

# Teaching Information Society: A Look at Curriculum Issues

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## Abstract

As we educate our students in information systems, we have followed curriculum models for several years (the latest being IS 2010). The authors suggest that there are some issues that need more prominence in information systems education, namely the concepts of the "Information Society". The authors also suggest that the *philosophy* of the "information society" be part of an information systems education foundation. In this paper, the authors review the concepts of the information society and suggest places and methods of incorporating these concepts into the information systems academic programs.

**Keywords:** Information Society, Intellectual Property, Piracy, Open Source Software, Antitrust, Access to Knowledge, Public Policy, Information Systems Education, Information Systems Curriculum

## 1. BACKGROUND

In a significant article published in May 2003 in the Harvard Business Review (HBR), Nicholas Carr argued that as the availability of information technology (IT) continued to increase, and its costs continued to decrease, IT's ability to provide competitive advantage to organizations would diminish, and eventually cease to matter (Carr, 2003). Many information systems (IS) academics quickly refuted Carr's pronouncements and provided convincing arguments on why IT would continue to hold its position of importance well into the future. All the arguments notwithstanding, we believe that some aspects of IT will indeed cease to be a management issue in the future, thanks to its commoditization. However, those predicting

the total demise of IT as a critical function within organizations are also far from the target. Today, and into the predictable future, IT is indispensable even in the smallest of organizations. Organizations do, and will continue to reap real benefits from IT innovations and infusion of IT into their business processes. New and disruptive inventions such as peer-to-peer computing, cloud and social computing offer unique opportunities and challenges to organizations.

IT permeates current society; it is pervasive, and ubiquitous. Since organizations form a part of the global socio-technical system, it is critical to study and clearly understand IT's role and implications in the larger society in order to really fashion an organization's IT strategy and to effectively deliver information

systems education. The key question that IS educators should therefore concern themselves with is: How to make IS education relevant and viable? Thus it is critical for information systems educators to identify and focus on technology developments as well as their ramifications and effects in society and tailor their courses appropriately, especially at the undergraduate level. Failure to do so will create a program that inadequately prepare students to work in the real world.

In this paper we start from the position that undergraduate information systems education has gradually lost a sense of context within the larger "information society." Much of current IS education focuses narrowly on the IT artifact within a corporation. The greater environment is acknowledged only cursorily. In a digitized, connected world, the field of information technology (IT) can no longer be considered in isolation. Today's business environment is a massive, complex global cyber society that is facilitated by IT. Business students, especially those specializing in IS, must be keenly aware of the societal realities perpetuated by information technologies.

Various model curricula have been suggested for IS education. Of particular interest are the undergraduate model IS curricula - the AIS/AITP/ACM 2002 model and the most recent AIS/ACM 2010 model. These provide a list of IS core courses and electives and justification for their inclusion to the curricula. But in our opinion, the courses listed, while comprehensive, do not provide substantial link between information systems and the larger environment in which they exist which might be considered a "philosophy of the Information Society". This lack of environmental context "under-prepares" IS students, and worse, detracts business students from pursuing a concentration in information systems. In the absence of a clear context to the global business environment, students see information systems as a mere commoditized function which could easily be shipped elsewhere.

We propose that the IS curricula be adapted to incorporate greater "systems thinking," wherein IT is considered to be an important component as well as enabler of organizations and societies. In the rest of this paper, we first provide a list of emerging issues in the contemporary information society that all IS

students should be familiar with. We then discuss each of the issues using a case approach, along with IT implications and significant questions so as to enable students to comprehend the role of the technology behind the cases. Following that, we provide suggestions on how these issues and concepts could be incorporated within the IS curricula. The approach is not to be all inclusive, but to encourage an open and active debate on the Information Society within the Information Systems education arena.

## **2. CURRENT ISSUES IN THE INFORMATION SOCIETY**

### **Intellectual Property: Patents, Copyrights and Fair Use**

Intellectual property (IP) refers to creations of the mind. They include inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. Intellectual property is divided into two categories:

1. Industrial property, which includes inventions (patents), trademarks, industrial designs, and geographic indications of source.
2. Copyright, which includes literary and artistic works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and sculptures, and architectural designs. Rights related to copyright include those of performing artists in their performances, producers of phonograms in their recordings, and those of broadcasters in their radio and television programs.

