



**Presents**  
**An IT Metrics and Productivity Journal Special Edition**

**Focus on Joseph McMakin**  
**Former CIO, Air Products and Chemicals**  
**Winner of Gartner's 2002 CIO Choice Award for Excellence in IT**

**A CAI State of the Practice Interview**  
**August 2005**

**Biography of Joseph McMakin:**

Joseph H. McMakin formed the consulting company ITMC, LLC in October 2003, following his retirement from Air Products and Chemicals, Inc. ITMC specializes in improving management practices relative to Information Technology.

McMakin joined Air Products and Chemicals, Inc. in 1975 after various manufacturing, engineering and sales assignments with DuPont, Stauffer Chemical Co., and IBM.

He was named director of technology for Air Products' plastics division in 1979, and subsequently held the positions of director of marketing for the industrial chemicals division and business area manager for alkyl and specialty amines.

In 1988, McMakin was named general manager of business development (M&A) for the chemicals group. He was appointed general manager of performance chemicals in 1990 and vice president and general manager of the polyurethane and performance chemicals division in 1994. In July 1996, he assumed the position of CIO for the company and was appointed to the internal management committee of the company.

During his tenure as CIO, Air Products rose to a top 30 position in E-business rankings, and won the Gartner award in 2001 for continuous improvement. With a staff of approximately 1000 professionals and global operations extending to over 30 countries, McMakin formulated and directed significant changes in infrastructure and application approaches, as well as in governance of IT in the enterprise. In 2002, McMakin was awarded the Gartner CIO Choice Award for excellence in Information Technology.



**CAI: How did you go about achieving long term value and cost savings during your tenure at Air Products? Why do you think so many other IT organizations fail at this?**

**MCMAKIN:** We applied basic principles to IT that hold true for any business; specifically, that you need scale to reduce your unit costs, that you need to have a process for how you do things, and that there is a value to simplicity.

We also treated IT as a rare resource as opposed to a bottomless well. Once you do that, you start to make different prioritization decisions. We all claim to have project prioritization systems but until they actually restrict the amount of IT resources that are available for doing work, these project selection systems are not going to be very effective.

Finally, we focused on the goal setting process. The first challenge with this was how to go about setting them within the IT organization itself. And that's a metrics issue. If you don't have proper metrics in place, it's going to be pretty hard to figure out what your goals are or should be. In our case, one of the first things we had to do was to measure items that we had not previously perceived as important. We had a variety of measures on all kinds of things but we didn't have the right measurements needed to develop our long term improvement objectives.

In terms of why we have difficulty with all of these things, a couple of issues stand out. First, there are always going to be conflicting demands imposed upon the IT organization and its leadership partly because the "needs" that emanate from the user community are often taken as absolutes by the IT community. IT generally does not feel that they have the skills or the background or perhaps even the right to ask whether or not these requirements are truly vital to the business. But until you can challenge these assumptions, and start to influence the debate about what sort of work we should all be doing, it is unlikely that you are ever going to make much progress in attacking the cost.

Second, although there is a very strong commitment within IT organizations for providing the best solutions, the reality is that you probably can't afford this approach. We really need to be asking questions such as "Why can't we use this already existing program?" or "Why can't we do it *this way*, where we already have the tools and experience?" In this manner, the organization gets an opportunity to reuse work product. In my own experience, I can tell you that we had at one point over forty different types of a single system and the question we asked ourselves was whether or not it could be done with three. And as it turned out, it could.

That's just one example, but it gets back to this point that to get achieve scale, to get reusability, to get a manageable environment you need to shrink the number of methods being employed to solve the same problems. So instead of trying to find the most perfect solution, work on finding generally usable solutions that will address most of the requirements.

**CAI: It is our observation that the management of many IT organizations can be characterized as anecdotal (as opposed to process-oriented, metrics-oriented, and benchmark-oriented around a historical base). Did you deal with these issues at Air Products? What would be your advice for fellow CIO's facing the same challenges?**

**MCKIN:** The biggest single issue we faced was lack of clarity about goals and that was related to metrics. Without metrics you just cannot formulate meaningful goals.

When I say metrics here I mean specific types of metrics where you start to get into discrete categories, e.g. environment, scale, diversity, complexity, unit costs, total cost performance, etc. And you need a whole set of these metrics in order to really start to understand where you are.

In the absence of any metrics based information, anecdotal evidence will continue to be the only thing acceptable because people will naturally form opinions and reach conclusions and make decisions around funding and prioritization and these decisions must be based on something.

But anecdotal information also tells a story. And it is far more compelling to relate and listen to a story than it is to study a stack of numbers. That's just human nature. The reality, however, is that if you have the right metrics and you know how to use them you can tell stories with those metrics.

Unless you are willing to invest the time- not just to buy the metrics- but also to figure out which metrics matter, how you want to assemble them, and how you want to discuss them, you are not going to get out of the anecdotal trap.

**CAI: For those organizations that are willing to invest the time in understanding metrics, what kinds of questions should they initially be asking themselves?**

**MCMAKIN:** I think a good place to start with metrics is to get engaged with a third party that does benchmarking so that you can start to see what kinds of costs, what metrics, and what ratios other experts and companies are using. At that point, you will have something to compare.

After that, you should look at the percent of IT spending that is associated with running, maintaining and operating your existing systems (as opposed to that which is dedicated to new development). Typically, 80% of the spend, on average, goes into running and maintaining existing systems and infrastructure and only 20% goes into new development. Study after study has come to this same conclusion. What this tells you is that existing operations is where the cost is, not so much in the efficiency of your random programming effort.

Finally, I think that unit costs are vital to communicating externally and internally. How much does it cost per transaction, how much do we spend per employee on IT, how much do we spend per user? All of these things start to allow you to separate out- as an accountant would- those costs that are unit cost issues and those costs that are volume driven.

