



# United States Industrial Fabrics Institute



**Division of Industrial Fabrics Association International**



## Mission Statement

To establish a coalition of United States Specialty Fabric Manufacturers and End Users dedicated to serving the interests of its members in both the Domestic and International marketplaces.

**...Represents all facets of technical fabric supply chain manufacturing for military tentage.**



# UNITED STATES INDUSTRIAL FABRICS INSTITUTE

## Member Companies

April 2005

**AC Incorporated**  
**(Fabricated Products)**  
Jackson AL

**AR Tech**  
Fontana CA

**The Astrup Company**  
Cleveland OH

**Base-X Expedition Shelters**  
Fairfield VA

**BioPlastics Company**  
North Ridgeville OH

**BondCote Corporation**  
Dublin VA

**Brawer Technical Yarns Division**  
**Brawer Brothers Incorporated**  
Cramerton NC

**Camel Manufacturing Company**  
Pioneer TN

**Cooley Group**  
Pawtucket RI

**DHS Systems LLC**  
Orangeburg NY

**Diolen Industrial Fibers**  
Scottsboro AL

**Dow Corning Corporation**  
Midland MI

**Duracote Corporation**  
Ravenna OH

**Ehmke Manufacturing Company, Incorporated**  
Philadelphia PA

**Johnson Outdoors Incorporated**  
**Eureka! The Tent Company**  
Binghamton NY

**Firestone Fibers & Textiles Company**  
Kings Mountain NC

**Gehring Textiles**  
Garden City NY

**Glen Raven Custom Fabrics LLC**  
Glen Raven NC

**Herculite Products Incorporated**  
Emigsville PA

**Highland Industries**  
Greensboro NC

**Invista**  
Charlotte NC

**John Boyle & Company Incorporated**  
Statesville NC



# UNITED STATES INDUSTRIAL FABRICS INSTITUTE

## Member Companies April 2005

**Johnston Textiles**  
Valley AL

**Milliken & Company**  
Spartanburg SC

**Outdoor Venture Corporation**  
Stearns KY

**Performance Fibers**  
Colonial Heights VA

**Plastatech Engineering Limited**  
Saginaw MI

**RJF International Corporation**  
Fairlawn OH

**Reeves Brothers Incorporated**  
Spartanburg SC

**Ronald Mark Associates Incorporated**  
Hillside NJ

**Safety Components Fabric  
Technologies Incorporated**  
Greenville SC

**Seaman Corporation**  
Wooster OH

**Snyder Manufacturing Incorporated**  
Dover OH

**Soluol Incorporated**  
West Warwick RI

**Solutia Incorporated**  
Atlanta GA

**Southern Weaving Company**  
Greenville SC

**Stedfast Incorporated**  
Charlotte NC

**Ten Cate Nicolon**  
Pendergrass GA

**Universal Fabric Structures Incorporated**  
Quakertown PA

***....39 of the Leading Technical Fabric  
Companies in the United States***



# USIFI Military Specifications Task Group



## **Group Purpose**

Textile Fabrics and textile products continue to rapidly embrace new technology for performance enhancement and cost reduction.

Our product standards and specifications need consistent review to insure testing compliance and consistent product performance.



## **Military Specification Task Group Mission Statement**

- The Military Specification Task Force in **conjunction** with the **approval of military governing bodies** will provide the means to **update**, **develop** and **maintain select military specifications** that pertain to the **technical fabrics industry**.



# Specification Review & Update Procedure

The goal of USIFI is not to replace military specifications, but to update and maintain these specifications and deliver a more reliable, consistent product.



# USIFI Specification Numbering System

- **Conversion of military specifications (word for word adoption of military spec)**
  - **Initial Specification**
    - Replace “MIL-C” or “A-A” with USIFI-PRF and no suffixes
    - Mil-C-43808A (GL) becomes USIFI-PRF-43808
    - A-A-55308 becomes USIFI-PRF-55308
  - Revision “A” (includes all DOD approved engineering changes and notices)
  - Revision “B” and later (includes all changes adopted by DOD and industry to reflect technology and design evolution as well as user needs)
    - Becomes USIFI-PRF-43808B, USIFI-PRF-43808C, etc.
- **Specifications originating with USIFI**
  - Numbering system under consideration
    - Possibly USIFI-PRF-001 for first original spec