New innovations and developments in information technologies have led to a tremendous upsurge in IT-related patents. According to the World Intellectual Property Organization (WIPO), 156,000 patent applications were filed in the year 2007 (Schlein, 2008). The WIPO Patent Report also states that a majority of the patents applications related to information technology and telecommunications. The large numbers translate to numerous disputes over patent violations all over the world. Moreover, large scale digitization of documents, movies and images has also resulted in a tremendous upsurge in disputes pertaining to copyright violations and piracy issues.

A major issue regarding purported copyright violations is the use or misuse of the "fair use doctrine." This doctrine seeks to balance the rights of authors and creators to reap benefits from their works of creation to the public's rights to create newer, derivative works based on the original creation (Pike, 2008). Yet, due to a misunderstanding of the fair use doctrine by both sides, numerous lawsuits ensue.

### 3. PIRACY

#### P2P file sharing technology

File sharing has proliferated since 1999, when Shawn Fanning, a student at Northeastern University, created Napster, an extremely popular file sharing platform service for sharing music files. The Recording Industry Association of America (RIAA), fearing loss of potential revenues, filed a lawsuit against Napster, citing illegal music downloads that was perpetuated using the Napster system. Napster's lawyers maintained that the platform merely provided a means to share files and that Napster could not be held responsible for illegal uses of the platform. Judge Marilyn Patel did not agree, and issued an injunction to Napster to stop its file sharing service, which succeeded in killing the product (Borland & Barnes, 2000). However, since then, the anti-copyright movement has gained ground, and a plethora of file sharing software products and sites have emerged with regularity. Unlike Napster, these sites use increasingly sophisticated technologies and architecture, and they use numerous redundant servers across the globe, which makes them difficult to be shut down.

### 4. NEW ISSUES IN PRIVACY

#### Privacy in the U.S. Constitution

The notion of privacy is codified as the Fourth Amendment of the U.S. Constitution, and provides protection against unreasonable searches and seizures by the government against an individual. Its origins come from the English common-law maxim "A man's home is his castle" and was discussed by Edward Coke in describing what he called *Semayne's Case* in 1604 (Liberty Fund, 2003), (Cuddihy, 1990).

In the U.S., invasion of privacy is a tort based on common law. The tort originated from an 1890 Harvard Law Review article by Samuel

Warren and Louis Brandeis that included four categories of invasion of privacy, namely: intrusion of solitude; public disclosure of private facts; publication of facts that place a person in false light; and appropriation of personal characteristics in order to attain some benefits. Laws have been enacted in countries such as the U.S., Canada, European Union (EU) countries, India etc, even though the countries themselves do not explicitly guarantee privacy in their constitutions. In many of these countries, privacy of personal information has gradually gained ground through common-law court precedents. In the U.S., the Privacy Act of 1974 provides the main controls within the federal government on the collection, use, and disclosure of personally identifiable information. The law was designed to protect individuals from an increasingly powerful and potentially intrusive federal government (ISPAB, 2009).

The Privacy Act of 1974 is, however, just a first step in protecting privacy of individuals. As the Internet continues to permeate every aspect of society, and large scale digitization of every type of data becomes the norm, the privacy of personal information has emerged to be a critical concern. Protecting privacy, civil liberties, and the U.S. Constitution's First Amendment and Fourth Amendment provisions are currently the subjects of serious attention by scholars, governmental agencies, NGOs and citizen groups.

Additionally, rapid growth of second generation web and social computing has added to the sense of urgency, as new business models and social transactions are not covered by the older privacy laws.

The Privacy Act itself has several inadequacies, as pointed to by the Congressional Privacy Protection Study Commission (PPSC) in 1977 (PPSC, 1977). As noted by Chenok in the ISPAB report (above), no Administration has systematically updated the Privacy Act since 1975.

In 1980, the Organization for Economic Co-operation and Development (OECD) adopted guidelines on the Protection of Privacy and Transborder Flows of Personal Data (OECD, 1980). The guidelines provide some principles that each member nation should follow in order to safeguard the privacy of individuals. These principles have become the baseline for

evaluating privacy and data protection initiatives worldwide, and are (from (ISPAB, 2009) :

- Collection Limitation Principle
- Data Quality Principle
- Purpose Specification Principle
- Use Limitation Principle
- Security Safeguards Principle
- Openness Principle
- Individual Participation Principle, and
- Accountability Principle

Many other privacy-related Acts, policies and guidelines in the U.S. have followed the Privacy Act of 1974. They include:

- The Computer Security Act 1987
- The Computer Matching and Privacy Protection Act of 1988.
- The memorandum on Privacy Policies and Data Collection on Federal Web Sites.
- House Resolution (H.R.) 2458, The E-Government Act of 2002.
- H.R. 2458 Title III (The Federal Information Security Management Act 2002).
- The 2003 memorandum "Implementation Guidance for the E-Government Act of 2002".
- The 2007 memorandum "Safeguarding Against and Responding to the Breach of Personally Identifiable Information".
- The 2008 Department of Homeland Security guidelines on the collection and use of only directly relevant and necessary information.

