Take five minutes or less to answer the questions on the handout sheet

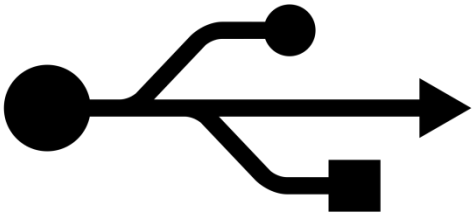
This presentation was possible through a grant provided by:

Establishing Freshman-to-Senior Bookend Experiences to Provide Academic and Professional Introductions to Standardization

Dr. Mike Ogle, Principal Investigator

Does Any of This Look Familiar?

IEEE 802.11



IEC 62680

ISO 9001 Certified

General Prohibition Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action which is prohibited."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:P001

General Mandatory Action Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action to be taken."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:M001

General Warning Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the hazard."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:W001

"Do not wear metal-studded footwear"

General Prohibition Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action which is prohibited."

Designation

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

Responsible committee

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:P001

What Is a Standard?

A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose.

http://www.iso.org/iso/home/standards.htm

More Important, Why Standardize?

Interoperability (size, shape, frequency, voltage),
Performance (capacity, strength, lifespan, flexibility)
Safety (impact resistance, fire resistance, labeling)
Consistent terminology for the above functionality
Consistent tests for the above functionality
Consumer confidence to enable a market

ISO 3873:1977(en) Industrial safety helmets

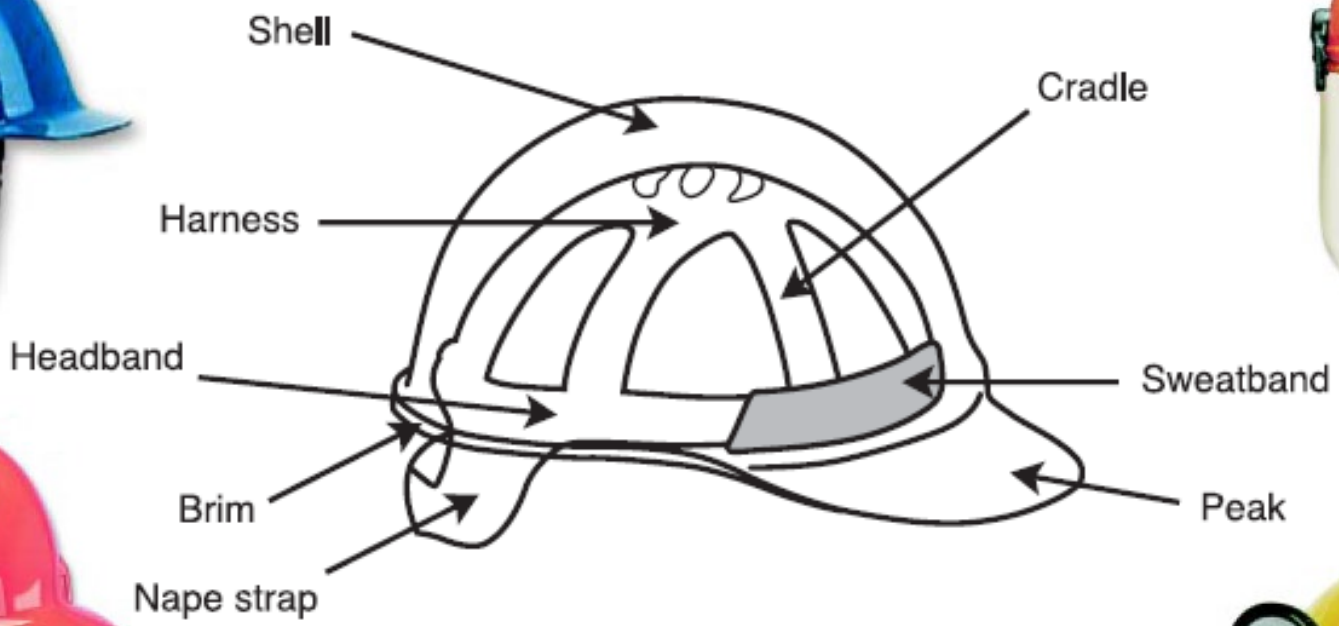


Figure C: General design

http://www.labour.gov.hk/eng/public/os/C/helmet_eng.pdf

Other Standards for Industrial safety helmets

- American National Standard - For industrial head protection (ANSI Z89.1)
- Australian/New Zealand Standard - Occupational protective helmets (AS/NZS 1801)
- Canadian Standard - Safety helmets (CSA Z94.1)
- European Standard - Specification for industrial safety helmets (EN 397)
- International Standard - Industrial safety helmets (ISO 3873)
- Japanese Industrial Standard - Industrial safety helmets (JIS T 8131)
- People's Republic of China National Standard - Safety helmets (GB 2811)

