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# The Changing Face of Academic Information Services

## (On Line Methods and Technologies in Teaching and Learning)

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### 1. Abstract of the presentation

On line instructional and information technologies play an important, often pivotal, role in modern teaching and learning. In academic research, knowledge repositories and state-of-the-art methods of accessing and analyzing information are pre-requisites for many projects. Yet, despite their high impact on academic activities, they are often organized and managed as part of “information services” in general, subjected to “standardization” without much distinction between what forms any large organization’s standard IT infrastructure, and what constitutes an integral part of the academic teaching, learning and research experience. This presentation makes a case for a mission-based approach to academic IIT as separate and different from IT in general, focused on a highly dynamic and flexible organizational model to address new teaching curricula and new areas of research. The presentation is based on the author’s more than 25 years of experience in managing various IIT activities at the University of Toronto.

### 2. Remarks

The proposed presentation is aimed at either Track 2 or Track 3 of the Conference. The objective is to outline briefly how the instructional and information technologies evolved over the past two decades in their support of teaching and learning, and then focus on the nature and demands of modern on-line academic IIT. The latter is far too often bumped together with IT in general (together with administrative computing, information at large, etc.), without realizing that **academic** instructional and information technologies form nowadays an integral part of teaching and learning experience, are a precondition for conducting many research projects, and have their own requirements and dynamics, different from the traditional approach to IT.

### 3. Summary/biography

**Dr. Chris Leowski** has been Director of CHASS – an IIT centre in the **Faculty of Arts & Science, University of Toronto, Canada**, providing - for more than 25 years before his retirement in 2014 - teaching and research IIT technologies to over 30 academic departments and 40,000 students.

Dr. Leowski graduated from the Warsaw School of Economics, Poland, where he taught economics before becoming research professor in the Graduate Centre for Administrative Systems, Institute of Technology, in Mexico. He joined the University of Toronto in 1984. Apart from being Director of CHASS, he also served as Acting Assistant Dean responsible for the IIT portfolio, and was principal designer, in cooperation with Statistics Canada, of on-line search and retrieval systems for economic and financial data repositories.

Dr. Leowski is a specialist in management of instructional and information technologies, with emphasis on knowledge repositories, collaborative portals, remote collaboration, and course management solutions.

## **TRANSCRIPT**

Please note that this is a transcript of a brief presentation at a conference, and not an academic paper. As such, it follows different rules, and makes certain allowances regarding the flow of argument, the style, grammar, repetitions, and/or emphasis. Due to time restrictions, I attempted to present a coherent line of thought as per supporting slides.

The slides themselves serve merely as a “teleprompter” to allow me to expand on topics that they outline. They can be meaningless to the unprepared listener without the accompanying description and explanation. The role of the transcript is to fully expose the topics, enrich the argument, illustrate major points, offer digressions, provoke and stimulate discussion.

I have added a few online links, used by me during the presentation, and a few other references, for the reader’s perusal.

**Hello, and welcome.**

<slide 1: Scope>

This presentation is about the evolution of **academic** information services, and the keyword here is “academic”. I will be talking about two major aspects of this evolution: (1) changes in the organization of IT departments within academia, and (2) changes in information and instructional technologies deployed by educational institutions to fulfill their teaching, learning, and research mandates. The subtitle of the presentation directly refers to that second aspect. I have been active in organizing and managing academic information services for a quarter of a century, and I hope I can outline a few trends, offer advice, as well as warn about potential traps.

Not every newest fad in information and instructional technology is worth deploying, especially in the academic context. Some are highly innovative and stimulating, and provide “value for money” in terms of enriching student experience, and allowing academic institutions to improve organization, delivery, and content of their offerings. Others are “dead-end streets” or – in worst cases – contribute to “social atrophy” (despite being called social media) and to “mind atrophy”. We are all familiar with pictures - and cartoons - showing a town square full of people, but nobody talking to one another, everyone busy with their smartphones and tablets, reading or texting their messages. Or with those real life jokes, when you can yell to your kids to come downstairs to dinner, and nothing happens, but send them a text message, and they will be there right away ... with their headphones still on, and looking at their smartphones’ screen ...

<Slide 2: Evolution of IT Services in Academia>

<Slide 3: Organizational Models of IT Services in Academia>

## **Organizational models of IT Services in Academia:**

### **Early days:**

Let me talk about the organization of academic ITS first. So, how did it look like in the early days? The simplest, but accurate, description would be: very limited, very restrictive, and very expensive. PCs were still in the future, and so were mini-computers. Mainframe computing cycles were limited and prohibitively expensive. Departments, and individual researchers within departments, were allocated quotas and offered some programming help from the mainframe support team. Still – it was “academic” computing pure and simple. As mainframe hardware matured, supercomputing, or high-performance computing, centres were created, often as inter-university consortia or as partnerships between universities and the government. There had been practically no teaching and learning component – except for the involvement of graduate students in research projects, and practically no academic administration component. The latter, however, started being developed very quickly. Full centralization of IT was the norm, mostly because hardware and expertise were so expensive.