While the above Acts, guidelines and memorandums offer a substantial base for privacy protection by governmental agencies, their implementation has been questioned by the Government Accountability Office (GAO) in a series of reports. In testimony before the Committee on Homeland Security and Governmental Affairs of the U.S. Senate, the GAO states that the Privacy Act's protections may not apply to contemporary data processing technologies and applications. In today's

highly interconnected environment, information can be gathered from many different sources, analyzed, and redistributed in very dynamic, unstructured ways that may have little to do with the file-oriented concept of a Privacy Act system of records. For example, data mining, a prevalent technique used by federal agencies for extracting useful

information from large volumes of data, may escape the purview of the Privacy Act's protections (Gao, 2008).

The problem has exacerbated since the September 11, 2001 terrorist attacks. Since then, security agencies have been given the authority to access inter-agency information without much limitation or oversight, which further erodes the privacy protection of citizens. This has set the stage for the new Obama administration to come up with enhancements and revisions to the Privacy Act of 1974. In addition to the GAO report, citizen privacy advocacy groups are also engaging themselves in strengthening privacy protection.

The Obama administration has been actively pursuing activities to use social networking technology and further increase transparency and participation in government using technology. Staff from the Office of Science and Technology (OSTP), the General Services Administration (GSA) and the Office of Management and Budget (OMB) are working on an Open Government Directive. The goal is to instruct agencies and executive departments how to implement the principles of transparency, participation, and collaboration- and these will inevitably involve the use of technology in ways that are not anticipated in the Privacy Act.

## **5. FREE SOFTWARE, OPEN SOFTWARE AND THE OPEN SOURCE MOVEMENT**

The *free software movement* was started in 1983 by Richard Stallman, a computer scientist working at MIT's Artificial Intelligence Lab. He started the movement at least partly in response to AT&T's plan to commercialize the Unix operating system which it was until then freely licensing to universities and non-profit organizations. In an email addressed to friends and fellow computer scientists (Stallman, 1983), Stallman explained the launch of his GNU (Gnu's Not Unix) project as one that was meant to free computer users and software developers from software copyrights and restrictive use licenses. His idea was that when any software became freely available, allowing anybody to use and make changes to them, new innovations would result, the quality of software would improve and the entire computing and user community would benefit

as a result. To start the project, Stallman announced his intent to write and freely release a Unix-compatible system called GNU. GNU was to be a kernel containing all the utilities needed to write and run C programs: editor, shell, C compiler, linker, assembler, etc. After accomplishing that, the project was to add "a text formatter, a YACC, an Empire game, a spreadsheet, and hundreds of other things. We hope to supply, eventually, everything useful that normally comes with a Unix system, and anything else useful, including on-line and hardcopy documentation (Stallman, 1983)."

Stallman founded the non-profit Free Software Foundation (FSF) in October 1985 to spread the message and philosophy of free software. The FSF defines free software as follows (adapted from (Free Software Foundation, 2010c)):

"Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it means that the program's users have the four essential freedoms:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and change it to make it do what you wish (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this."

The open source software and free software movements have spurred numerous software projects, products, innovations and new software companies. Red Hat, a Linux distributor is a notable success story. Undoubtedly, the Linux project, with its

multifarious distributions, has been the poster-child of the success of open source. Other very successful projects include the *GNU project*, the GNOME windowing environment, the *OpenOffice* project, the *Apache* web server project, the Mozilla *Firefox* browser project and Google *Chrome* browser project. Google, Inc.'s *Android* operating system, a Linux variant, is a successful open source project. Linux has been incorporated into numerous cellular phones and personal computing devices. Major components of Mac OS X, including the UNIX core, are made available under Apple's Open Source license. IBM Corporation joined the open source world in the late 1990s and gave the movement mainstream credibility.

