

Leading Beyond the ICT Conundrums for Scholarship 2.0

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Abstract

The foundations and frontiers of ICT and the purpose and passion of scholars are combining to reshape the modern university. It is easy to squander organizational attention and money in poor timing or poor choice of technology-enhanced efforts, but it is equally easy to miss the real transformative opportunities that arise from scholarly communities. As we embark on a new wave of maturing ICT and the attendant social changes, now is precisely the right time for assertive ICT leadership, purposeful strategy, and disciplined execution to ensure that our universities are able to rise to their potential. For ICT leaders, we must not shy away from the conversations regarding the digitization of the scholarly record, frontiers and funding models for campus and national cyberinfrastructure, and the increasingly porous boundaries of the university for serving learners. Our passion for architecting networks, systems, and services are just our stewardship responsibilities to the university. Co-creating scholarship 2.0, participating in a digital fabric of meta-universities, and doing all of this while serving the needs of individual scholars and students to deliver “user delight” with ICT services are among our challenges. We do, however, have the tools and community to lead through these conundrums if we choose to invoke them.

Introduction

“...we are seeing the early emergence of a meta-university—a transcendent, accessible, empowering, dynamic, communally constructed framework of open materials and platforms on which much of higher education worldwide can be constructed or enhanced.” --Charles M. Vest, President Emeritus, MIT, (p. 30).¹

I believe the notion of a meta-university as described by Chuck Vest is a wakeup call for us. If his view of the future for great universities is right – and I believe it is – then we see clearly that such institutions can only rise and prosper through the use of Information and Communication Technologies (ICT). And ICT is our job....but what is it?

I worry as I sit with my national and international ICT colleagues and note the use of our time. We spend hours discussing this network or that one, the ills of vendor X or vendor Y’s latest money grab, and bemoan the legislative shenanigans visited upon us by various well funded lobbying efforts. All of these are indeed appropriate efforts and work for ICT leaders. We do need to develop, govern, and optimize advanced networks for our stakeholders, and contractual and policy matters are also our fiduciary responsibility. Yet what are we doing to *really* contribute to leading the development of the 21st century university? What should we be doing? In this short essay, I argue that we must be vigilant in our stewardship role for ICT and a valued partner in leading the development of great universities for the 21st century.

Scholarship 2.0

I use the term *scholarship* to broadly encompass the valued endeavors of great universities – teaching, learning, research, discovery, development, and service. Our faculty and their disciplinary communities have refined over the centuries various quality control mechanisms for filtering and disseminating scholarly works. Processes for manuscript review, journal publishing, textbook creation and adoption are ingrained in the academy, yet we see many evolving conversations regarding the future of the scholarly record.

Scholarship 2.0 describes the growing role of ICT – digital repositories, search, electronic collaboration, etc. – in these scholarly endeavors while maintaining or improving the quality of each. At this conference, Tony Hey has illustrated the rise of highly connected disciplinary communities and Jan Wilkinson points to the changing and essential roles of university libraries. These forces are reshaping our institutions, and as ICT leaders, I believe we face a number of leadership challenges – conundrums – for how to best enable Scholarship 2.0.

Of Stewardship and Leadership

When Sidney Taurel became CEO of Eli Lilly & Company, he wrote a 13 page essay to his executive leadership team. I find his remarks timely for us as they provide a useful distinction between *stewardship* and the sometimes overused term of *leadership*:

“Our goal is not mere success, but sustained success, continual progress. And it is clear that managing a business for continual progress requires two quite different skills sets – one creating change (because no business model can be valid indefinitely) and another creating order (because pure change would be pure chaos). Some people stretch the word “leadership” over both skill sets. But doing so blurs an important distinction. Leadership, unmistakably, has to do with change. For the skills of creating order, I like the very useful term “stewardship.”

In fact, a shorthand way of explaining the weak traits in our culture is to say we tend to overemphasize stewardship. Perhaps the fear of failure is so strong in our culture because we feel that we have been given a precious treasure – this great and venerable company – and desire above all to preserve it from harm.

