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Best Practices Paper: Business Rules

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Introduction

In today's world, there are massive amounts of data. What is missing, is the insights that make sense of all that **information**. Even when businesses and organizations have a method of collecting information, oftentimes the quality of **data** is poor. The Data Warehouse Institute reported that in 2002, issues with data quality cost businesses about $600 billion each year (English, 2002). More than a decade later, that dollar figure is sure to be higher. Businesses rely on insights from the information they have collected to make decisions about what to buy and sell, who to hire, how to advertise and market their products and more. Having quality data is as crucial today as it has ever been. One way to help solve the problem of too much data, too little insights, is to introduce constraints, or business rules, when building a database system. **Business rules** "govern how data are handled and stored" and are "derived from policies, procedures, events, functions, and other business objects, and the state constraints on the organization" (Hoffer, Ramesh, & Topi, 2013, 55-56). This ensures that when a book store sells a book, it is impossible to enter a buyer's name without also entering the book he/she bought. The business rule here would state something like, "each customer can buy zero or many books". Business rules are not the ultimate solution to data quality and beneficial insights though. The best practice is to include end users in the development of clear, concise, broad, and updatable business rules that are written down.

Best Practice

There are typical standards for business rules. Business rules should relate to the business, so **entity** names should say "Customer" rather than File10. They should be clear, broad, meaningful to users, and also unique so there is not confusion or duplication of data. There should also be a mechanism in place to update the rules should circumstances change. For instance, if the bookstore begins to sell books-on-CD and e-books after their database, database management system, and business rules were created, they will need to find a way to indicate the type of sale that occurred (Hoffer, et al, 2013, 63).

While typical standards are important for business rule development, they are not the final solution. Including end-users as key members in the process is critical for success. Without **end-user** advice and buy-in, the development of the database management system risks being flawed, and could risk end users developing their own shadow databases (Saran, 2011). Simply writing business rules will not guarantee data accuracy (English, 1999). If end-users are not included in the process, a database for a non-profit might be developed that includes a married couple as one entity. If end-users were included, they might have indicated that married couples should be de-coupled in the database, since sometimes one partner is interested in the non-profit, while the other one is not. Sometimes one partner may donate to a non-profit, and only they should be given gift credit while their partner may not be eligible to receive credit. Without knowing this information, the business rule will be confusing, and will not work.

Asking end users to be a part of the process of developing business rules does not mean they are actually doing the programming of the database – like in the case of **end**

user development. Relying on end-user development could be harmful to the business processes overall (Spreeuwenberg, 2005). Instead, end users should be treated as **subject matter experts** who know the business and its challenges very well.

It is important that the business rules be written in a way that makes sense to the average end-user, too. While using an **entity-relationship model (E-R model)** is perfect for developers, and those that understand how databases work, it is not necessarily clear for a novice. End-users should be able to buy into how the database management system actually works, and why they may get stuck sometimes. Having the business rules easily accessible and readable is key to getting this buy in from end users (C. Ferreira da Silva et al., 2013).

Catarina Ferreira da Silva, et al, developed a Graphical tool for rules Editing and AudiTing (GREAT) that has helped end users become empowered and write business rules that are then easily translated into specific programming languages. With some limitations, tools like this allow end-users to better understand how business rules actually work when applied to database management systems (C. Ferreira da Silva et al., 2013).

By including end users in the writing of clear, concise, and updatable business rules, the goal is that they would be less likely to create their own shadow databases using spreadsheets. The end-users will be more likely to ensure quality data is entered into the system as they will understand how the database is organized, and why quality is important.

Assessment

There are drawbacks to having end-users as a critical piece of business rule authoring. End-users will likely need training. Many end-users will not have been exposed to business rules in the past, so they will need to understand that each rule needs to be very specific and unique in order to work. This training piece can slow down the **systems development life cycle (SDLC)** in both the **planning** and **analysis** phase.

