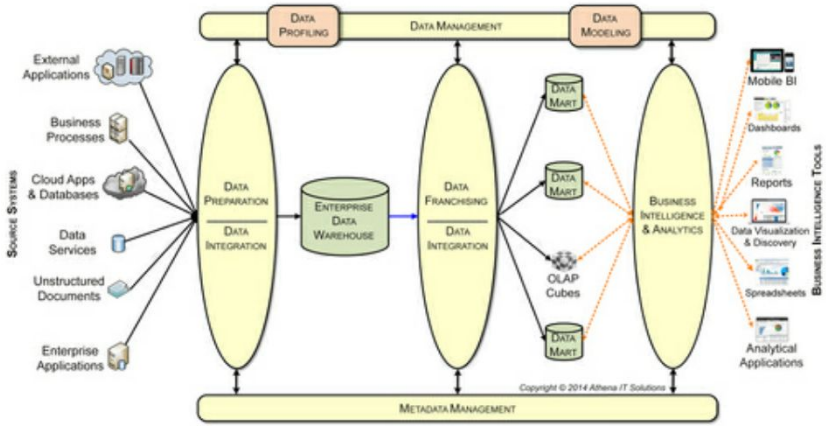


FIGURE 5.1 DIF information architecture.

The data integration framework (DIF) is a combination of architecture, processes, standards, people, and tools used to transform enterprise data into information for tactical operations reporting and strategic analysis.

Source: Sherman (2014)

Information architecture: why, what, who, where

- **Why** the solution(s) will be built—what the business and technical requirements are

- **What** business processes or functions are going to be supported?
- **What** types of analytics will be needed?
- **What** types of decisions are affected?

- **Who** (employees, customers, prospects, suppliers, or other stakeholders) will have access?

- **Where** the data is now?
- **Where** it will be integrated?
- **Where** it will be consumed in analytical applications?

Source: Sherman (2014)

Data architecture

Consists of data

- schema (star, snowflake, multidimensional),
- integrations,
- transformations,
- storage,
- workflows,

required to enable the analytical requirements of th information architecture

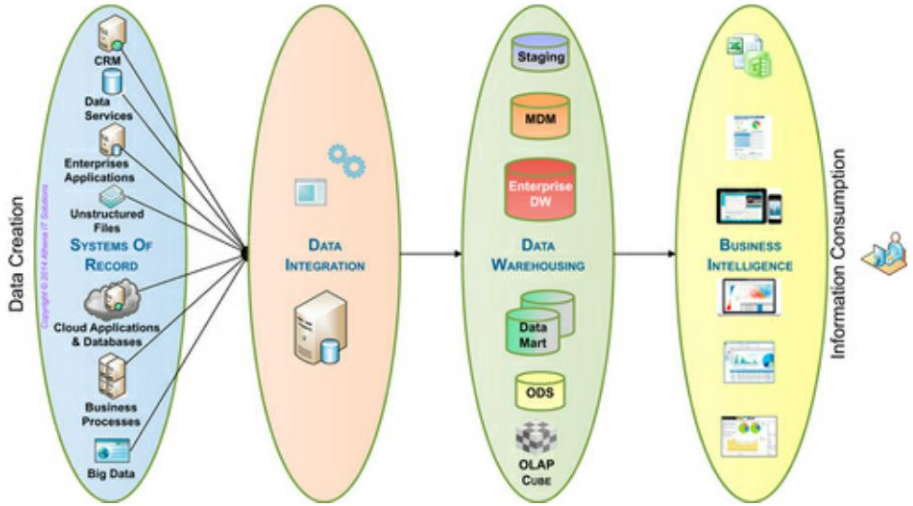


FIGURE 4.3 Data architecture workflow.