To correct this imbalance, we need not throw out all sense of good stewardship. On the contrary, we need to emphasize efficient processes and basic business discipline throughout our global organization. But at the same time, we urgently need to reawaken our leadership capabilities from top to bottom. We cannot build a winning culture simply by being good caretakers. We must also put our energy into becoming great change makers.”

Our ICT stewardship responsibilities are apparent. We must ensure the quality of our networks, administrative systems, storage, security, etc., and the many services that are our purview. Excelling in these, however, will do little to develop great 21st century colleges and universities.

Broadbent and Kitzisⁱⁱⁱ had it right when they urged corporate CIOs in 2004 to seize the moment to leverage their expertise into a larger and more strategic role than ever before or be relegated to the sidelines as chief technology mechanic. Such advocacy is not about growing a personal budget and headcount, in contrast, it is about ensuring that our universities benefit from efficacious and timely ICT choices.

But university ICT is often a conundrum...something puzzling, confusing, or mysterious...for both ICT managers and users. From the professor who can't understand why innocuous scholarly communications from colleagues get trapped in the beloved spam filter to the CIO who sees a brewing

disaster in balkanized identity management with no way to influence a rational institutional strategy, leading effective ICT for universities can be most puzzling. The needs of a 21st century university, and enabling our institutions to work as a meta-university, however, align well with our skills. ICT leaders are in a moment of great opportunity as technology capabilities take another large leap forward and harness the societal skills that are becoming mainstream in our daily lives.

Assertions and Conundrums

In the limited scope of this short essay and its presentation, I'll address four (of many) assertions and associated conundrums that merit the focused *leadership* efforts of ICT leaders.

Assertion #1: The Most Valued Scholarly Endeavors are Connectionist and Cumulative

The work of Scholarship 2.0 is highly connected. Disciplinary communities (e.g., Physics, Bioinformatics, Ethnomusicology, etc.) draw on shared data sets, instruments, and multi-media data as both the input and the product of their work. Students wish to attend multiple universities or take courses from various providers and painlessly create a cumulative and authoritative academic record. A dean wishes to improve a very expensive doctoral program with a new inter-institutional program that leverages outstanding faculty at each.

Conundrum #1: Our ICT Infrastructure and Applications are Inward Focused Rather Than Outward Enabled.

Our institutions must become more porous to participate in the global fabric of meta-university activities, and ICT leaders must engage now to configure university identity management, library, course management, portfolios, repositories, and administrative systems to be outward enabled. ICT leaders alone can't solve the myriad policy matters that are in the way, but we can provide the enabling ICT platforms that are the canvas on which faculty, students, and administrative leaders innovate. In many cases, our ICT will be complements to public Web 2.0 services.