ISO 3873:1977(en) Industrial safety helmets

Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*

It has been approved by the member bodies of the following countries :

Australia	Israel	Spain
Austria	Italy	Sweden
Bulgaria	Mexico	Switzerland
Denmark	Netherlands	Turkey
France	New Zealand	United Kingdom
Germany	Norway	U.S.S.R.
Hungary	Poland	Yugoslavia
Iran	Romania	
Ireland	South Africa, Rep. of	

The member body of the following country expressed disapproval of the document on technical grounds : Belgium

ISO 3873:1977(en) Industrial safety helmets

1 SCOPE

This International Standard specifies physical and performance requirements, methods of test and marking requirements for industrial safety helmets.

3 DEFINITIONS

3.1
safety helmet
A helmet primarily intended to protect the upper part of a wearer's head against a blow.

3.2
shell
The hard, smoothly finished material that provides the general form of the helmet.

3.3
peak
A permanent extension of the shell above the eyes.

3.4
brim
A rim surrounding the shell.

ISO 3873:1977(en) Industrial safety helmets

FOREWORD

1 SCOPE

2 FIELD OF APPLICATION

3 DEFINITIONS

4 PHYSICAL REQUIREMENTS
- 4.1 Materials
- 4.2 General construction
- 4.3 Shell
- 4.4 Vertical clearance
- 4.5 Horizontal clearance
- 4.6 Wearing height
- 4.7 Mass

5 PERFORMANCE REQUIREMENTS
- 5.1 Mandatory requirements
- 5.2 Optional requirements

6 TEST REQUIREMENTS
- 6.1 Samples
- 6.2 Conditioning for testing
- 6.3 Headforms
- 6.4 Verification of clearances and wearing height
- 6.5 Shock absorption test
- 6.6 Penetration test
- 6.7 Flammability test
- 6.8 Electrical insulation test
- 6.9 Lateral rigidity test

7 MARKING
- 7.1 Markings on the helmet
- 7.2 Additional information

What are the words for the ANSI acronym?	American National Standards Institute

ANSI is a private organization, coordinating the U.S. consensus standards system, providing a neutral forum for the development of policies on standards issues and serves as a watchdog for standards development and conformity assessment programs and processes by accrediting and auditing standards developers.

1,073	Total ANSI Members
605	Company Members
343	Organizational Members
64	Government Members
23	Educational/Institutional Members
38	International Members

240	ANSI-Accredited Standards Developers (ASDs)
11,368	Approved American National Standards (ANS)

http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Brochures/Annual%20Report%20Archive/ANSI_2014_15_Annual_Report.pdf

All Standards, Specifications, Guidelines are not ANSI Standards, but all American National Standards (ANS) are ANSI Standards

So What Do You Get with an ANS Process?

- open, balanced group of interested/affected people (concensus body)
- broad-based, open public review/comment on draft standards
- anyone can comment and be considered during public review
- incorporation of approved changes into a draft standard
- right to appeal if due process was not respected

What does ISO mean?	equal

ISO formed in 1946 when 25 countries met at the Institute of Civil Engineers in London

International Organization for Standardization

Commonly thought of as:

We are a private, non-governmental, organization.

We are a global network of national standards bodies with one member per country.

ANSI is the official U.S. member

165 members

20 500 International Standards

More than 100 000 experts

http://www.iso.org/iso/isoinbrief_2015.pdf

What is the value of "x" in terms of 10^x for the number of ANSI standards (3 => 1000 4 => 10,000 5 => 100.000 6 => 1,000,000) and what is "x" for the number of ISO standards?			
ANSI	**<4.1**	***ISO***	**>4.3**

11,368 Approved American National Standards (ANS)

http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Brochures/Annual%20Report%20Archive/ANSI_2014_15_Annual_Report.pdf

20 500 International Standards

http://www.iso.org/iso/isoinbrief_2015.pdf

Many American National Standards (ANS) become ISO standards

One example is the intermodal freight container

https://en.wikipedia.org/wiki/Intermodal_container

Who develops the standards that affect your everyday lives (for example: bicycle helmets, concrete strength, safety signage, USB drive size, gasoline octane levels, Wi-Fi, etc.)?