## 6. ANTITRUST AND OPEN STANDARD BATTLES (ODF, BIBLIOGRAPHY)

### The Browser wars

Interest in open source and open access has gradually increased over the last two decades, especially as the Internet moved from its academic moorings and individual and commercial usage of the Web increased. The web browser became the primary user interface to traverse and interact with the Web. Netscape was an early leader in developing the web browser that could work in multiple operating systems. The immense success of the Netscape browser, along with the promise of E-Commerce, led Microsoft to develop its own Web browser, Internet Explorer (IE). Soon a full-fledged browser war was in progress between Netscape and IE. Microsoft was accused of using its clout in demanding that PC manufacturers bundle IE with their hardware in order to license the Windows 95 system. On October 27, 1997, the U.S. Department of Justice filed an antitrust lawsuit against Microsoft as a result. On December 11, 1997, in a preliminary injunction, U.S. District Court Judge Thomas Jackson ordered Microsoft to stop requiring PC makers to ship Internet Explorer along with Windows 95 (Wired News Report, 2002). Microsoft promptly appealed the ruling, and since then, there have been a series of antitrust lawsuits filed against Microsoft in the U.S., followed by a series of rulings and appeals by both parties. Starting in 2001, twenty States had filed class-action lawsuits against Microsoft. By 2007, Microsoft had reached agreement with The U.S. Department of Justice and 18 out of the 20 of those States.

## Antitrust and EU

It should be noted that Microsoft is not the only company that has been investigated by the EC for antitrust violations. Literally hundreds of companies from all over the world have been investigated, including several top IT companies headquartered in the U.S. On May 13, 2009, the EC levied its largest ever anti-competitive fine of EURO 1.6 billion against Intel Corporation, after its investigations revealed several instances of anti-competitive practices by Intel in the micro-processor business against Advanced Micro Devices (AMD) (Hodgin, 2009). On February 24, 2010, the EC announced that it was starting an antitrust investigation against Google Inc., in response to complaints filed with the Commission by U.K. price comparison site Foundem, a French legal search engine called eJustice.fr, and a German search site called Ciao that was recently acquired by Microsoft Corp (Meller, 2010). On July 26, 2010, the EC announced that it had opened two antitrust investigations against IBM Corp. in response to complaints by emulator software vendors T3 and Turbo Hercules, which accuse IBM of tying the sale of mainframe hardware to its mainframe operating system (Larson & Hoffman, 2010).

## **7. ACCESS TO KNOWLEDGE (A2K) AND INFORMATION & COMMUNICATIONS TECHNOLOGIES FOR DEVELOPMENT (ICT4D)**

As computer networks extend their global reach, many developing countries and emerging economies are beginning to see the potential of the networks as a premier tool for delivery of information and knowledge to under-developed areas and under-privileged populations. Falling prices of computer hardware and developments in wireless and satellite technologies have enhanced these attempts. The power of computer and communications technologies can be used to aggregate appropriate information and deliver them to rural areas. In many cases, the available technologies are adapted to local conditions. Examples are computer interfaces in different local languages, and development of wireless transmitters and receivers and associated hardware that can function in

adverse weather conditions, non-standard and unsteady electric voltages, power failures, etc.

One promising ICT4D project that is currently garnering attention is the One Laptop Per Child (OLPC). What is interesting here is the technology and software that would be supplied through this project. This gives rise to interesting questions such as: What operating system would be used? What will be the configuration of the laptop? What accessibility features will be built in? Who will hold the licenses for this product? Will only open source software be installed on this laptop? Who will provide training to the end-users as well as the trainers? How will these machines be maintained?

## **8. PUBLIC POLICY**

The rapid spread of computer networks and the invention of innovative applications such as peer-to-peer computing/file sharing, social networking, "blogs," collaborative authoring, e-commerce, etc. has necessitated that appropriate public policy positions are taken by governments and corporations in order to protect consumers, corporate intellectual property and a nation's security. Some hot policy issues that are currently being debated by governmental agencies, activists, consumers and corporate are Net neutrality, wireless spectrum allocation and auctions, the use of technologies in dissent, censorship, the battle for security versus privacy, international agreements such as the Trade-related Aspects of Intellectual Property Rights (TRIPS) and Anti-Counterfeiting Trade Agreement (ACTA). We will briefly address these issues here.

