

Standards Education: Cooperation Between National SDOs and Education

Bruce A. Harding

Chair, ANSI Committee on Education

Professor of MET, Purdue University USA



US System – Roles & Responsibilities

	ANSI	SDOs	Companies	Consumers	US Gov	NIST
Coordinates US system and policy development	x					
Coordinates and monitors USG use of and participation in VCS activities						x
Participates in US policy development	x	x	x	x	x	x
Provides technical input for standards			x	x	x	x
Independently runs standards development		x				
Legal metrology and WTO-TBT enquiry point						x

A few US-based SDOs

ASTM
International



American
Society of
Mechanical
Engineers



International
Code Council



American
Dental
Association



National
Electrical
Manufacturers
Association



National Fire
Protection
Association



SAE International

Society of Automotive Engineers



Institute of
Electrical and
Electronics Engineers



**Underwriters
Laboratories Inc.**

Underwriters Laboratories Inc.

American
Society
of Civil
Engineers



American
Petroleum
Institute



**And more than 200
additional organizations**

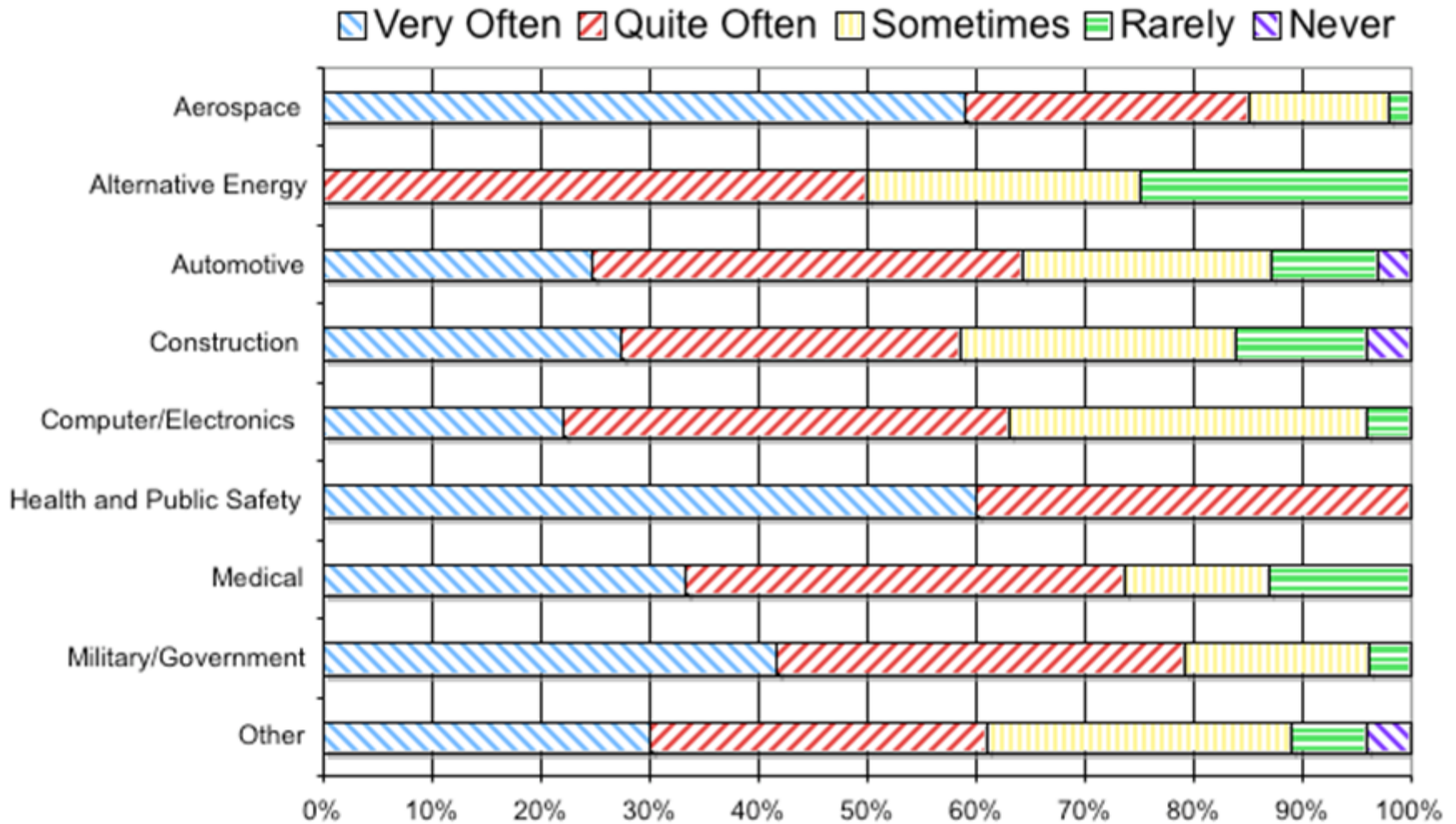
A top-down view of a desk with a wooden surface. A white sheet of paper is centered on the desk. In the bottom-left corner, a black fountain pen with a gold nib is visible. In the top-right corner, a brass fastener is partially visible. The text "Standards education: Industry Needs" is printed in bold black font on the paper.

