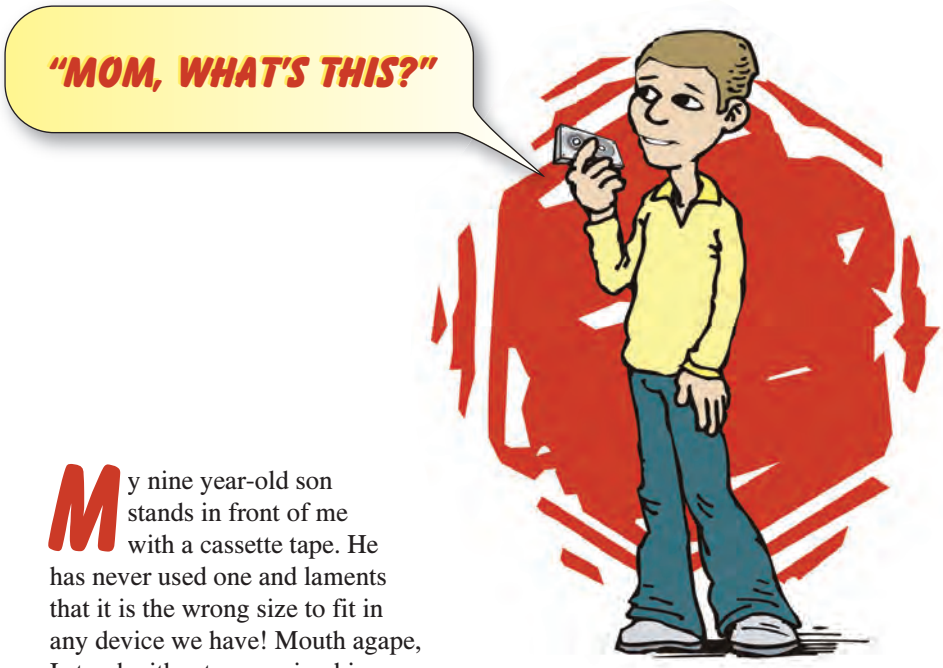
By Jen Sharp, jensharp.com

How Much is Too Much?

A Backwards Approach to Implementing Technology



My nine year-old son stands in front of me with a cassette tape. He has never used one and laments that it is the wrong size to fit in any device we have! Mouth agape, I stood without answering his questions, pondering on how fast technology moves. The "Latest and Greatest" device and technology buzz words cloud computing in my head: iPhone, Android, Remotext, augmented reality, MP3, G-sensor, face detection, Lockitron, iPad, gestures, Edutainment, etc.

And, what's the point?

Ideally, technology should improve our lives, not add complication and struggle. The "kid" in us sees new toys and wants to chase the best, newest out there. Yet the inner "adult" resists all the work that goes along with change. True balance comes with a mix of Think and Do. Converting an entire municipal or rural water office to new fancy systems can be more damaging than helpful. That's where the "Backwards Approach" to implementing technology can be useful.

Working backwards

Instead of looking at the shopping list on newest gadgets and trying to find a use for them, a more balanced approach starts with the simple technology of pen and paper: Brainstorm as many unevaluated, even ridiculous ideas of what would make your work load lighter and more efficient. Using that nine-year old boy imagination of "What if we…?" is ideal here! Then, take a break, even a day or week, to let this sit. Finally, come back to the list and see if you could find technology to help you achieve the most important and practical ideas you came up with.

In the wide range of choices, we need basic guidelines for knowing our decision is good in the long term. Specifically, we weigh some components such as scalability, or how the balloon can grow; flexibility, that is how the bamboo moves with the winds of change; compatibility, or fitting that lock with the right key; and utility, that is, the flow of water that eases information our direction. Evaluating location on these components is the essence of this exploration.

Scalability

In software engineering, scalability is the ability of a system, network, or process, to handle growing amounts of work in a graceful manner or its ability to be enlarged to accommodate that growth. Essentially, technology needs to have the same characteristics, the balance of being useful in its current state, yet able to accommodate change both increasing and decreasing. However, an entity should always anticipate growth, planning creatively for the biggest imagined scenario in the future. The image of balloon, able to grow exponentially without increasing vulnerability or risk of self-destruction, appropriately represents this concept.

