One fine sunny day, a man is out flying in a hot air balloon. He is enjoying the view so much, he loses track of where he is. Realizing he is lost, he reduces height and looks for a familiar landmark. Spotting a man walking in a field below, he lowers the balloon further and shouts: "Excuse me, can you tell me where I am?"

The man below replies: "Yes, you're in a hot air balloon, floating about 30 feet above this field."

"You must be a CIO," says the balloonist.

"I am," replies the man. "How did you know?"

"Well," says the balloonist, "everything you have told me is technically correct, but it's no use to me whatever."

The man below then concludes, "You must be a CEO."

"I am," replies the balloonist, "but how did you know?"

"Well," says the man, "you don't know where you are, or where you're going, but now that I'm here, it's my fault!"

Every time I tell this joke, it evokes a chuckle. Every corporate audience has experienced a disconnect between an IT agenda and the strategic direction of the organization it is meant to serve. Clearly it is difficult to ensure that an investment in technology meets the objectives of an organization and its stakeholders. Why is this the case?

The ultimate objective of any information investment is to improve the performance of an organization in some way; examples include improving the quality or efficiency of operations, delivering a useful service in an entirely new way or establishing a strategic position in the market that sets the organization apart from its competitors. In each of these cases, inventing the future is a common theme.

This is a very difficult thing to do. It involves so many variables, it is impossible to predict success with certainty. Although outcomes can be predicted through detailed modeling and learning from the experiences of other organizations trying similar initiatives, they can never be definitively known. Each organization starts from a different set of circumstances (history, market position, size, staff experience, technology, culture, leadership, etc.) that impacts the course of events during an implementation process. Organizational dynamics of this sort always inject an element of risk into any information project.

Michael Guerriere, Editor-in-Chief

The challenge inherent in any information initiative is to effectively manage all of these complex variables. Finding leadership that can do this effectively is very difficult. The list of skills and experience needed to effectively manage a major information implementation in healthcare is long and highly specialized:

- Information Technology – to manage the IT resources of an organization requires an intimate understanding of a highly technical, rapidly changing technology industry
- Clinical Practice – any major change project in healthcare requires a detailed knowledge of how the change will impact (either positively or negatively) the practice of clinical professionals
- Organizational Behaviour – change management is a major feature of introducing any new system into a workplace
- Financial – this involves not only the cost of the project but also the impact on the ongoing costs of operations after a new system is introduced
- Legal – successful IT projects require a set of complex relationships with an array of outside suppliers and partners that must be cast in a set of legal agreements which support and reinforce positive working relationships
- Operations Management – the analysis of workflow and the design of new work processes is a major feature of the successful use of information technology in healthcare
- Organizational Context – even with all the theoretical knowledge listed above, a detailed understanding of the organization in which a new system is to be introduced is crucial to managing a successful implementation

It is rare, if not impossible, to find all of this knowledge in a single person. The insightful CIO recognizes what he or she does not know and endeavours to build a management team that compensates in areas where he or she is deficient. The team then adopts a series of management practices to bring all the skills to bear on planning and implementing information projects.

This is difficult to do in practice. It is not enough simply to have all of the capabilities outlined above in the management team. The knowledge also has to be integrated to understand the implications for any particular project. Different factors interact with each other in complex ways to affect the outcome of an implementation effort. When each member of the team understands only some of the factors at play, a complete picture of the issues to be addressed is difficult to construct. An example will be useful in illustrating this point.

Computerized Physician Order Entry (CPOE) has become a very common objective since studies have demonstrated the high frequency of clinical errors in prescribing drugs. CPOE requires profound change in the work processes of physicians, nurses and pharmacists. A standard approach to implementing CPOE has not yet been established. Any team tackling this problem has a large number of variables to consider in designing a solution. One such variable is security; how is the physician to be authenticated to ensure that a drug order was indeed entered by the person the system says it was entered by?

IT TAKES A VERY STRONG LEADER TO SEEK DISSENTING OPINIONS

This seemingly trivial problem has proven to be a major obstacle to successful implementation of CPOE. Technically, there are a number of options for definitive identification of a user. A name and password are often used but these can be shared with others, casting doubt on who actually entered information into the system. An authentication device (such as a key or ID card with magnetic stripe) can be used to supplement but these too can be loaned to another person. Finally, biometric approaches can be used for definitive identification. Each of these options, while technically feasible, has different legal implications, impacts on clinical workflow and system cost. Authentication devices can be forgotten at home or lost, depriving a clinician of the ability to work until a replacement can be supplied. Biometric devices cost a lot and make it difficult to access a system from outside the clinical setting where they are unavailable (i.e., remote access from home is impossible unless a biometric device is installed there). Name and password is the easiest and cheapest solution to implement but it leaves legal and patient safety questions if the identity of a person entering an injurious order is challenged.

This one project variable has technical, clinical, legal, workflow, cost and operational implications. But there are many more such variables to be decided for each project. Each option has a different set of implications to be considered by the management team. It is only with an intimate understanding of the complex interplay of these variables that a management team can hope to mitigate risk and give a project the best chance of success.

Integrating knowledge that is fragmented across many members of a team is difficult to accomplish. It takes a very strong leader to seek dissenting opinions and to encourage team members to consider the opinions of others in an environment of learning and discovery. Whether a project ends in failure or success, a team can be strengthened by the collective experience of trying to change practice in the clinical workplace. Although each member of the team comes from a deep knowledge in a particular discipline, each implementation experience helps to teach them something about the other factors that must be considered when planning a new clinical system.

A practice I am seeing more often from organizations seeking to advance their information management performance is the establishment of an external expert panel. This panel is composed of people from outside the organization

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with deep experience in implementing complex information projects, usually in a healthcare setting. This panel is brought together at intervals to advise senior leadership on their information management plans. Panel members are sought for their leadership experience and knowledge and are paid as consultants for their advice. This allows the CIO and CEO to obtain different viewpoints and an independent critique of their plans.

In the end, the most important quality a CIO can possess is the humility that comes with knowing that it is not possible to know it all. Actively looking for weaknesses in a strategy or an implementation approach is the best defense against avoidable project failures. Without that quality, all the internal skills of a diverse management team or the external advice of an expert panel will never have a chance to improve a misguided project plan.

Technology is useful only if it meets the needs of the clinical enterprise. Meeting those needs in an ergonomically efficient way requires a multidisciplinary approach to solving information management problems. Only in this way can the phenomenon of the CIO – CEO disconnect be avoided for good.

Michael Guerriere, Editor-in-Chief
editor@longwoods.com