### **Mini-computers, PCs, and beyond ... :**

Improving hardware, falling costs, proliferation of mini-computers, and later personal computers, had led to two divergent developments in academic

information services. On the one hand, newly available computing power led to decentralization of IT resources – departments, individual research projects, and even individual faculty, graduate students, and staff members started developing new applications and using them in their daily tasks. Progress had been fast, albeit often chaotic, because hundreds of academic institutions competed in developing new tools and new uses for those tools. Departments of computer science were teeming with innovative geeks and nerds. To my mind, the best term to describe that phase would be: innovative chaos.

At the same time, deployment of information technologies for the task of **administering** academic institutions required a completely different approach.

### **Towards the “corporate” model of ITS:**

What are major characteristics of a corporate model of information services?

First, it is a separate hierarchical structural entity, with its CIO part of the top management. One of its main features is standardization of equipment and solutions across business units, and implementation of (usually expensive) “industry standard” hardware and software, supported by equally expensive maintenance contracts – all this in order to guarantee uninterrupted services, high availability, and business continuity in case of disasters. This IT model usually incorporates 3 shifts of employees for some critical services, is based on 24/7 availability, can easily scale up and down based on current business requirements (because of its standardized components), follows up with a rigid post-mortem after every significant failure, etc.

Corporate model of running ITS is often highly hierarchical. While business corporations have various “self-control” mechanisms defined by costs, profits, efficiency requirements, etc., public institutions often lack similar controls and develop highly hierarchical bureaucracies that run their information technology services. Organizations that are overly hierarchical run the danger of “thrashing” – to use the computing term that describes “context switching” of a multitasking computer where too many processes (tasks) compete for the same CPU and memory, and the entire system is swamped by “internal communication”. Let us imagine an ITS organization with the CIO, a few Senior Directors reporting to the CIO, a few Directors under each Senior Director, a few Senior Managers under each Director, a couple of Managers reporting to each of the Senior Managers, we finally reach operational units that provide end users with IT services. But this can easily be the case of “organizational thrashing” – where most of the energy, time, resources are being used for internal communication. No doubt that this can be a very costly and inefficient model to run IT services.

<Slide 4: Characteristics of the ITS Corporate Model:>

[describe slide 4 less those features covered in the paragraph above]

<Slide 5: What is the Corporate ITS Model Suitable For:>

[describe slide 5]

**Beyond the corporate model of ITS:**

Is this model suitable for academia? The answer depends on how we characterize academia. On one hand, every institution of higher education resembles, to a certain degree, a standard business corporation. Functions like: payroll processing, budget management, space management, institutional mail and calendar, and probably a score of others, are not that much different from the same functions in business corporations. There are even some functions – let us call them “main business” functions – that clearly benefit from an efficient, stable, standardized, hierarchical ITS model, like: enrolment, course administration, other student services (Student Information System (SIS)), not to mention building and supporting the IT infrastructure (hardware, networks, basic software).

#### <Slide 6: Characteristics of Academic I&IT Services:>

But is this all? Is this really what we mean when using the term “academic information services” and “academic IT”.

When looking closer at the “academic” component of information services, we tend to focus on areas very different from those that form the core of corporate IT. Institutions of higher education are very heterogeneous entities, teaching a wide range of disciplines, and conducting research across various disciplines.

#### <Slide 7: In Praise of Hybrid Models:>

### **In praise of hybrid models**

In many academic institutions the “splitting of the mandate” has been partially achieved by “allocating” instructional and information services to libraries. Digitized information repositories could be viewed as an extrapolation of traditional academic repositories in print format. They may require new and sophisticated methods for storage, indexing, and searching – and so digital libraries were created to provide technical and topical (subject) expertise. This solution – convincing, and even pretty on the surface – often leaves large areas of academic computing in limbo. Running collaborative environments, learning management systems, distant education, etc. requires programming resources and skills far beyond those found in digital libraries. For example, developing new Blackboard modules and incorporating them into the existing system, implementing new and secure communication technologies for teaching and learning, specialized IT support for the whole range of academic research projects – from molecular physics, through economics and sociology, to literature and other disciplines within the humanities; expertise in relational databases; in computing algorithms; in running high-performance server clusters

Let me say a few words – and what I am going to say is directly based on my experience as director of an “academic computing” IT unit – about the financing of academic IIT within an institution of higher education. This is where, in my view, a “hybrid” model can produce miracles. Let me tell you first how my unit has been financed for almost two decades. We had a base budget, like most other units (academic and non-academic) allocated by the Dean’s Office, but the base budget covered roughly 60% of our expenditures. It did not even cover full payroll. My argument for having a base budget is stability – both in terms of core personnel, and core services delivered to

users. But the remaining 40% of our annual budget was based on “recoverables”, and there were two types of those recoverables. We have been selling – form nominal fees, but nevertheless they added up to a considerable amount – our data centre services to over 65 universities in North America. We also entered into separate contractual agreements with many departments and institutes, even with individual research projects, to provide IIT support and services “tailored” to those units’ (or projects’) individual requirements. The “hybrid” financing model has thus included two components: base budget for stability, and an incentive to provide the best services to our academic clients – since they were covering the remaining 40% of our annual expenditures budget.