**Net Neutrality:** The term refers to the principle that Internet Service Providers (ISPs) should not block or slow down Internet traffic from competing content providers with a view to speed up their own content. In the (not-so-distant) past, ISPs merely acted as transmitters (or carriers) of Internet traffic. However, in recent times they have increasingly become content providers. Net Neutrality activists and other interest groups protested that slowing down a competitor's traffic in order to speed one's own content went against the grain of free choice and was an anti-competitive act.

**Wireless spectrum allocation and auctions:** Radio frequency spectrum is a

method to map electromagnetic waves. Radio spectrum ranges from 3 kHz to 300 GHz, and may be used for wireless communication. Wireless spectrum is considered a national resource. It is a reusable public good, unlike, say, water or minerals. Its allocation and use is usually managed by the governments of individual nations. The wireless spectrum is subdivided into 1G, 2G, 3G, etc., depending on the frequency of transmission of the radio waves.

In several countries, the wireless spectrum allocation to commercial entities such as telecommunications companies is done through auctions run by the government. In some cases, like India, spectrum allocation is split between public and private sector telecommunications companies. Wireless spectrum auctions have to be planned very carefully by national governments, for their ability to attract big revenues or losses. Auctions are more an art than science, and the conditions of an auction can either attract or deter bidders. Some auctions have resulted in loss of revenues, or a colossal under-selling of a nation's spectrum. (Marsden, 2009).

### **Technologies of Dissent**

The global reach of the 'Net, and the mushrooming of social networking software is enabling individuals and groups to communicate with each other more than ever, and faster than ever. Applications such as blogs, YouTube, Facebook, Twitter and Flickr enable individuals to become "citizen reporters" and allow various types of political dissenters to transmit news and actual happenings of protests, human rights marchers, hunger strikes, riots and other political events rapidly across the globe to supporters, news media and human rights organizations. The nature of the software allows features such as anonymity, transience and rapid transmission and publication through broadcast channel. This allows the dissenters to work around various censorship processes imposed on such transmission by the governments of nations from where such dissent originates.

### **Censorship, Ethics, Security and Privacy**

Even as new technologies are being used innovatively to express dissent and project protests throughout the world, censorship of

such activities by repressive governments are also increasing.

### **Facebook and Privacy**

While an individual's right to privacy, and privacy laws have already been discussed in an earlier section, we bring forth some new and recent issues here again as it relates to ethical obligations of corporations. A recent news item that has made waves is Facebook's announcement at the April Facebook developer conference that Facebook was "building a Web where the default is social." To achieve that, Facebook has created technologies that include Facebook features on other sites, which then send information back to Facebook. In addition, as explained by Richard Esguerra of the Electronic Frontier Foundation (EFF), Facebook considers "public information" as that information about a subscriber/member that it can share with its business partners without seeking further permission (Esguerra, 2010).

This has led to a flurry of protests from users as well as privacy activists who have questioned the ethics and motivations of FB. To add to this situation, on July 28, 2010, it was reported that profiles of 100 million FB users were leaked to a Bit Torrent (peer-to-peer file downloading software) server, from where the profiles were downloaded by thousands of interested parties, including numerous commercial enterprises (Frucci, 2010), (Chen, 2010).

### **Playing God: Censor versus Savior**

The role of global networks in disseminating information as well as controlling the same, albeit for ethical purposes, is powerfully illustrated in the case David Rhode, a New York Times reporter who was kidnapped by the Taliban in Afghanistan on November 10, 2008. The management of New York Times decided not to publicize the kidnapping – as that would only enhance the bargaining position of the Taliban. Thus, as seen in the above New York Times/David Rhode's case, as well as the cases of Facebook privacy and BlackBerry versus Indian Government, the issues of ethics, privacy, censorship and security often fall under "grey" areas. They often defy clear "black or white" classifications, which makes it more difficult for citizens as well as enforcement agencies to take appropriate actions.

