## Too Much Information?

In 1979, TMI referred to Three Mile Island. Today, it usually refers to "too much information." But if you look at www.acronymfinder.com, you'll find 213 definitions for TMI. It seems as if we live in an age of way too much information. (That would be WTMI.) Information Overload and Information Fatigue Syndrome could become new physiological maladies—reasons that our heads hurt and we feel the need to stay home from work!

Small businesses and highly reactive maintenance organizations can easily fall into the trap of not knowing what action to take because of too much information or taking swift action with misguided or unreliable information. We are awash in information, and at the root of it lies data…lots and lots of data coming at us faster than we can sort through it. Coming out of the Space Age of the 1960s, '70s and '80s, the Information Age was supposed to be a good thing: lots of information, lots of knowledge, and lots of informed decisions. But finding what is valuable and what is not is sort of like separating the fly specks from the pepper in the shaker. Most of what's in there is good stuff, but some of it's just junk.

So how do we determine what the good stuff is? First of all, let's clarify our terms. Many people use the words "data" and "information" interchangeably, but they are not really the same stuff. Data are plain facts. When data are organized and presented in a certain way that makes them useful, then they become information. Data alone are useless. But when data are processed to determine their true meaning, they become useful and can then be called information. (Here's a very simple example: 8006240849 is data, but 800-624-0849 is information because now you can recognize it as a phone number.)

In maintenance and reliability work, we deal with mountains of both data and information specific to our equipment and facilities: maintenance management systems, work order histories, preventive and predictive maintenance, condition monitoring, bills of materials, parts inventories, and performance metrics (MTTR, MTBF, OEE, and much more). How we access this information—sort through the data in search of answers to help us make the right decisions and take the right actions—can be a growing challenge that must be mastered.

> "It's hard to pay attention these days because of multiple affects of the information technology nowadays. You tend to develop a faster, speedier mind, but I don't think it's necessarily broader or smarter."
>
> ~Robert Redford

### Internet Fuel

The global uses of digital information technology and search engines generate "digital exhaust." It starts out so simple: We have huge educational and reference libraries and databases coupled with the Internet, web sites and their URLs. Then we use Internet search engines (hundreds including Google, Yahoo, Dogpile, Excite, LeapFish, WebCrawler, and many more) and emails in an attempt to gather necessary information. Then we mix business media such as voicemails with social media that includes text messages, blogs, MySpace and Facebook, YouTube, web

cams, Twitter, Flickr. Then information controls are entered into the mix: encryption, ciphers, information regulatory compliance, regulated information, rights to privacy. Now the flood gates open up with unregulated information, junk-mail and e-scams. Mixed in with the information we need is a huge cloud of digital exhaust!

> "Technology is so much fun, but we can drown in our technology. The fog of information can drive out knowledge."
>
> ~Daniel J. Boorstin

**A Picture is Worth a Thousand Words**

Here's a way to think of how information has morphed into digital exhaust in the past 20 years. For more than 100 years and up through the 1970s, a photograph was a true recording of an event. If you look at these early photos, they almost always represented a true and accurate depiction of what was in front of the camera: A picture is worth a thousand words. Then digital photography technique came into its own in the 1980s, along with desktop publishing and the personal computer. By the late 1980s and early 1990s, digital images (photographs) could be easily modified. With the advent of digital images, anything is possible in a photograph—megapixels of truthful details or far from the truth. Today, almost anyone can modify digital images on their home computer, making it difficult to discern a fake from the real thing. Sadly, we can no longer think of digital images as snapshots of actual events or conditions. The true nature of the image is now cloudy, and thus, visual digital exhaust!

As with digital photographs, we are often unable to determine the real thing—the authentic data in much of today's "information" warehouse.

> "Where is all the knowledge we lost with information?"
>
> ~T. S. Eliot

**Data is a Four-Letter Word**

Data alone is practically worthless. They take up space in file cabinets, on computers, on servers, on memory cards. It's what you do with data and the resulting information that counts. To master the Information Age, it is about more than access to the right hardware and software. The most important element is the right "people-ware"—intelligent gathering, analysis, and use of specific information. Producing actual knowledge out of the information is key.

So, how should we make sense of all of the information? Here are ten sequential actions for gathering information and then doing something with it:

1. searching and scanning for related data
2. accumulating and categorizing unfiltered data
3. evaluating facts, fiction, authenticity, reliability, currency
4. sifting the data to extract the information
5. recognizing and capturing potentially useful knowledge
6. sorting, discerning, and learning
7. taking action with the newfound knowledge

8. observing the reaction, the change
9. measuring and quantifying the results of the action
10. evaluating the newly acquired knowledge and next steps

Of these ten actions, how much of this is truly hardware and software dependent? We suggest steps number 1 and 2 in the case of massive amounts of data. Most of everything else is totally dependent on "people-ware." The process of converting unfiltered data (number 2) into action (number 7) depends on informed, knowledgeable, discerning human beings. Observing the reaction (number 8) and measuring the results can be a combination of software, hardware, and people-ware." Step 10 (more data available) starts the cycle all over again.