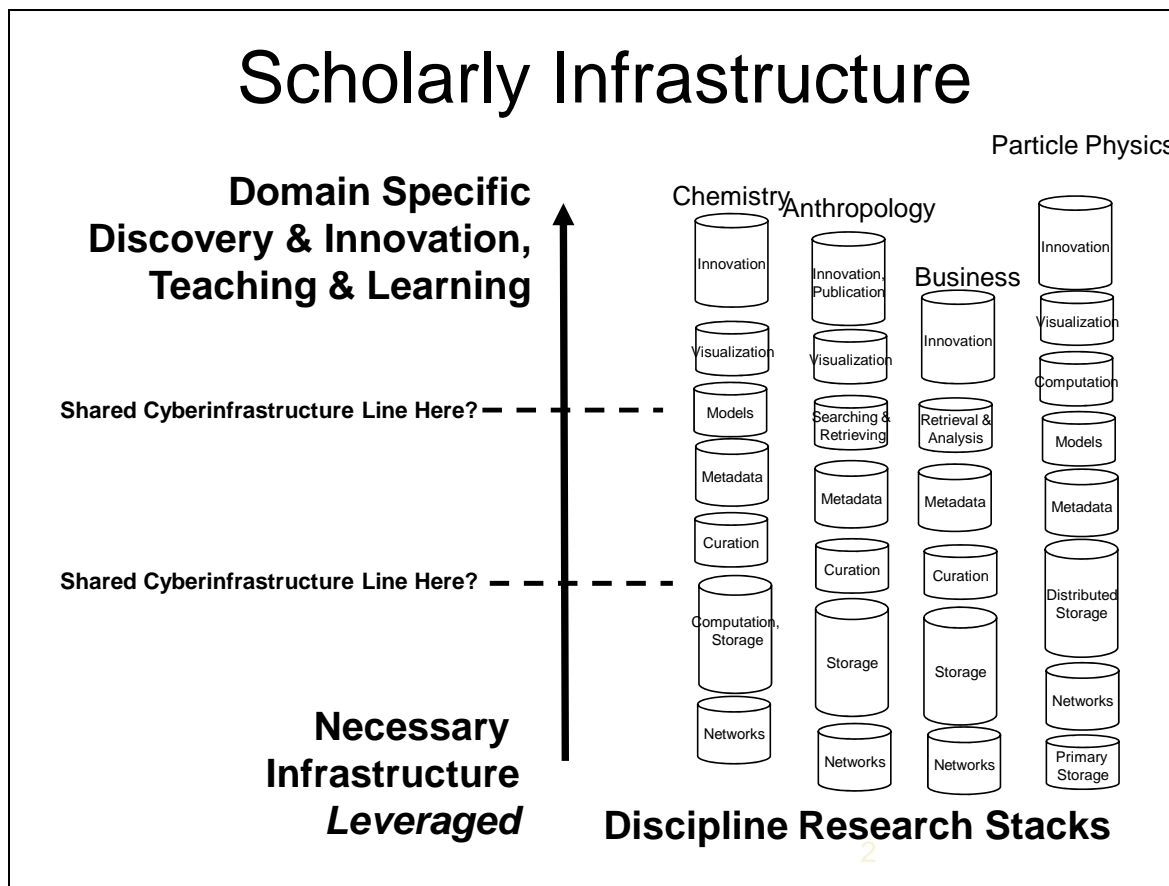
Our work to create advanced networks is a great example of putting advanced infrastructure in place ahead of the immediate demand, and now we see them as indispensable for many Scholarship 2.0 endeavors. Metaphorically speaking, these networks are like vast freeways that now connect fortified cities, surrounded by walls that inhibit their citizens from all forms of inter-state commerce. We can and must do better.

Assertion #2: Institutional Cyberinfrastructure is a Choice...An Essential Choice

For research, disciplinary research communities span the globe and collaborate via networks, scholarly repositories for both data and journals, and are becoming voracious users of storage, networks, and computational resources. Various reports outline the need for local and national investments in *cyberinfrastructure* for modern scholarship across the sciences, humanities, and arts.^{iv} Research grants often proffer long-term preservation and curation of digital artifacts with network access to those resources.

Conundrum #2: ICT Governance and Funding for Cyberinfrastructure Requires a Mindset Change

The following figure illustrates the challenge of thinking about how cyberinfrastructure choices align with the concepts of leverage, innovation, and disciplinary needs.



In short, each research discipline has its own blend of an evolving “research stack” of ICT needs. Some need lots of computation where others need vast storage or sophisticated metadata consulting expertise. Disciplines also differ in their historical sophistication in the use of ICT. The question is where which ICT services do we provision in a shared and leveraged way for efficiencies and which ones do we leave to each discipline (see the Shared Cyberinfrastructure Line Here question)?^v For many institutions, this is a chicken-and-egg situation where the money to provide shared services is in the research projects and schools who may prefer the use of university infrastructure, but can’t trust it until it exists. It can’t exist until money is aggregated to fund it.

Assertion #3: We Don’t (and Won’t) have the ICT Resources We Need to Reach Our Institutional Potential

Sigh....another unfunded mandate. Yes. For most of our institutions, I see no new pot of money to pay for the considerable and broad work required to transform our infrastructure and applications for Scholarship 2.0. On a project by project basis, we may garner some additional resources for these activities, but the larger matter is one of grasping that ICT leaders face an unbridled parade of rising user expectations. The costs of securing our networks, making our institutions wireless, and dealing with spam are examples of costs imposed upon us and there are many more to follow. Thus, we must consider the full range of sourcing options – build, buy, or borrow – for how we solve our ICT needs.

