Multidimensional Analysis Data to Create a Decision Support System Dedicated to the University Environment

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Received: 8 December 2011 Accepted: 2 January 2012 Published: 15 January 2012

Abstract

Our objective is to make proposals for the design of a SIS SID-quality and meet the needs of different stakeholders of the university. This is where we join (which is poorly modeled by the concept of data marts in the current tools of the market), namely the modeling of data resources. Often the documents are deposited on the information system of an organization without classification, without indexing, with all the information on their content, their purpose, their technical requirements and practices. The method of describing the properties of a document is a binding step involves an author and a culture of destruction of documents. Few users perform document properties they file on a system design and information. Then it is naturally more difficult to retrieve these information gaps which usually take the form of voids, it is still necessary that the input fields are provided adequate and appropriately organized, arranged and explained. Indeed, it often happens - for example on an intranet of an organization - the drop zones are not conducive to give relevant information on the properties of materials downloaded. In the best case, the documents are managed by their own systems, accessible through their own search engine or by federated search engines. Why we try to answer the question: how to reproduce a set of metadata specific to multidimensional databases specific to the decision-oriented universities.

Index terms— Multidimensional databases, Metadata, data marts, design and information system.

1 INTRODUCTION

he actors of the university have centered on the need Reporting, others need however to analyze more precisely the data (University maker). It is therefore to explain the anomalies and their origins, such as causing problems for the disappearance of students during their university life without any qualifications. It is also to highlight extreme events in the very structure of a numerical result.

An analysis of data reveals disparities and to explain phenomena apparently normal. In this logic, the Drill down is a method to visualize the detail information component, the opposite, the Drill up scrolls upward through the hierarchy of a dimension while the Drill through is to see other indicators to explain information. Starting from a 3D cube, it is possible to aggregate rotating along one dimension (pivot); we obtain a lattice of views (computable in SQL). The table below contains the main principles of the algebra of cubes. We will prove that multivariate analysis is to model data along several axes. The OLAP cube means the analytical technology that applies to this model of representation. This notion that rubs predictive analytics as designated by the Anglicism Data mining.

2 II.

3 HYPOTHESES

One starts by modeling [4] upstream actors taking into account the specifications and expectations of each of them, namely: ? From motivation to the job involvement: motivation Thus appears as part of a directed behavior and completed (goal oriented). ? Training required by the actors in institutions in the university year. ? Etc...... Given this situation, it is to correlate between the needs of University actors [1], [2] and those of the teacher and those of administration. Infect, we are faced with a situation of looking for satisfaction with a specific university. Indeed for a university, it is more about positioning and visibility of the organization. The company seeks a positioning performance level of its capital and the university aims to achieve a quality and a high ranking both domestically and internationally. The company seeks customer satisfaction; the university seeks to satisfy its stakeholders. Customer satisfaction in business is formalized in terms of costs. Satisfaction of the actors in university is renowned for meeting their needs.

The main objective of this work is to provide a simple, detailed and complete enough to meet the real needs of the university decision-maker (in [5], **??**6]) in terms of automatic adaptation needs and priorities of the indicator is to make a multidimensional model: Given the scope of this project which combines university: students, professors, administrative domains and operating [4] in various disciplines in terms of their thematic, structural information we propose is based on the model [5]of a warehouse data, taking into account the different trades. For example a person may have different responsibilities: it can have the status of responsible teaching.

We discuss the data on different levels by actors. We distinguish three levels: the actor, the administrative level and educational level.

? The level player makes an initial typology of actors around 3 classes, showing students, teachers and administrators.

? The educational level is used to identify bases 'referents' correlated with previously identified actors: foundation courses geared towards the students, baselines for serving teachers and basic rules and regulations for the administration of destination.

? The administrative level census data on the administrative situation of the student actor, data on the administrative situation of the actor and teacher data from administrative and financial management of students, teachers and training relevant to the administrative actor. We illustrate by a diagram that data relating to the actors, supplemented by existing.

After the consolidation of the formula 1, we obtain:

The portfolio of the source (S) (in [1], [2])defines all the activities to be performed during one cycle by each university players. Category (C) defines the three actors of the university: Student, Teacher, and Administrator. Aggregation (A) defines the needs of each player for a graduate level. The following model is then obtained: Table **??** : Role, Activities, Aggregation of Actors Model of application is to justify the balance between all the activities of all actors and their aggregations at the end of a graduate level.