## **International Agreements: TRIPS and ACTA**

Large-scale digitization, which includes production, storage and rapid dissemination of all types of knowledge, is a key feature of globalization. It makes reproduction and transmission of data extremely easy. But this development has not been welcome with some industry groups in developed countries. Digitization and transmission of data has enabled large-scale piracy of digitized, copyrighted information such as movies and music. The Recording Industry Association of America (RIAA) and the Motion Picture Association of America (MPAA) have long spearheaded legal avenues to combat piracy around the world. Such industry groups have also used international trade-related agreements as weapons to protect their intellectual property. The *TRIPS* (Trade-Related aspects of Intellectual Property Rights) agreement is administered by the WTO, and is **Annex 1C of the Marrakesh Agreement establishing the WTO, signed in Marrakesh, Morocco on 15 April 1994. The TRIPS Agreement sets out minimum levels of standards concerning intellectual property in the form of copyrights, trademarks, patents industrial designs, geographical indicators, integrated circuits and trade secrets (WTO, n.d.). The U.S. played a major role in framing the TRIPS agreement and winning (sometimes after applying pressure) the support of developing countries.**

Currently the debate for and against TRIPS has not been resolved. Battles rage between the supporters and detractors. Regardless of which side is correct, serious students of IT should be aware of TRIPS, its application in the IT and digital world, its plusses and minuses.

### **ACTA**

In 2007, the U.S., European Union and a number of other members of WTO started working on a new international agreement to tackle global counterfeiting of intellectual property (IP). The countries involved in the negotiations other than the U.S. and EU are Australia, Canada, Japan, Korea, Mexico, Morocco, New Zealand, Singapore, and Switzerland. IP is considered to be one of the key competitive assets of developed countries, and the idea of new agreement was to develop

a mechanism to enforce IP rights strictly across the globe. The overall objective was to effectively combat international trade in counterfeit and pirated goods. But as noted by the Office of the U.S. Trade Representative, the scope of ACTA is broad, including counterfeit goods, generic medicines and copyright infringement on the Internet (The United States Trade Representative, 2009).

At the present, ACTA is in its final negotiated stages, but the opposition to it, especially the secretive process in which the negotiations are taking place, remains strong. Many people accuse the involved countries of "policy laundering," whereby a policy becomes a legal entity without much open discussion.

## **9. HOW DOES THE INFORMATION SOCIETY THIS AFFECT IT EDUCATORS AND IT EDUCATION?**

In the previous pages, the authors have attempted to give an overview of the broader issues of the information society. While long (especially for a conference paper), the authors intended to explicitly point out a need for a larger coverage of such materials – and even to the stronger understanding of the philosophical underpinnings of the information society as important in the education of information systems graduates.

The authors examined the recently released IS 2010 Curriculum Guidelines for Undergraduate Degree Programs in Information Systems (Topi, et al, 2010). This model has seven courses designed for students majoring in information systems. Unfortunately, for the concepts presented in this paper (Information Society) there are few places that directly relate in IS2010. The authors suggest two possible places for Information Society coverage in IS 2010: IS 2010.1 Foundations of Information Systems and IS 2010.7 IS Strategy, Management and Acquisition.

IS2010.1 Foundations of Information Systems has this partial course description: "Information systems are an integral part of all business activities and careers. This course is designed to introduce students to contemporary information systems and demonstrate how these systems are used throughout global organizations. The focus of this course will be on the key components of



information systems - people, software, hardware, data, and communication technologies, and how these components can be integrated and managed to create competitive advantage." (Topi, et al, 2010) The authors suggest that that is not necessarily a good fit for coverage of Information Society concepts, although some concepts might fit into the IS2010.1 bailiwick.

IS2010.7 Strategy, Management and Acquisition has this partial course description towards the end of the overall description: "The remainder of the course is focused on developing an **intellectual framework** that will allow leaders of organizations to critically assess existing IS infrastructures and emerging technologies as well as how these enabling technologies might affect organizational strategy. The ideas developed and cultivated in this course are intended to provide an enduring perspective that can help leaders make sense of an increasingly globalized and technology intensive business environment." (Topi, et al, 2010) (*emphasis added*)

The authors suggest that developing that "intellectual framework" of the Information Society is central to education information systems majors and graduates. Furthermore, we suggest that the Information Society would fit into the framework of IS2010.7 - under the "intellectual framework", "organizational strategy", "increasingly globalized and technology intensive" terminology.

## 10. CONCLUSION

The authors suggest that failure to expose students to these concepts will leave gaps in a student's information systems and information societies understanding. They furthermore suggest that information systems education must explicitly cover:

- The security and privacy of individuals, guaranteed explicitly or implicitly by several countries of the free world.
- Ethical issues in gathering and handling personal information
- Laws and loopholes pertaining to privacy
- Intellectual property, copyrights and fair use

- Societal and cultural differences in the meaning of privacy and intellectual property
- Technology and public policy
- Technology in government
- IT standardization
- Access to knowledge
- IT's role in the freedom of expression and other human rights

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