… well, you may be the *future* you

Most people think there is a group of people (hopefully, smart, caring, people) in Washington or some other big city, that know everything about everything and they develop all the standards.

Look to your left and look to your right…for better or worse…those are the people that will be creating your standards!

International Organization for Standardization

ASTM INTERNATIONAL

Over 12,000 standards

ASME

SETTING THE STANDARD

Over 550 standards

IEEE

Approximately 1300 standards

UL

Over 1300 standards

ISA

Approximately 150 standards

The American Society of Safety Engineers

Over 130 standards

Standards are enforceable as laws	Circle one of the choices below		
	YES	NO	It depends

ANSI and ISO standards are voluntary

Adopt them or don't, it is up to you!

However, if the Code of Federal Regulations or a Building Code references the standard for work you, your company, or your employees are doing, then you follow the standard.

If your client references that you must follow a standard, again you can voluntarily choose not to follow the standard...

...and therefore voluntarily choose not to have their business

How long (number of months from inspiration to publication) does it take to develop an ANSI standard? An ISO standard?			
ANSI	**It depends…** **min 1+30+45+1 days*A**	***ISO***	**It depends…** **on a lot of factors**

*A

- assuming the standards admin agrees to give idea consideration on day one
- then ANSI posts public announcement in *Standards Action* (30 days)
- then complete draft document is created/completed during the 30-day period
- draft is posted instantly for public comment after the 30-day mark by ANSI
- then after 45 days there is complete agreement with no comments
- then the next morning, the ANSI standards review board gave its blessing
- then that afternoon, the standard could be published by the developer

The above is a fantasy world. More likely is 2-4 years of multiple committee meetings, ballots, comment review periods, revisions, administrative/committee/member communication delays, formatting, etc.

ISO 9001:2015
Quality management systems -- Requirements

ISO/TC 176/SC 2 *85 countries*

Specifies requirements for an organization's quality management system

- When a company needs to demonstrate its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, and

- When a company aims to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

All the requirements of ISO 9001:2015 are generic and are intended to be applicable to any organization, regardless of its type or size, or the products and services it provides.

http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=62085

ISO 31000:2009
Risk management — Principles and guidelines

ISO/TC 262 *49 countries*

When implemented and maintained in accordance with this International Standard, the management of risk enables an organization to, for example:

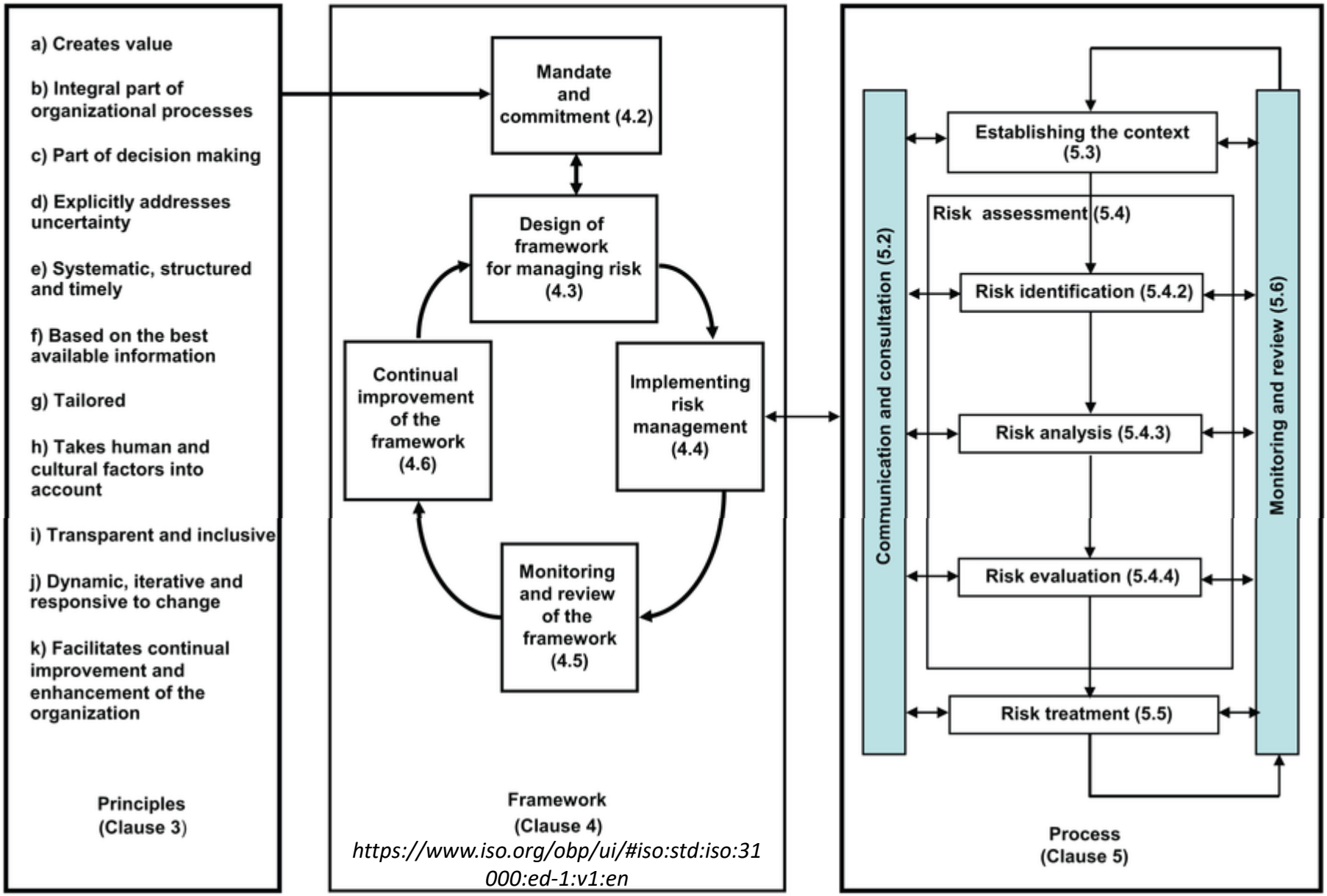
(partial list, see standard for full list of examples)

— be aware of the need to identify and treat risk throughout the organization;
— improve identification of opportunities/threats;
— comply with relevant legal/regulatory requirements and international norms;
— improve mandatory and voluntary reporting;
— improve stakeholder confidence and trust;
— establish a reliable basis for decision making and planning;
— improve controls;
— effectively allocate and use resources for risk treatment;
— improve operational effectiveness and efficiency;
— enhance health and safety performance, as well as environmental protection;
— improve loss prevention and incident management;
— improve organizational learning; and
— improve organizational resilience.

http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=62085

ISO 31000:2009 Risk management — Principles and guidelines

Figure 1 — Relationships between the risk management principles, framework and process



https://www.iso.org/obp/ui/#iso:std:iso:31000:ed-1:v1:en

ISO/TR 16982
Ergonomics of human-system interaction — Usability methods supporting human-centred design

ISO/TC 159/SC4 Ergonomics of human-system interaction *22 countries*

In the Scope of the Technical Report

- This Technical Report provides information on human-centred usability methods which can be used for design and evaluation. It details the advantages, disadvantages and other factors relevant to using each usability method.
- It explains the implications of the stage of the life cycle and the individual project characteristics for the selection of usability methods and provides examples of usability methods in context.
- The main users of this Technical Report will be project managers. This Technical Report therefore addresses technical human-factors and ergonomics issues only to the extent necessary to allow managers to understand their relevance and importance in the design process as a whole.

http://www.iso.org/iso/home/standards_development/list_of_iso_technical_committees/iso_technical_committee.htm?commid=53372

Other Systems-Related Standards: Project and Process Management

ISO 21500:2012
Guidance on project management

ANSI/PMI 99/001/2004
A Guide to the Project Management Body of Knowledge (PMBOK® Guide) - Third Edition

IEEE Std 1220-2005
IEEE Standard for Application and Management of the Systems Engineering Process

Should

Recommendation of good practice, but not mandated

(shoulds allow judgement calls)

vs.

Shall

Mandatory requirement to follow the standard.

