

Catholic University of America
School of Engineering
Engineering Management Program
Strategic Standardization Curriculum
(CMGT 564 - 2008)

The purpose of *Strategic Standardization* is to create a level of awareness, or enhance awareness, for graduate engineering students on significant issues associated with standards and the process of standardization. To a significant degree, a practicing engineering must successfully manage these issues in order to resolve complex engineering challenges. In particular, the course focuses on development of global technology standards from a United States perspective because the process of globalization directly affects the fields of engineering and technology management.

Standards govern the design, operation, manufacture, and use of everything mankind produces. There are standards to protect the environment, human health, safety, and to mediate commercial transactions. Other standards ensure that different products are compatible when hooked together. There are even standards of acceptable behavior within a society. Standards generally go unnoticed. They are mostly quiet, unseen forces, such as specifications, regulations, and protocols that ensure that things work properly, interactively, and responsibly. How standards come about is a mystery to most people should they even ponder the question. With the evolution of global markets, standards are even more important to facilitate international trade. Unfortunately, they may also be used as trade barriers or to gain advantage over foreign competitors. The United States has been fortunate to have a pluralistic, industry-led standards setting process that has served us well in the past. Whether it will continue to do so in the future in the face of bruising international economic competition is uncertain (*Global Standards: Building Blocks for the Future*, Forward, U.S. Office of Technology Assessment Report to Congress (1992)).¹

Globalization is rampant and will remain so for the foreseeable future. (*The World is Flat*, Thomas Friedman (2005)).² Standards influence everything we do (UK National Standards Strategy (2003)).³ Standards control markets (German National Standards Strategy (2005)).⁴ Standardization is one of the best sources of competitive intelligence available (Canada National Standards Strategy (2005)).⁵ Standardization programs offer one of the best, most important means to evaluate current technology, and provide a glimpse of where future technology innovations may occur. Standardization programs are indispensable for the strategic evaluation of technology and the analysis of competitive issues. In strategic terms, "If you control an industry's standards, you control that industry lock, stock, and ledger" (*Out of the Crisis*, by W. Edwards Deming, Center for Advanced Engineering Study, MIT at 302 (1986)).

¹ http://www.princeton.edu/~ota/ns20/pubs_f.html

² <http://www.thomasfriedman.com/worldisflat.htm>

³ http://www.nssf.info/resources/documents/Guide_to_NSSF.pdf

⁴ http://www.din.de/sixcms_upload/media/2896/DNS_english%5B1%5D.pdf

⁵ <http://www.scc.ca/en/nss/css-scn/index.shtml>

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For over 100 years, the National Standards Policy of the United States has been the private sector will lead in the development of consensus standards and the government will play a supporting role (National Technology Transfer and Advancement Act (1995)). The United States standardization system is the most diverse standardization system in the world. According to the U.S. Department of Commerce, there are at least 600 individual standardization groups in the United States representing virtually industry in commerce. The United States System is a “bottom up” system in which the private sector has the leading role. All other national standardization systems are essentially “top down” systems in which the government has the leading role. At the global level, IEEE estimates that 500,000 technology standards are the technology foundation for the global economy, and it costs at least \$1.5 billion each year to maintain the global standardization system.

Standards are created by various procedures and methods such as de facto systems (private sector), de jure systems (private sector and government), and consortia. There are a number of legal issues in standardization systems. In fact, the general environment in which standards are created resembles a complex legal maze. Legal issues include, for example, openness, fairness, public review, safety, health, the environment, competition, antitrust, intellectual property, trade and export controls, the internet, and ethics. The failure of practicing engineers to understand standards, the process of standardization, and potential legal issues related to these issues is unacceptable and may lead to significant liability for engineers and organizations that employ them.

The future of the United States economy depends, in significant part, on effective management of its standardization system and effective participation in development of international standards. It is estimated that at least 50% of current U.S. standards practitioners will retire in the foreseeable future. Standards education and training of the next generation of practitioners is a critical issue.

There is a clear need in the United States for greater attention to standards. In an information-based global economy, where standards are not only employed strategically as marketing tools but also serve to interconnect economic activities, inadequate support for the standards setting process will have serious detrimental effects. (U.S. Office of Technology Assessment, *Global Standards: Building Blocks for the Future*, at page 9)

In short, “[w]e have a republic if we can keep it...” (Benjamin Franklin).

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