But each of these lines of inquiry are also useful insofar as they prompt the right kinds of questions, questions about what you are trying to do and how you are trying to do it. For instance, if we examine our cost per transaction, and find that it is escalating, one could conclude that the order process should be a productivity target. But does it matter? That would depend on how many orders you take in each year and the total

cost as line item. If we examine our spend by business process, and we see that most of it is committed to a set of processes that does not represent the heart of the business, then why are we spending so much money there?

**CAI: If you had to identify three or four things as cornerstones of a successful metrics based organization what would they be?**

**MCKIN:** First of all, the CIO has to somehow get the entire IT organization to have an external awareness and to be sensitive to that external world. That may seem obvious but the reality is that there is a high level of discomfort about discovering that everybody else in the world is doing something differently or more cheaply than you.

You can always tell when somebody is not truly externally oriented because you will hear the following words: "we're different." Until you accept the fact that we are not materially different, it will be very difficult to get the organization to accept the use of metrics and benchmarking, because energies will get devoted to explaining why all these metrics should be different as opposed to how the organization can improve. That mindset shift is more important than anything else. There has to be emotion and energy inside the organization saying "we are going to get better" and to do that the organization must first accept the fact that these numbers mean something.

A second cornerstone involves third parties. If you bring in third parties you will get much bigger databases than you could ever put together on your own and you will also get better judgment. It's naturally going to be a lot easier to put your own numbers together and interpret them the way you want but, realistically, nobody is going to believe you outside your own function.

A third cornerstone is consistency. Before you start measuring things, you really need to first think through- from a budgetary and manpower perspective- how often you are going to do this. And whatever you decide must be continually executed upon so that the rest of the organization knows that this is not a fad. You will also be able in this manner to build a consistently derived set of numbers using the same protocols so that, even though other things may change, your numbers will always remain comparable. Another point, related to consistency, is that you should stick to the same metrics, whether in goal setting or performance evaluation or reporting. In the absence of this, your metrics will never develop the meaning that they should.

A final cornerstone involves keeping things simple. In some of the balanced scorecards I've seen, there were organizations with 50-60 measures being published. I don't believe that people can remember 50-60 separate measurements. In general, I can deal with about 5-7 metrics, at a maximum. That doesn't mean that we shouldn't have more metrics that build to those 5-7. What it means is that the ones we are really going to discuss and commit to memory are going to be those 5-7 key metrics.

**CAI: How does a CIO best show the value that IT is providing to the business, in quantifiable business terms? How can metrics be used to facilitate this?**

**MCMAKIN:** One of the first things you need to do is to get the CEO to understand that 80% of the spend is going towards the running and maintaining of existing systems and infrastructure. And then you need to look at how low you can drive that number. Until that is understood everybody will be looking at what the potential impact might be of a new program being developed. But that's not where the money is. So this is the number one task- education as to what we really spend money on.

The next thing I recommend is to look at where the biggest investments are. The biggest single investment in IT is not actually in application software, it's in infrastructure. It's in the hardware, the switches, the networks, the operating systems, the platforms, the remote access services, etc. The executive committee's primary interface to IT is through infrastructure. They use these things. So doesn't it make sense that we would want the infrastructure to perform extremely well? And yet this is frequently viewed as a non value activity because it is not impacting the way we do business or changing the paradigm for business. And while that's true, it's still the single most experienced part of IT in the company. So in this sense it actually does communicate value. We should get it right.

Beyond that, why not also look at the unit costs in each process? Why not ask ourselves what impact IT is having on those unit costs so that we can show productivity in these terms? If we can't show it this way, we get trapped into trying to show the reduction of cost while there are all kinds of things occurring that make it impossible to have an apples to apples comparison. But if you go to unit costs, you will be able to have an in-kind of comparison.

Finally, you can communicate value indirectly by talking about relative performance. In every business one of the measures you are always looking at is relative performance, e.g. how your market share changes versus your competition over time, how your profit per dollar of sales changes versus your competition, etc. It's never looked at in a vacuum. In light of this, why wouldn't you do the same thing with IT? Why would you not look at your industry and at where your costs or capabilities or transaction costs were relative to others in the industry? This gets back to the need to formulate metrics that get at where you are in relation to everyone else. By comparing yourself to these standards, and then communicating this within the organization, you can start to show the value you are creating in business terms.

**CAI: We frequently hear that many CEO's inevitably come to distrust their software development groups. Why is this so inevitable? Why do IT departments tend to struggle so much with the executive communication process? Do you have any advice for CIO's on how to best deal with these issues?**

**MCKIN:** I think there are several reasons for this distrust. When it comes to software, corporate executive management does not sit down and write the specifications for what they want. This takes place further down in the organization. Later, when executives get engaged in the project because there is a reported problem, they don't find what they would expect in terms of functionality and usability. They don't find it because they didn't participate in designing it.

The distrust is also related to IT issues that are well known; namely, that only 1/5<sup>th</sup> of projects get completed on time and on budget and in accord with the original specifications, that cost overruns are present in about half of all software projects and that time overruns are present in more than half. Naturally, nobody is going to be happy with this. It's certainly not accepted in other parts of the business. Nevertheless, when it comes to IT, there is very little that anybody outside the IT organization can do to get at the issue because they don't have skills in the field.

For those dealing with these issues, the primary thrust needs to be a metrics based approach where you are comparing yourself to industry peers, where you are examining unit costs, and where you have third parties substantiating the numbers. That's really the key.

Questions? Suggestions? Comments? Please contact the IT Metrics and Productivity Journal Editor at [michael\\_milutis@compaid.com](mailto:michael_milutis@compaid.com)