Conundrum #3: ICT in Higher Education doesn’t have a Money Problem...We have a Coordination Problem.

The cumulative expenditure of higher education on ICT is sufficient to create and sustain the technologies and software that we need. In an efficient marketplace, multiple commercial firms would compete to provide us the best offers. In essence, they play the coordinating role for us (and extract an appropriate profit) as they collect licensing and maintenance fees from a large group of us. We are a most peculiar industry, however, and history is replete in tutoring us how *our* behavior leads to the unsavory challenges of commercial monopolies or duopolies over time.^{vi}

What we need is for more of us to benefit from the expenditures of others without overwhelming coordination costs among us. The Community Source model for application software development shows great promise of a new ecosystem for commercial and institutional investment with greater benefits to all.^{vii}

Assertion #4: The Collaborative Capability is Essential

Creating, deploying, and refining great ICT and services – part of cyberinfrastructure for Scholarship 2.0 – is best done as collaborations. Even well-funded institutions that may have the money to go solo for any ICT investment might see greater benefit from participating in the community of innovation. For the rest of us, we need to systemically leverage the skills, talents, and financial investments of other institutions to fund our own ICT needs. No one of us is smart enough to devise the best schemes for advanced scholarly repositories, the best way to teach Chemistry at a distance, or the all the integration code for various software components. Collectively, however, our industry has the leverage and insights to develop the infrastructure for the digital fabric of meta universities.

Conundrum #4: Collaboration is Hard, Seemingly Inefficient, Counter Cultural...and Necessary

Just one challenge....collaboration is really hard. It's hard because it's mostly a human problem and is much more than just cooperating. Higher education is replete with various failed or suboptimal collaborations, and this invokes rational caution if collaboration is an essential part of our strategy.

As ICT leaders, however, we must develop our staff, organizational routines, and philosophy with an orientation to collaborate. Why? Because developing a great collaboration capability takes time, and it is essential to “deal in” to the best projects and flow of ideas. When our staff members are incented to reuse software and ideas from the larger community, they can develop sufficient respect in those communities to help shape collective endeavors that meet our local needs.

Conclusion

The path for effective ICT leadership in developing Scholarship 2.0 and the meta-university will differ at each institution. I have the good fortune to be leading IT at Indiana University while working for a most capable Australian, but he created IU's leading IT role while working for President Myles Brand – a philosopher by academic training. Thus, local political contexts and institutional histories are only the background for the leadership actions that are incumbent upon us. In my view, collaboration is not an option...it is a necessity to address the ICT conundrums for Scholarship 2.0.

ⁱ Vest, C. (2006). Enabling Meta University, *EDUCAUSE Review*, May/June, (41:3), 18-30, <http://www.educause.edu/apps/er/erm06/erm0630.asp> (accessed 30 March 2007).

ⁱⁱ Taurel, S. “On Leadership,” personal correspondence.

ⁱⁱⁱ Broadbent, M.A., & Kitzis, E. (2004). *The New CIO Leader: Setting the Agenda and Delivering Results*. Harvard Business School Press. Boston.

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- iv Hey, A. J. G. and Trefethen, A. E. (2003) 'The Data Deluge: An e-Science Perspective', in Berman, F., Fox, G. C. and Hey, A. J. G., Eds. *Grid Computing - Making the Global Infrastructure a Reality*, 809-824; Wiley and Sons; "Revolutionizing Science and Engineering Through Cyberinfrastructure: Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure," (January 2003), <http://www.nsf.gov/cise/sci/reports/atkins.pdf>, (accessed 30 March 2007); "Our Cultural Commonwealth: The report of the American Council of Learned Societies' Commission on Cyberinfrastructure for Humanities and Social Sciences," (July 18, 2006), <http://www.acls.org/cyberinfrastructure/acls.ci.report.pdf> (accessed 30 March 2007), and Cyberinfrastructure Vision for 21st Century Discovery, http://www.nsf.gov/od/oci/CI_Vision_March07.pdf (accessed 30 March 2007).
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