(shalls give a standard its teeth)

Performance Standards

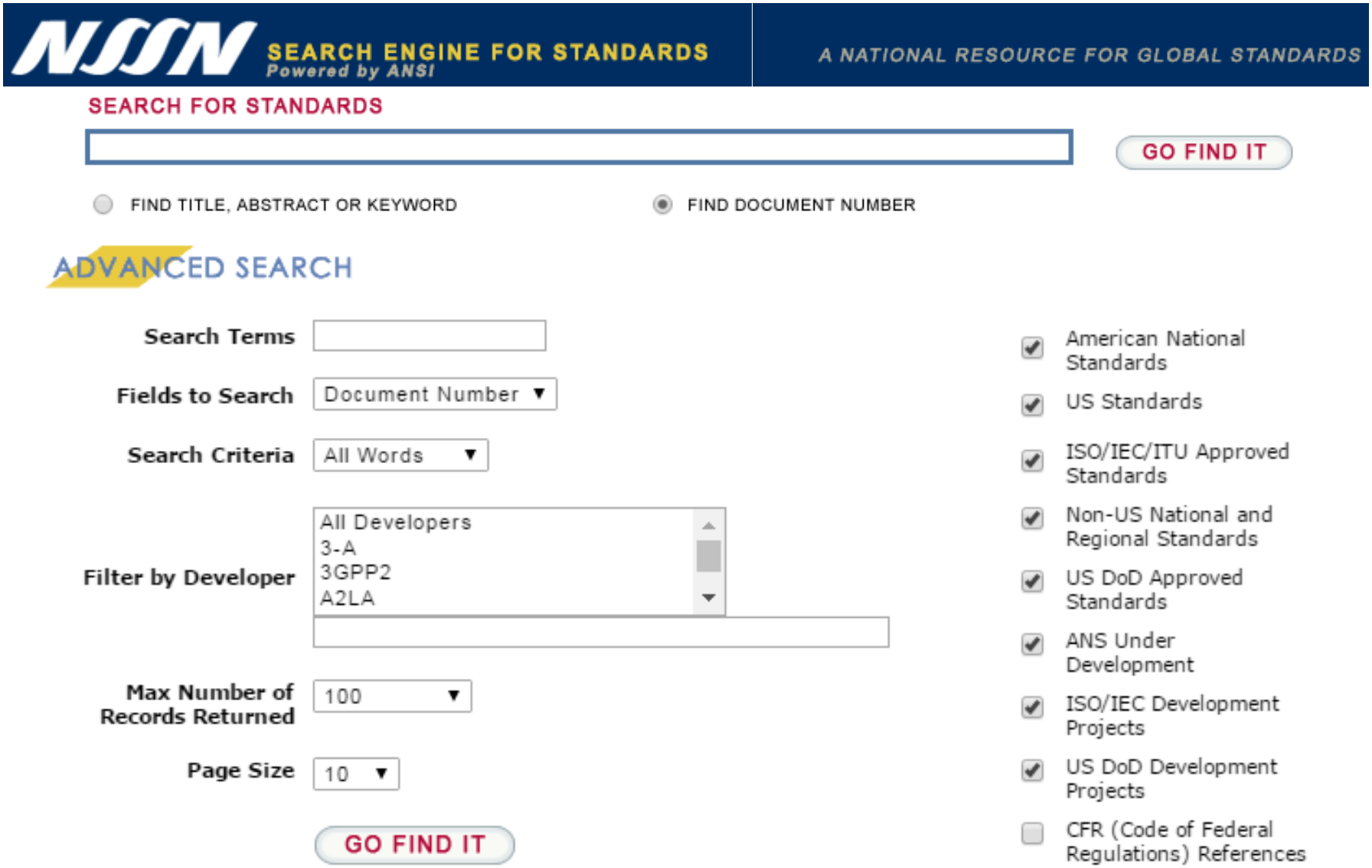
Specify clearly how something should/shall perform by providing clear guidance regarding what is desired and how to measure that performance

vs.

Prescriptive Standards

Specify exactly how something should/shall be done by providing clear guidance regarding materials, dimensions, processes, procedures, etc.

Where can you find the most comprehensive list of ANSI and ISO standards?	www.NSSN.org



Given what you know now about standards…

Take a few minutes to answer the questions on the handout sheet.

Then turn them in as you leave.