Standards education: Industry Needs

October 2009 Industry survey on standards use / standards education

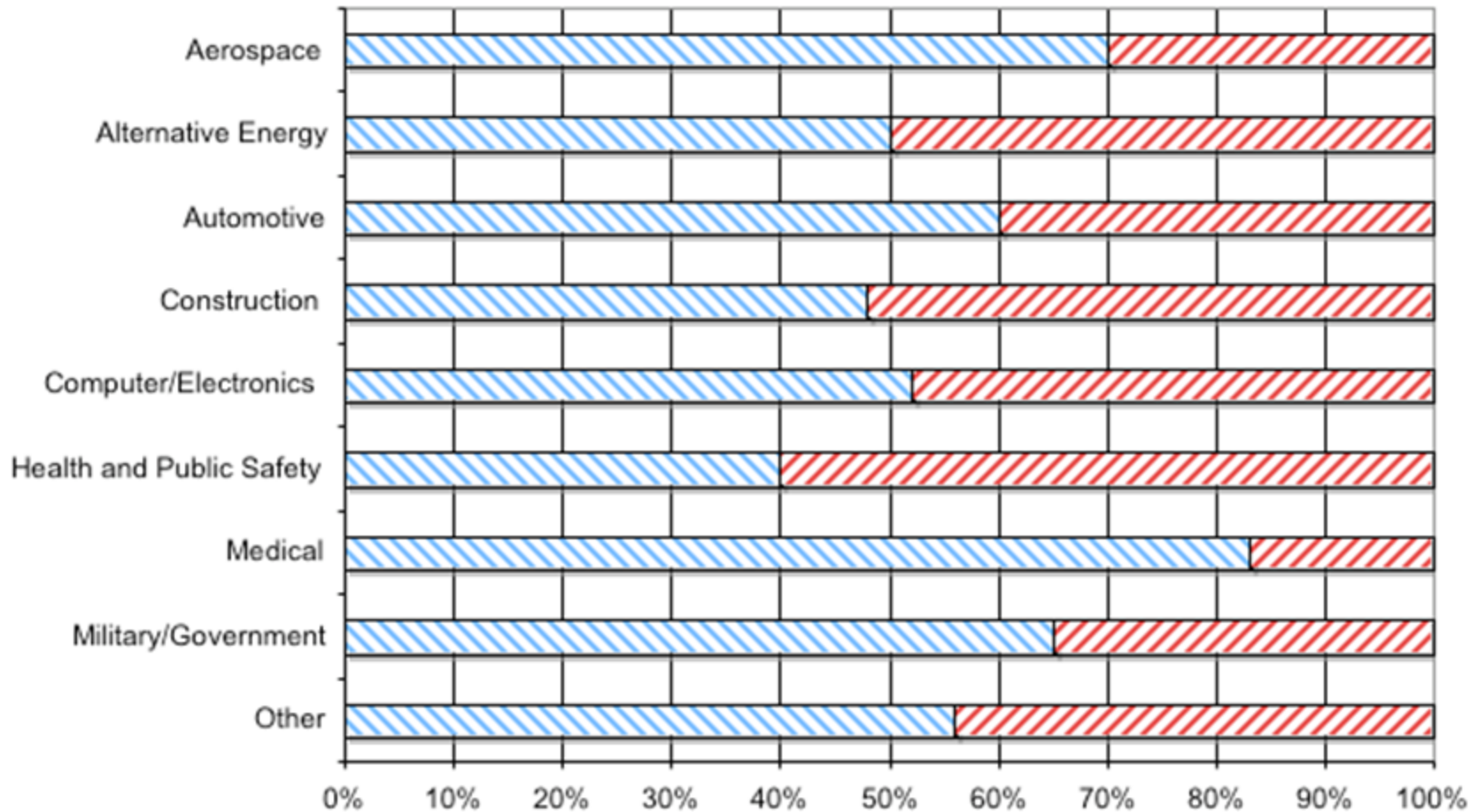
- ~ 16,000 BS grads self-identifying as engineering 'managers'
- Results grouped into 9 industry segments
- 2010 Follow-up survey to ~40,000 engineering 'managers' being analyzed now