"Information is not knowledge."
~Albert Einstein

**The Computer is a Tool**

Since about 1981, personal computers and networked PCs offered individualized and up-close access to lots of data. Software (anything that can be stored electronically) and programs (an organized list of instructions that causes the computer to behave in a specific predetermined manner) for the emerging generation of PCs began proliferating in the early 1980s. A quick Google search turned up 1,330,000,000 (yes, that's 1.3 billion) "software" links! Without programs, computers are useless. But all too often, mistakes are made because we rely entirely too much on the products of the software and hardware as actionable knowledge. We experience this almost every day during Internet searches for answers to our questions. Taking action based on unfiltered data happens all too often for the uninformed masses who search the global digital network for information. "If it's on the internet, it must be true and factual" cannot be further from the truth! We've potentially got access to billions of answers. Now if we could only ask the right questions! Let's intelligently use the tools given to us.

**Sorting the Pepper**

During a recent maintenance audit while searching for production downtime records, we found that the commonly perceived "most troublesome machine" actually was not the problem. The first problem lay in the way the data was collected, entered into the database and later retrieved in the form of production downtime reports. The data was entered in the computer program by a select few people, including temporary office help. However, the downtime data initially came from the plant floor crews who logged production downtime data on shift production report sheets. The actual downtime incidents for the equipment labeled "Filler 4" could be logged as downtime for Filler 4, Filling 4, Filler4, Plastic Filler 4, Filler 4 Plastic, Filler, and Filer 4 (misspelled). The problem with the data was further complicated by lower case and/or all caps spellings of the above such as filler 4, rotary Filler 4, FILLER 4, and so on. The data base was case sensitive.

So, to get a true picture of the production downtime for Filler 4, we had to scan the entire downtime database printouts for anything that looked like "Filler 4" and add it to the list. To quote Charlie Brown from the Peanuts cartoon: "Aarrgghhh!" Once we pulled all of that data together and assessed the reasons for production downtime, we discovered that the biggest cause of Filler 4 downtime was the upstream process that was starving Filler 4. So, no matter how

much time was devoted to Filler 4, the upstream process continued to cause the largest amount of downtime.

Intelligently using available tools could resolve this problem. Differences in natural language—in the way various people enter data into this database—could be managed with the tools of information science, a growing field that focuses on collecting, classifying, storing, retrieving and distributing information. Using a controlled vocabulary in this database instead of free text would bring together all of the above-mentioned phrases used to represent Filler 4. A preferred term, i.e. Filler 4, could be designated as the primary term; but if any of the other secondary terms were entered, the database it would still connect to Filler 4. In other words, a controlled vocabulary establishes a relationship among all of these terms, thereby resulting in the retrieval of more valuable, accurate information.

We use all kinds of data and information to make critical decisions every day. But we must find ways to improve the way routine equipment and process data is collected, standardized, catalogued, and retrieved. Remember, the old saying about computers—garbage in, garbage out—still applies.

"Information's pretty thin stuff unless mixed with experience."
~Clarence Day

**Unintended Consequences**

Another negative consequence of the Information Age is information overload. Through the Internet (and intranets), we have access to more information than any other generation on Earth, and the volume of information has doubled about every four years. With almost unfettered access to boundless amounts of information (and we use that term "information" loosely here), we still get bogged down in our decision-making processes. This information overload is much like the "can't see the forest for the trees" analogy, except that we can become so focused on the leaves and never see the trees, let alone the forest.

Psychologist David Lewis wrote a foreword to the research study "Dying for Information" (1996) in which he first identified Information Fatigue Syndrome. IFS is characterized by feelings of stress, lack of confidence, irritability, anxiety, loss of appetite and insomnia. People afflicted with IFS may become mentally tired, staring at something for many minutes without doing anything and not aware of it. Then, suddenly, they may begin to react by making "foolish decisions and flawed conclusions." Unintended consequences…

Information used to be a solution for unknown problems (maintenance, reliability, health, nutrition, smoking…). Now, information itself is often an unknown problem. With an overabundance of information, there is a strong desire for simple to-the-point information versus all the clutter we encounter on the path to solving a problem or answering a question. We have to be aware that just because we dug up some information on a specific problem, it might not be the right information. It might not be the complete information picture that we seek.

"Everybody gets so much information all day long
that they lose their common sense."

~Gertrude Stein

**Information Literacy**

In September 2003, the International Conference on Information Literacy took place in Prague in the Czech Republic with experts representing 23 countries from seven major continents participating. This group proposed six basic information literacy principles. The first of these principles states that "The creation of an Information Society is key to social, cultural and economic development of nations and communities, institutions and individuals in the 21st century and beyond." Other sources have indicated that information literacy is becoming an increasingly more important part of K-12 education and a vital part of university-level education In this information age, students must develop skills early on so they are prepared for post-secondary opportunities, whether in the workplace or in pursuit of higher education. In her book *Student Learning in the Information Age* (1998), Patricia Senn Breivik reports that the sum of all human knowledge will double every 73 days by 2020.

So, if you are waiting for the flow of information to slow down, don't hold your breath. Effective access to and knowledgeable use of information is necessary to make our plants reliable and productive, to make our cities safe and secure, to make our infrastructure functionally sound, to make our water supplies potable, to make our food sources abundant, to make our energy sources renewable, and to preserve our natural environment. We must be intellectually prepared to make efficient and effective use of all of the appropriate information that is literally at our fingertips. To amass and use large amounts of data while thinking that it is information could be the death of productive organizations.

"Tis not knowing much but what is useful that
makes a wise man."

~Thomas Fuller


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