The 7 basic principles of a proper Business Intelligence architecture

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A good number of basic principles

The architecture of a Business Intelligence system is guided by a good number of basic principles that specifically apply to Business Intelligence systems. A basic umbrella principle here is the well-known phenomenon of 'structure follows function': the indicators that are derived from either the business processes or the strategy as well as additional management information largely determine the architectural structure of the Business Intelligence system. In other words: the content of the system determines its architecture and structure.

The principles govern the BI architecture

The basic principles reign over the Business Intelligence system's architecture. When we conscientiously apply these principles, we are provided with a clear, easily comprehensible architecture and with a Business Intelligence system that is scalable and easy to maintain.

The 7 principles

The basic principles relate to the following aspects:

1. **Symmetry:** the architecture reflects the business processes. This principle helps in creating an overall picture of the business processes and a single source of the truth. It also ensures that the Business

Intelligence system seamlessly attunes with both the information needs and the challenges of the business operations.

2. **Granularity:** data are submitted as detailed as possible and display the exact same granularity as the data in the source system(s). This principle increases the testability and verifiability of data and information in reports. It also allows for detailed reports because no information is lost. Information will be lost if concentrated rather than detailed data are submitted (at a higher level).

3. **Synchronisation:** the refresh rate of data in both the data warehouse and reports should coincide with the regularity and frequency of events in the relevant business processes. This prevents the organization from missing out on important events.

4. **Maintainability and scalability:** the calculations, the intelligence and the logic behind KPI's, measured values and dimensions are preferably recorded in one and the same place – thus also on one single platform. This greatly improves maintainability and scalability.

5. **Hiding complexity for end users:** end users should be able to directly select indicators and dimensions for use in reports or interactive analysis. This makes quick and easy reporting possible and it protects the organization from a situation in which each employee needs to (or can) assemble his own indicators.

6. **Flexibility:** when we fill the Business Intelligence system, we usually include relevant surrounding and adjacent data from the source systems so that users can create as many meaningful combinations of indicators and dimensions as possible. This increases both the power and possibilities of the analysis function within the organization.

7. **Not depending on tools:** an architect constructing a building needs to take into account which materials are available. Nonetheless, an architecture should where possible be separate (independent) from the tools used – or to be used (e.g. ETL and Business Intelligence tools).

Applying the principles is now possible

The current state of technology in the fields of data warehouses, Business Intelligence tools, architecture, metadata, databases, portals and so on, enables us to actually apply the above-mentioned principles. Reviewing and applying basic principles in advance provides more clarity in managing and implementing the project so that the ones who design and develop the Business Intelligence system can work much more independently.

Simply refer to the principles

After all, the basic principles guide the architecture, which frees designers from having to consult other project members or users with each (small) extension. For example: if users want to supply data on an aggregated level, we can simply refer them to the basic principles – the granularity principle in this specific case – and deliver the data at the lowest level of detail in consultation with the users.

Key contributors of a sustainable BI system

Finally, the above-mentioned basic principles may prevent the organization from compromising on aspects of Business Intelligence that have a major impact on the organization's performance. The 7 basic principles are key contributors to a sustainable and lasting Business Intelligence system.