In this context, we present, as an application of indicators defined by the makers of the university and programmed by technical information system making the institution in [4] order to improve the performance of each actor.

To better understand this approach, we are using a graphic to show the equilibrium relationship between each actor and their activities at an undergraduate level [6] and its aggregation, taking into account the multiple observations to develop our model. In the middle of our development that we present the following scheme which provide an overview of both synthetic and cross.

4 Global Journal of Computer Science and Technology

Volume XII Issue XIII Version I

5 Year

The classic cases to verify data administration are redundancy, synonymy, duplicates (duplicates), the inconsistencies according to the origin or time, unreliability, failure to reuse and non-corporate knowledge.

The problem of data quality ['7](inhomogeneous) has become central to the design of a data warehouse. The risks are to use data 'dirty', to make bad decisions, lack of relevant information, to misjudge the impact of a decision or fail to detect an abnormal situation. We must therefore ensure respect some essential criteria in order to have quality data.

? Completeness Expected values are present or not.

? Conformity Coherence, contradiction, format, syntax ? Correct Prediction, level of detail ... ? Credibility reputation, reliability ... ? Accessibility ,Availability of SI source, access rights, connectors ...

? Relevance, usefulness importance, value-added ... ? Freshness, news age, persistence / volatility ...

6 ? Comprehension, interpretation

understanding, meaning, origin ... Emphasize that there is a difference between Data ware housing and Master Data Management. A data warehouse consolidates data from multiple sources to feed business intelligence applications, reporting and analysis. As MDM, Data Warehouse consolidates the data from source systems but conversely it is not intended to refer to these sources changed data. Only MDM ensures data synchronization between the repository and source systems / targets attached.

Any kind of information value-added used repeatedly in key processes and institutions shared by multiple applications can be included in the scope of MDM between the data and thus represents a candidate for Master Data Management (see the examples in Figure **??**: Example the Repository Actor Single (UAR): a strategic MDM declination for the university).

7 CONCLUSION

To implement this application, we went through three main phases. The first is the theoretical part that needs to have a model that is able to respond in an academic setting known for its complexity (different actors, the wealth of data, non-uniform data ...).

This requires a mathematical model defining simple relationships between the actors, their activities and their aggregations. The second phase focuses on collecting data and designing a multi-dimensional. The third used as 'data about data', or reference data in the context of data aggregation and facilitate crossanalyzes. These Meta data (accessibility) used to describe the data used in analysis and decision making as the exact definition of the data (semantics), the source data (date, origin), how they are calculated, aggregated (calculation rules), business rules relating thereto, the process of extraction, transformation and loading that has been implemented (ETL). In the case of intelligence, so there are tools for extracting and managing Meta data that are so flexible -that is to say, scalable -and play an important role in the establishment.

Data within data warehouses must be good quality, clean, but also described by meta data to be managed best by the Management System Database to provide the most relevant results possible. [1]

Figure 1:

Activities (academic contribution to each player)			
1	Administer		
	Prepare	4	13
2	Organize	5	12
	Learn		11
	Train	8	
	Track	6	
	Correct		10
3	information	7	
	present		9

Aggregations (by contributing to university each actor)			
	Regulation	5	10
	Budget	1	
15	Monitoring		11
13	Training		8
	Course	6	9
12	Registration	2	
14	Census	3	7
	Preparation	4	
16	Resources		

Figure 2:

1 $$\text{Actor } \{ \sum_{i=1}^{i=13} S_i \; ; \; \sum_{j=1}^{j=16} A_j \}$$

Figure 3: Figure 1 :

Activities (academic contribution to each player)			
Review	31		
training		33	
course		35	
End Exhibit		34	
SID			37
Preparation	35	32	36