Source: Sherman (2014)

Technical architecture

- Business intelligence and analytics:
  - Tools to analyze information.
- Data warehousing
  - Any database (structured, unstructured …) or file used to store integrated data
- Information access and data integration:
  - Tools used to gather, integrate and transform data
- Data sources
  - Any data source that captures data

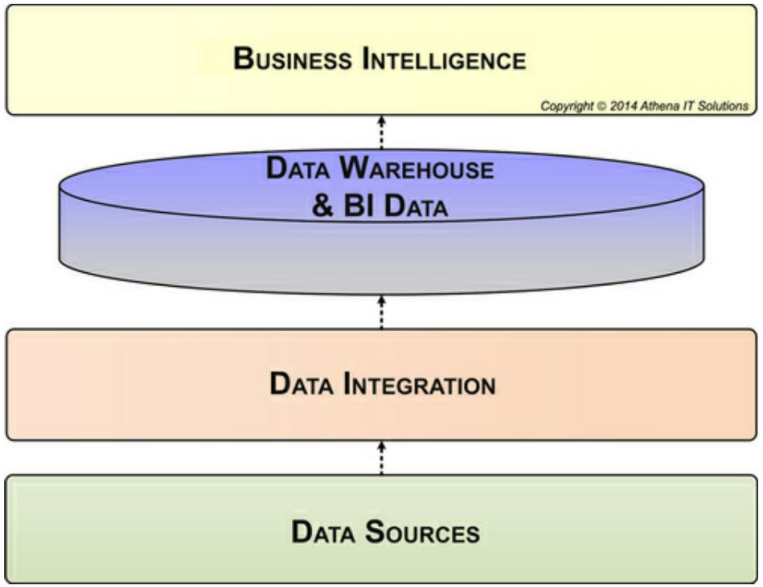


FIGURE 4.5 BI technical architecture.

Source: Sherman (2014)

Technical architecture categories

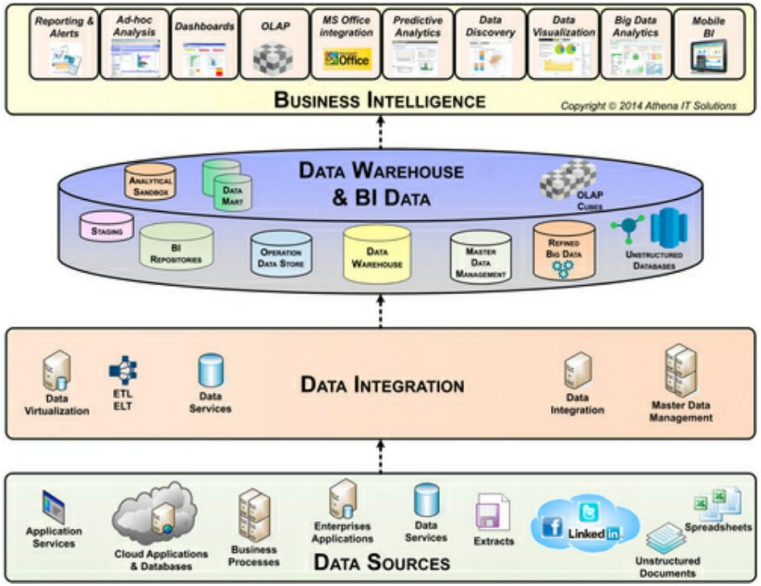


FIGURE 4.6 BI technical architecture categories.

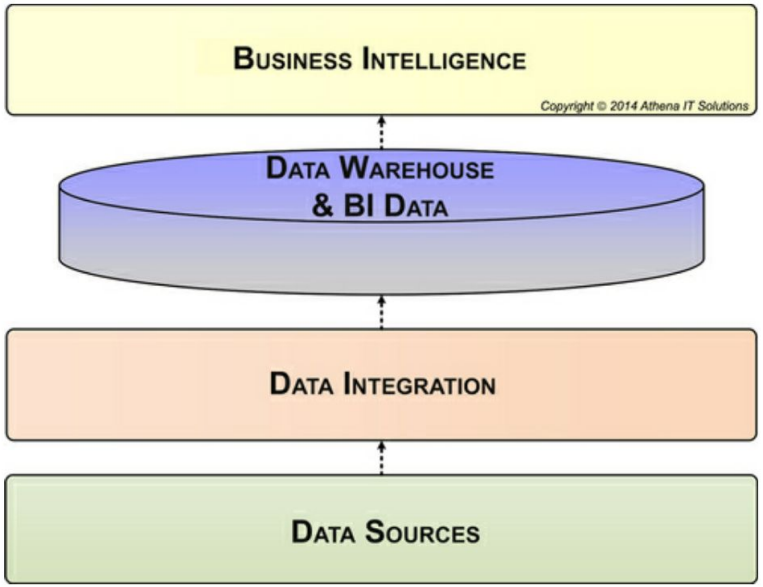
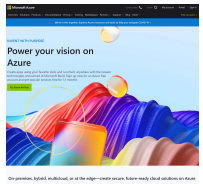


