

● From Bits and Bytes to Knowledge Management

By Ramon Barquin

With the advent of knowledge management initiative in a large number of enterprises, we need a better understanding of what to do to the bits and bytes we currently store so they may eventually yield knowledge. This is not easy, but there is at least one construct that provides us with some insights into the process: The Barabba-Haeckel Framework.

I've given it this name because it first came to my attention in a presentation by Vince Barabba, the former head of the National Institute of Standards and Technology (NIST) and Vice President of General Motors. At a recent knowledge management summit, Vince told me he had developed it in discussions with Stephen Haeckel, a former IBM Vice President, and hence the origin of my nomenclature.

The Barabba-Haeckel Framework

- Data
- Data + Content = Information
- Information
- Information + Inference = Intelligence
- Intelligence
- Knowledge
- Knowledge + Synthesis = Wisdom
- Wisdom

The framework starts with data and takes it all the way to wisdom. Like a continuum, it goes through stages: data, information, intelligence, knowledge, and eventually wisdom.

Data, or its components, are stored in borne medium: our brains, paper, silicon chips. If we are dealing with electronic databases, we tend to use coding scheme composed of binary

digits, or bits, conveniently aggregated into larger structures called bytes.

What must we do to data to get information? Barabba and Haeckel say to add context—in this case, metadata. For example, take the following numbers: 46, 27, 35, 56, 22, 40. This is data. If we are now told that these are the ages of individuals in a given group, we now have information.

To get from information to intelligence, we use inference. This means that we must have a set of business rules—an experience base—learned over time that when applied to the information allows you to infer intelligence. We may be able to infer, for example, that this is a group of adults; insofar as we can apply a business rule that anyone over the age of 18 is an adult.

Going from intelligence to knowledge is a bit more complex. The Barabba-Haeckel Framework states that to go from one to the other you need certitude. This seems like a very strong condition. Certitude. Certainty. How can we ever be absolutely certain of anything? The spin is that we must look at certitude as a probability function. Absolutely means 100% probability.

In the real world, as we move from theory to practice, and from analysis to action, we must make decisions with whatever intelligence we have at hand. The more and better intelligence we have, the higher the level of certitude we will have in our knowledge of a specific situation. But factors outside our control often dictate when we must move to a action. A military commander may have to launch an attack being only 50 percent

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elements in a battlefield situation. A business executive may have to decide on whether to launch a new product or not with possibly 60 percent certainty about the situational components

Yet if Max Weber was right—and at least in my opinion, he was—then the individual does make a difference in our world. Hence, factors like courage, commitment, inspiration, fortitude, management style and willingness to accept risk play a significant role in that movement from analysis to action. As a result, even with better intelligence one individual can outcompete another through better interpretation, speedier action, more robust strategy, or simply better execution.

Barabba-Haeckel indicates that to go from knowledge to wisdom entails synthesis. We can address this in more depth on another occasion. The move from knowledge to wisdom entails much more discussion than the space we have for this article.

How much of this can we do with information technology? How much knowledge can we methodically produce from an enterprise's data using information systems? The answer is not clear, but it certainly is a lot less than what we would like.

Remember that this is a space dominated by human processes and interrelationships. There are just too many other factors—resistance to change, unwillingness to share knowledge, organizational learning processes, difference in cognitive styles, change management, building communities of practice—that are often very difficult, if not impossible, to address only with technology.

Ultimately, we are dealing with disciplines to assist us in the process of making decisions. Focus for a moment on the definition of a decision. Admiral A. W. Radford put it like this: "A decision is the action an executive must take when he has information so incomplete that the answer does not suggest itself."

If you follow this to its logical conclusion, knowledge management deals with reducing the decision domain in an enterprise to its minimum expression. By extracting, analyzing, interpreting, manipulating, mining, and/or displaying data, information, and/or intelligence, stored in brains, paper, databases and/or data warehouses we are clearly moving the ball forward in our ability to manage knowledge. •

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