<Slide 8: Academic I&IT Services:>

## **Academic Instructional & Information Technologies & Services**

The title of this section is not merely semantics. Information services and information technologies are often intertwined, but they are not the same. After all, traditional university libraries – catalogued and searchable collections of books and journals – are certainly academic information services, but they are not what we normally understand by the term “instructional and information technologies” (IIT). The latter more typically comprise of:

- smart classrooms and labs
- on line searchable repositories – databases and textbases
- collaborative environments for teaching and learning

- remote teaching and learning tools
- sophisticated course management and course administration tools
- complete learning management systems (LMS)

### <Slide 9: Examples of Online Academic Technologies:>

#### **The Taming of the (on line) Shrew**

### <Slide 10: MOOCs:>

MOOCs (Massive Open Online Courses)

### <Slide 11: Coursera ... and others ...:>

Now, *Coursera* is a wonderful idea, but its practical implementation does not match its potential. The last time I checked, 107 institutions from 25 countries had their presence at *Coursera*, but only a few courses were being offered at any one time. The vast majority, almost all, of these institutions are universities, although a few “global institutions” – like the World Bank and National Geographic Society – are also present. Having said that, a quick check of all online courses offered by major MOOCs in March/April revealed around 180 offerings, in many languages and at various levels.

One would expect that *Coursera* would show the best of what each and every participating institution has to offer, thus becoming *de facto* an advertisement for that institution. Unfortunately, this is not the case, because in reality

recorded and offered courses reflect individual inclination, innovation, driving force, and media skills, of a few select faculty and staff, rather than the best of teaching talent and intellectual property of the institutions in question.

But then, why not start on a smaller scale, and build a “regional Coursera”, which could become part of the global offering, but would be also maintained as a separate entity, and reflect the specificity of the region. Imagine a portal of best courses offered by universities and colleges from the countries of the region, and included in the curricula – at least in optional curricula – of those institutions, with mutually recognized academic credits for students who complete those courses.

Such initiatives, to be fully successful, require sustained and coordinated support from senior administrators, and should be part of strategic academic plans of those universities. Otherwise they become merely very interesting, very innovative, but also very “*ad hoc*” and often ephemeral developments.

### <Slide 12: Academic Collaborative Environments:>

[for students, but also for research]

### <Slide 13: Is Blogging Good for Your Health:>

#### **On blogs and blabber (IS BLOGGING GOOD FOR YOUR HEALTH?)**

Everyone has a blog, writes to a blog, or at least reads a few blogs these days. After all, even standard news services have resorted to the ‘sort of’ blog format – one can post comments. Many comments are often silly and meaningless,

and express the authors' frustration, lack of education, etc. Yet blogs can be a very powerful on line method for teaching students how to:

- express an opinion
- present one's views in writing (and in a coherent and understandable form)
- respect opinions of others
- use arguments instead of demagoguery
- avoid venting frustration and being offensive
- share interesting knowledge tidbits, and so on.

#### <Slide 14: Characteristics of Good Academic Blogs:>

To be all of the above, an academic blog should:

- be relatively narrow in scope
- have clearly stated objectives
- have a limited number of participants – that number can be large or small, increasing or decreasing over time, but the blog should not be open, that is, there should be a vetted sign-up procedure
- limit the number of individual postings per unit of time (e.g. a week or a month) – that is, discourage from “blabber” and encourage synthesis of one's views on the matter in question
- have a competent moderator, who is willing and able to enforce the blog's objectives and rules

#### <Slide 15: Conclusions:>

### **Conclusions: Guidelines for Academic Policy Makers**

I have attempted to present here a coherent, I hope, outline of the evolution of information and instructional technologies in institutions of higher education, focusing – on one hand – on organizational models, and – on the other hand – on the “mission critical” aspect of these technologies in modern teaching, learning, and research. What are, then, the main conclusions?

First, given that academic I&IT are nowadays an integral part of teaching, learning, and research, they should be separated from the general Information Technology Services. I&ITS are built on top of the IT infrastructure, have their own dynamics, objectives, and require a distinctive set of skills from their staff.

Second, in what concerns online methods and technologies in teaching and learning, given the richness and sheer quantity of offerings, applications, methods and approaches, of changing fads, of real as well as false “breakthroughs”, it is important to have an advisory unit, which would continually assess those offerings and their relevance to any given institution of higher education (alone, or in combination with regional consortia). The objective is to maintain diversity, while avoiding chaos; to develop plans to thoughtfully implement IIT across departments and faculties, including training of instructors and orientation classes for students; to assist the provost and other senior administrators in developing relevant strategic plans.

Third, one needs to strike a reasonable balance between costs and efficiency while maintaining a creative and versatile academic environment. For this purpose, focusing on a few proven global solutions, proven international

methods and applications, might be the best approach, while at the same time working through a regional consortium might offer the benefits of inter-university cooperation, exchangeable academic credits, and generally richer and better student experience.

### <Slide 16: Contact Information:>

This concludes my presentation. The last slide provides information on where to find all the slides in various formats (PPT, Key, PDF), and the full transcript. Many thanks for your attention.