Use of standards in industry



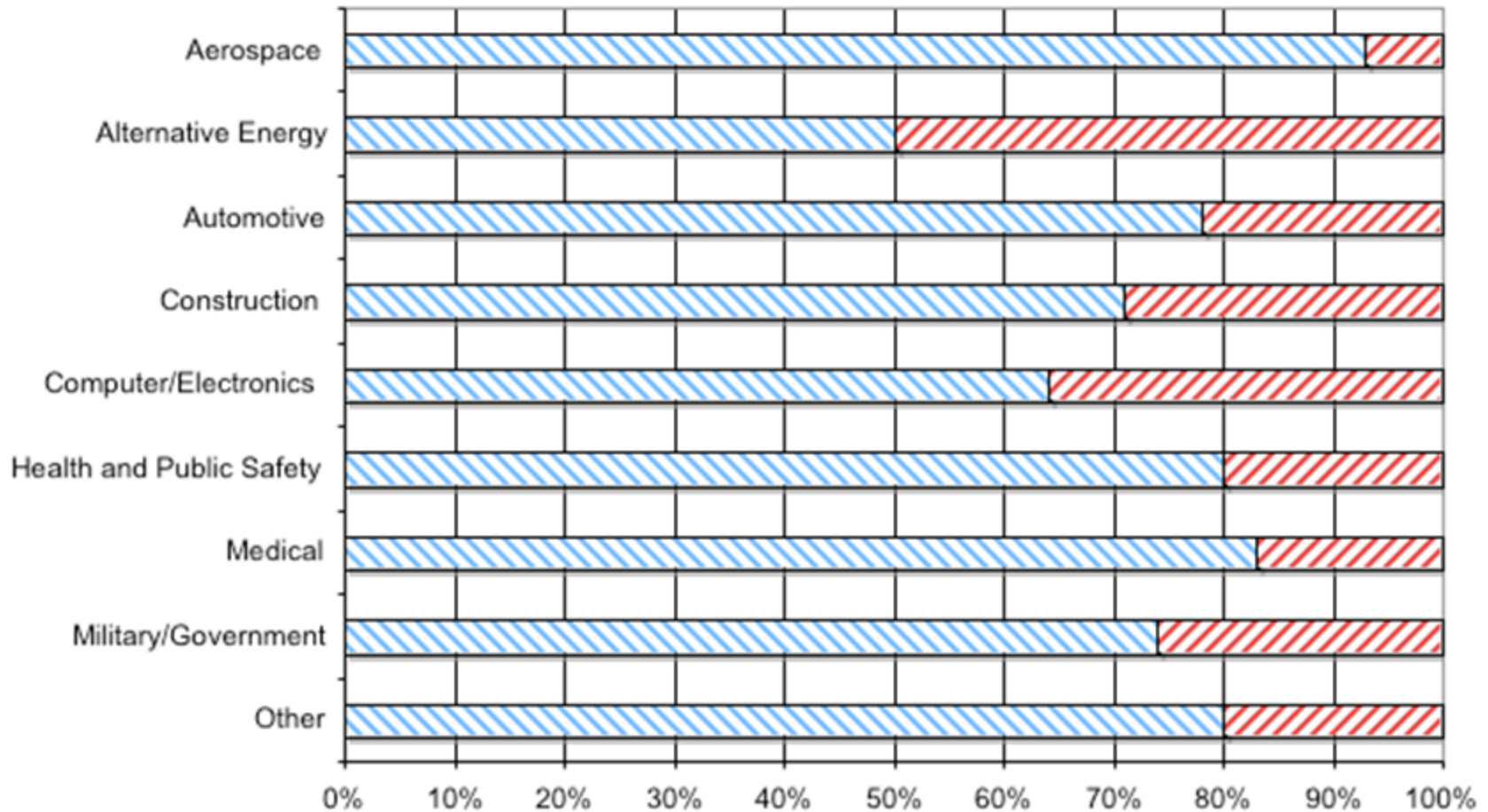
Need for engineers possessing fundamental knowledge about standards

Yes No



Would education about standards help prepare students to work for this company?

Yes No




A top-down view of a desk with a wooden surface. A white sheet of paper is centered on the desk. In the bottom-left corner, a black fountain pen with a gold nib is visible. In the top-right corner, a brass fastener is partially visible. The text is printed in a bold, black, sans-serif font on the white paper.

Standards education: The The University Disconnect

ASME survey of US mechanical engineering department heads, practitioners & managers (2010 Unpublished)

- 40% of US university ME department heads feel that existing curricula is weak in coverage of codes & standards and needs strengthening
- 50% of US ME practitioners & engineering managers indicate that entry-level engineers' knowledge of codes & standards is weak and needs strengthening

A wooden desk with a white sheet of paper. In the top right corner, there is a brass fastener. In the bottom left corner, there is a fountain pen. The text is centered on the paper.

**Reality #1: Engineering
education is driven by
accreditation requirements**

ABET – Criterion 5 - Curriculum

Engineering

- **Major design** experience – based... “on earlier course work and incorporating **appropriate engineering standards...**”

Engineering Technology

- Communications content – “Utilize **appropriate technical literature** and use it as a principle means of staying current.”

Reality #2: Faculty tend to teach what they know/have experienced

- Few faculty have industrial experience (where they would have encountered standards)
- Fewer courses taken involving standards results in few faculty incorporating standards

Delivery of Standards Knowledge

- Stand-alone courses
- Incorporation of standards 'literacy' into existing courses (modules, case studies, simulations, games, etc.)

Sources of Standards

- Gifts/Grants
- Purchase (from SDO or broker)
- Subscription service via SDO
- External subscription service
- Libraries

Standards education: Efforts at Changes

- From SDOs: Education groups within SDOs promoting standards use
- From Educators & SDO: Push to change ABET criterion to address standards literacy both earlier in curriculum and in greater depth

Question/Comments?