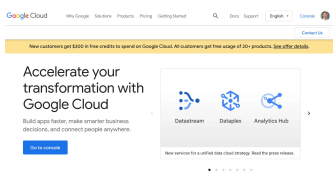
FIGURE 4.5 BI technical architecture.

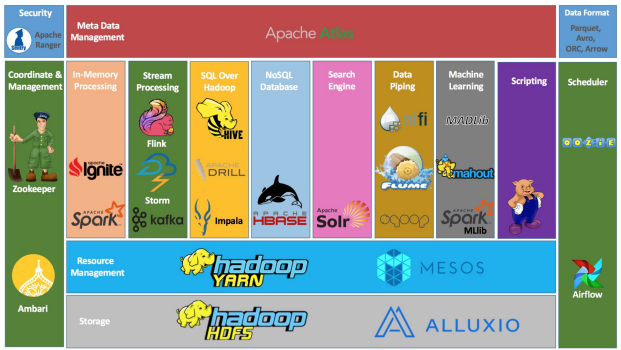
Source: Sherman (2014)

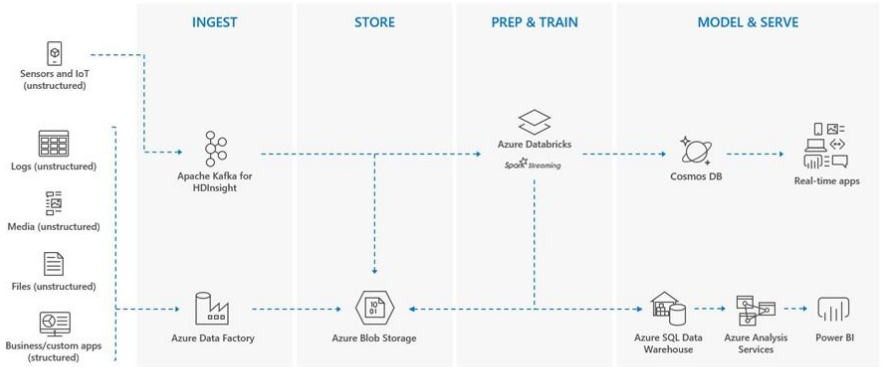
Product architecture

- Products, configurations and how products are interconnected









Overall architecture

- **Overall architecture**
  - Metadata
  - Security
  - Privacy

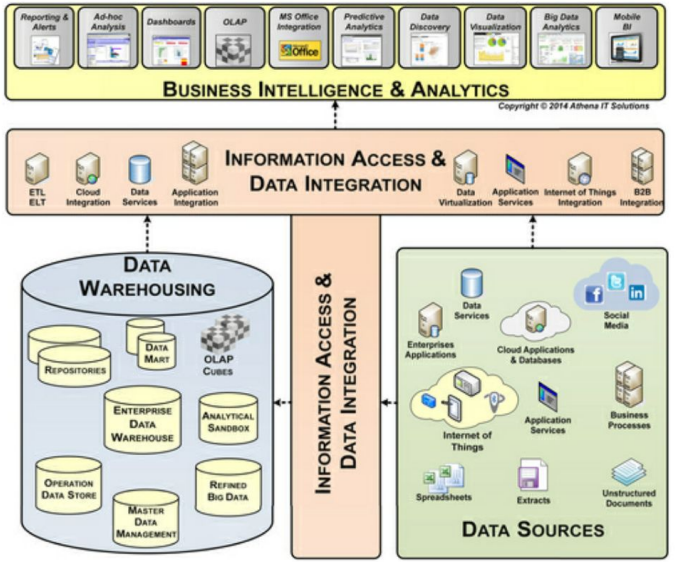


FIGURE 7.2 Technology architecture.

Source: Sherman (2014)