Flexibility

Flexibility is the ease with which the system can respond to uncertainty in a manner to sustain or increase its value delivery. Key to an implication here is the word "uncertainty." Although we fear the unknown, it can also be exciting – hence the balance of risk versus reward. Venturing can create opportunity, and therein lies its value. This concept is embodied in the image of a strong yet flexible bamboo shoot, able to whether a storm despite its size or strength compared to an inflexible oak tree.

Compatibility

Given constant changes in operating systems, the ability of a given technology to "fit" faces more challenges as diversity in technology grows. Compatibility is accessibility to the largest possible audience while maintaining performance and output. Even in the same organization, the hardware and operating systems used to view and interact with a database might differ greatly, given the need for equipment replacement schedules to stagger purchases; there will always be a range of models in use at any given time. Just as a key fits into its lock, this concept of compatibility requires precision.

Utility

As our need for greater functionality increases, complexity of a system grows as a byproduct. To make sense and use of this functionality is a technology's utility. Most of this interaction is facilitated – meaning made easy, as in the Latin root facil – by a GUI (Graphical User Interface) that is intuitive and familiar, building on skills the end user already possesses. The image of water with its easy flow and simplicity captures the essence of this concept.

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How to apply?

These concepts are general. How do we use these components when making a decision on a particular technology? For example, let's look at one of the most likely solutions that would fit needs: a database. This simple technology can not only lighten practical daily workload, but also provide easy access to a big picture view for decision-making. Although the choices for structuring or restructuring devices or even a database can be daunting, the path for deciding has two forks: traditionally housed databases, and web databases.

Traditional databases have generally been deployed internally with hard configurations, and resources such as Oracle, DB2, and SQL Server, or even as simple as MS Access, or the even friendlier Sesame, house data with some ability to interface. Scalability is dependent on the design itself, and because of object-oriented modeling, flexibility is high. Compatibility is limited in some sense, because of system requirements to not only run these but also updates at times not being backwards compatible.

Top Ten Rules

According to a company called Interface Management, a database should follow these rules:

Rule 1 – Keep it simple

Rule 2 – Get it Right

Rule 3 – Stick to Standard Data Formats

Rule 4 – Eliminate Duplication

Rule 5 – Strive for Completeness

Rule 6 – Date Each Entry

Rule 7 – Resist Unnecessary Clutter

Rule 8 – Restrict Permission

Rule 9 – Update and De-Clutter Regularly

Rule 10 – Hire a Professional to Do It

Utility is also of variable value, as the design dictates how well it comes through.

Web databases are used by businesses in various capacities depending on the operation. Common uses include customized database generation, presentation of information to customers or visitors, sorting of data, report generation, and importing and exporting of data. Scalability with web databases depends on design mostly, but in general, most are acceptable for use in all areas except extremely large, given connection speeds. A system of networked smaller databases can overcome this limitation. Flexibility is high, given the fact that web pages can be generated dynamically, and the front-end content is separate from the data. Compatibility is high because the primary applications used to access web databases are browsers, which naturally strive to look and feel the same for any operating system, screen resolution, hardware configuration or other system specification. Perhaps even more compatible is the accessibility of a database from any Internet connection, without the use of specialized software; instantly a database is ubiquitous. Utility is naturally high as well, since users are accustomed to interacting online, and smart designers capitalize on structure and techniques already familiar to those needing data.

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Taking into account scalability, flexibility, compatibility, utility, the concept of a web-centered database clearly leads traditional databases in advantages. Not explored here is the concept of security, but as web applications become more popular, the demand for higher security is being catered to, with satisfying results.

The bottom line?

Although the appeal of "new" technology can feed urgency to just buy something and make it fit, the most cost and time efficient approach is backwards: Take your time to evaluate what you need and why. Then find a fit to fill those needs.

Since 1997, Jen Sharp (JenSharp.com) has served business and government across Kansas and the US and even internationally, specializing in web development, design & programming including e-Learning, ecommerce, content management systems, and other small business solutions. Her work has earned National and International awards: krwa.net won Best Web site in 2002 from the National Rural Water Association.