End-users may also request additional access so they can author business rules on their own. This can be risky because they will either be disappointed when they are not granted access, or they will be granted access but will not have the expertise to write effective business rules, and may damage the system (Saran, 2011).

The SDLC is also a highly technical process that can take a lot of time, and does not necessarily make a lot of sense to end-users whose jobs require them to complete very different tasks. They may not grasp the bigger picture of the process, and might not be productive. Additionally, end-users may not always agree on what the business rules should include, and ultimately the developers will need to make a judgment (Coronel, Morris, 2011).

Though there can be negatives to including end-users heavily in the process, there are also large benefits. For companies and organizations that are generally **top-down** in nature, end-users play a key role in filling in the blanks when the database developers and administrators are creating business rules. If management gives a broad idea about entities that are needed, end-users know best about how those entities relate. At the same time, a **bottom-up** organization needs to rely on end-users, because they tell the first part of the story, about how information comes to exist in the system, and how it affects other information. Boyer and Mili write that the end user (subject matter expert) “is responsible

for defining the business processes, the business policies, and the application requirements" (Boyer, Mili, 2011). Without the end-user, the developers will not know where to begin or end in their process.

As mentioned previously, when the SDLC reaches the maintenance phase, end-users need to feel invested in the system. If they run into roadblocks because business rules were written without their knowledge, they are likely to find workarounds that may result in dirty data – like making up a birth date because the real one is not available, but the field is required (English, 1999).

End-users will also be crucial in the maintenance phase of the SDLC, because they will know when a core business practice has changed, and the database and business rules need to reflect that change. A record store that decides to start buying used records would need to update its rules to reflect that a customer can not only buy a record, but can sell one, too. CheckFree assigned ownership of specific business rules to their end-users and subject matter experts. What resulted was an establishment and evolution of key business terms within the company, and ultimately a savings of more than $300,000 per year in staff resource time as end-users played a part in formalizing processes (TDWI, 2005).

Conclusions and Recommendations

Business rules best practices should be implemented in five steps. (1) First, the database system developers should give an overview of business rules to end-users and set expectations about what role every person will play in the SDLC. The overview will include descriptions of how business rules need to be clear, concise, adaptable, and understandable. (2) Next, the developers will interview a large sample of end-users,

getting representatives from each business unit that interacts with the database. They will ask end-users to document how they come into contact with data, what roadblocks they face, and what works well for them. (3) The developers will take this information and create a data model that can be read and understood by end-users, and then will ask for feedback. (4) Once feedback has been given, developers will begin implementation, and an end-user will help with creating training for all end-users. (5) Additional end-users will be asked to regularly check in on how the database and business rules are operating. Using these strategies will ensure best practices are used in the development of effective and useful business rules.

Glossary

Source: Many definitions taken directly from Modern Database Management, 11th Edition

Analysis: A phase of the system development life cycle where an analyst produces a detailed data model that identifies all the organizational data that must be managed for this information system.

Bottom-up: Defining specific user needs and building the system and its entities from there

Business rules: A statement that defines of constrains some aspect of the business. It is intended to assert business structure or to control or influence the behavior of the business.

Data: Stored representation of objects and events that have meaning and importance in the user's environment.

End-user: A person that uses the system

End-user development: A person that is not a professional developer or programmer who programs a system

Entity: A person, a place, an object, and event, or a concept in the user environment about which the organization wishes to maintain data.

Entity-Relationship Model (E-R Model): A logical representation of the data for an organization or for a business area, using entities for categories of data and relationships for associations between entities.

Information: Data that have been processed in such a a way as to increase the knowledge of the person who uses the data

Planning: A phase of the system development life cycle that begins with a review of the enterprise modeling components and ends with a conceptual data model

Subject matter experts: A person who is an authority in a particular area or topic

System development life cycle (SDLC): The traditional methodology used to develop, maintain, and replace information systems

Top-down: Defining a broad understanding of the organization's needs

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