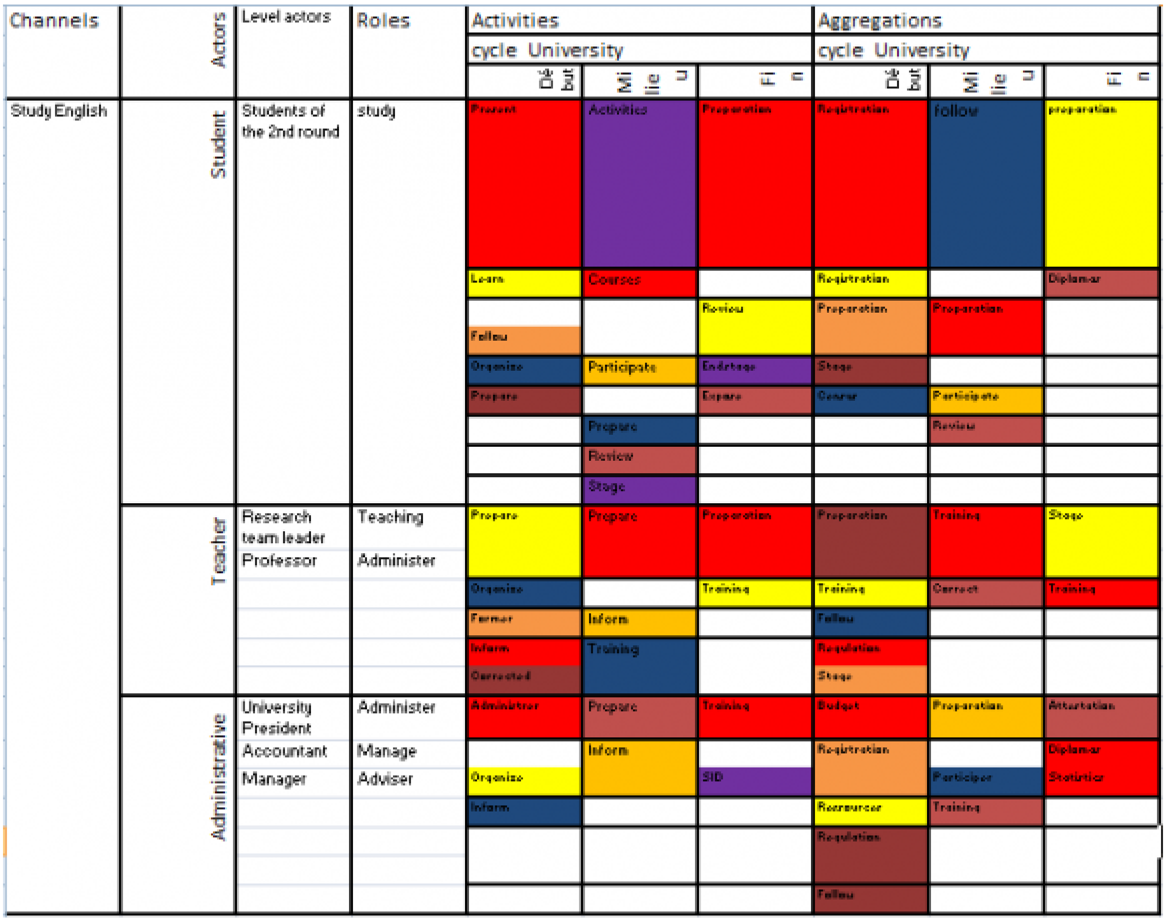
2

Aggregations (by contributing to university each actor)			
Statistical	43		
Training	41	44	
Diploma			38
Course			39
Certification	40	42	

Figure 4: Figure 2 :

3 $$\text{Actor } \{ ; \sum_{i=29}^{i=37} S_i \; ; \; \sum_{j=29}^{j=44} A_j \}$$

Figure 5: Figure 3 :



Channels
Actors
Level actors
Roles
Activities
Aggregations
cycle University
cycle University
Study English
Student
Students of the 2nd round
study
Activities
Preparation
Registration
follow
preparation
Learn
Courses
Registration
Diplomar
Review
Preparation
Preparation
Follow
Organize
Participate
Stage
Prepare
Participate
Prepare
Review
Review
Stage
Teacher
Research team leader
Teaching
Professor
Administer
Prepare
Prepare
Preparation
Preparation
Training
Stage
Organize
Training
Training
Correct
Training
Inform
Follow
Inform
Training
Regulation
Corrected
Stage
Administrative
University President
Administer
Accountant
Manage
Manager
Adviser
Administrar
Prepare
Training
Budget
Preparation
Attestation
Inform
Registration
Diplomar
Organize
SID
Statistics
Inform
Training
Regulation
Follow

Figure 6:

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