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The Importance Of Business Rules In Actionable Healthcare Data

By George Dealy, Vice President of Healthcare Applications at Dimensional Insight

Healthcare organizations are wrestling with the imperative to harness information from their internal IT systems to increase operational inefficiency and improve patient outcomes. One major challenge stands in the way: most of the available information is transactional in nature and not sufficiently meaningful by itself to truly support data-driven decision making. Effective decision support requires an information infrastructure that encourages every member of the organization to freely interrogate, analyze, and explore institutional knowledge with the goal of making the best possible choices.

This is where analytics comes in. Effective analytics systems make data-driven decisions practical by capturing and organizing the information at hand, adding meaning to it, and disseminating the resulting knowledge throughout the organization. One important aspect of analytics difficult to achieve involves deriving knowledge from data. But once it's available, this knowledge can help encourage a culture in which information is the primary currency for communication, collaboration, and consensus.

But how can healthcare organizations do this? Historically, developing reliable approaches for transforming raw data into organizational knowledge has posed significant challenges. One of the key ingredients to successful knowledge creation lies in a class of data transformation known as business rules.

Business Rules Provide The Foundation For Effective Analytics
Business rules encode the logic necessary to convert raw data from transactional systems into

information that can facilitate data-driven decisions. They play an important role in transforming healthcare data into information and ultimately, information into knowledge. One of the principal challenges of business rules is that even the most elementary concepts can quickly become complex.

Rules tend to be layered on top of one another, forming an intricate network of logic. One seemingly small change to that logic may propagate through a large number of related rules. Additionally, multiple rules may be needed to represent what appears on the surface to be the same thing. For example, a measure of the number of patients cared for by a nursing unit may vary depending on whether it is defined in terms of administrative claims or the actual patient census. Though they may yield different results, both measures may be valid for their respective purpose.

For the professionals who regularly make data-driven decisions in delivering or supporting care, business rules are essential to reducing vast amounts of data to insights that are relevant, timely, and useful.

But defining and implementing these rules is no easy feat. Healthcare data is notoriously complicated which only compounds the challenges associated with business rules. Multiple systems may represent the same concept or event in different ways for different purposes. This all needs to be reconciled in order to maintain information integrity and it typically falls to business rules to do this.

The ultimate goal of business rules should be to enrich information. Among the ways they can do this are by:

- conforming to standards where available and practical
- incorporating supplementary data that adds meaning and context
- quantifying measurable concepts such as utilization, efficiency, and adherence
- providing a basis for comparison against targets or benchmarks

Business Rules Must Be Aligned Across Healthcare Organizations
Aligning business rules, both within and across organizations, is particularly critical when comparing values to benchmarks or targets. The challenge is source systems typically don't define data in ways that support direct comparison to external targets.

Business rules can be used to bridge the gap. In particular, proxy measures — retooled variations of standard measures that yield timely and actionable information — are often useful. They approximate standard measures but have the added advantage of incorporating considerations that are specific to how an organization may manage the activities that impact a particular measure.

One useful example involves readmissions. Standard readmission measures are typically computed retrospectively and are only available long after the opportunity to affect the measure has passed. Readmission proxy measures can provide insight into both actual and potential readmissions events and may be calculated daily to help care teams more proactively manage processes designed to reduce readmissions.

In practice, business rules quickly become interrelated. For example, one set of rules is needed to determine which patients belong to a hospital's acute population. These rules must be combined with those used to define standard quantitative measures, such as length of stay, in order to obtain useful and reliable results for the acute population. When any of the rules need to change, it's essential those changes propagate seamlessly — ideally automatically — throughout the entire rules network. A well-designed analytics system should make even complex rule configurations practical to manage and maintain.

While there is certainly work involved in rigorously defining, documenting, and maintaining business rules, this investment will provide a reliable foundation that helps healthcare organizations take the next step in harnessing knowledge for data-driven insights. Among the most important initial steps are to ensure that analytics technology solutions are up to the task and that the organization is building the competencies necessary to both produce and consume information and knowledge.

About The Author

George Dealy is a veteran healthcare information technology leader with more than 25 years of experience helping organizations design, develop, and implement innovative commercial software solutions. As vice president of healthcare applications at Dimensional Insight, George is responsible for product direction in the healthcare market. His previous work experience with companies such as PatientKeeper, Epiphany and Sybase provides George with a unique perspective on the challenges that organizations face in effectively distributing business-critical information to varied user sets. George holds a master's degree in computer science from Union College and a bachelor's in applied economics from Cornell University.