

Case-Study: “Reasoning” within A Web Site for a Museum, Built as a Database Driven Web Resource

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Preamble

- data
 - digital representations of the information/knowledge that has to be communicated/given to users
- meta-data
 - digital representations of the descriptions of data that are required by software agents in “reasoning”;
 - meta-data is not “directly received” by human users; it is perceived only through the functionality of the system/site

Generalities

- two tier architecture (database centred)
 - data and meta-data are together stored in the database
 - meta-data is not made available on the web; it is only used locally, by the system
- the expressive power of a relational database with respect to meta-data is limited
 - better ways of expressing meta-data result in better automatic reasoning
 - *considered later*
- meta-data available on the web
 - increases interoperability (knowledge/information sharing)

Starting Scenario

- create a web service whereby:
 - data
 - ...
 - ...
 - functionality
 - ...
 - ...

Data (and Meta-Data) Modelling

Functionality Implemented in Front-End

- ...
- ...

Refine and Discuss the Previous Model

- enhance/refine the data model
 - identify new possible attributes, entities and relationships
 - note that some may be referred to as meta-data
- focus on "meta-data"
 - general domain descriptions "outside" the actual data model
 - these will increase the power of reasoning of the front-end

Need for Standard Meta-Data Vocabulary

- users (staff and clients) may change their geographical location
- knowledge sharing

Conclusions

- **all** data can be stored centrally in a database
 - meta-data does not need to be considered separately from data
 - the (local) behaviour of the system is as if the system were using meta-data
- more complex domain descriptions — meta-data — are not (easily) expressed in a database
 - a more refined language/syntax is required
- interoperability requires a standard language/syntax and meta-descriptions made available on the web

References

Connolly, T, Begg, C, Strachan, A, 2000, *Database Systems - A practical approach to design, implementation and management*, 3rd edition, Addison-Wesley. (for data modelling within the ER model)