# USIFI Military Specification Conversion

**Task Groups can be working on Revision "B" during Initial and Revision "A" stages**

## **Selection of Specification**

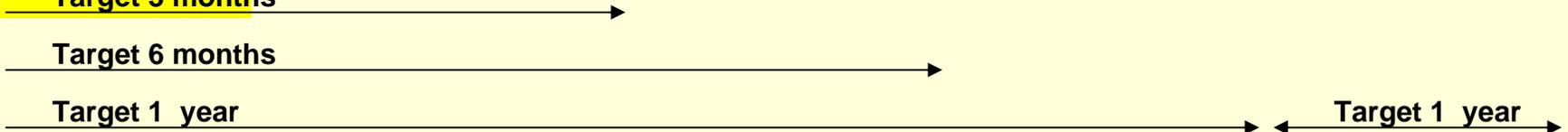
- Chosen by committee
- Sponsor selected
- Task groups formed

**Target 3 months**

**Target 6 months**

**Target 1 year**

**Target 1 year**





# USIFI Military Specification Conversion

Task Groups can be working on Revision "B" during Initial and Revision "A" stages

## Initial Specification

- Convert MIL spec to USIFI spec
- USIFI logo, numbering and disclaimers
- Word for word adoption of Mil Spec
- No editorial or admin changes
- Internal working document only

## Selection of Specification

- Chosen by committee
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# USIFI Military Specification Conversion

Task Groups can be working on Revision "B" during Initial and Revision "A" stages

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- Word for word adoption of Mil Spec
- No editorial or admin changes
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## Revision "A"

- Adapted to USIFI template
- Includes DOD-approved engineering changes and notices
- DSCP distrib. notice removed
- Custodian, participatory & preparing activity description removed
- Spelling and typographical errors edited
- Ref. to mil approvals relating to original mil spec removed
- Approved by membership & military then published
- Doc date is date of approval for adoption

## Selection of Specification

- Chosen by committee
- Sponsor selected
- Task groups formed

Target 3 months

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## Revision "B" & later

- Includes all changes adopted by DOD & industry to reflect technology & design evolution as well as user needs
- Approval by membership & mil then published
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## Selection of Specification

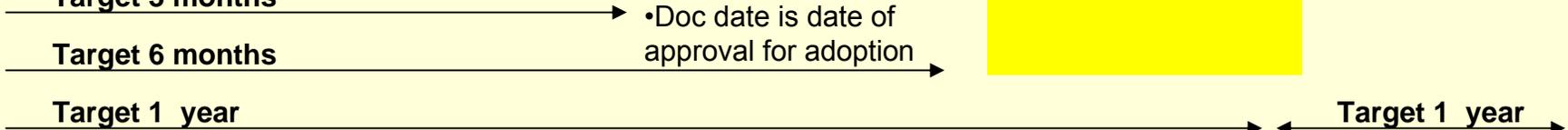
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- Approval by membership & mil then published
- Doc date will be date of approval for adoption

## Revision/ Review

- Revision based on Change Proposal and committee approval
- Sponsor selected
- Task groups formed
- Revisions approved by membership and military and then published
- If no change proposal in 5 years since last revision, review and decide status

## Selection of Specification

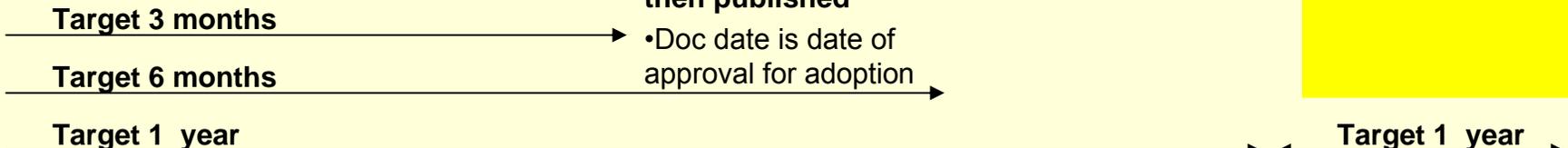
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# Unified and Consistent Industry Test Standards

## **Sub-Committees**

- **Physical Testing**
- **Abrasion**
- **Light Fastness**



# Unified Testing Specification

- **Purpose:**
  - To **consolidate** and **streamline** the number of **tests** and **test types** used in the industry
  - Primary effort is focused on **reducing** the **testing variation** from manufacturer sites **throughout the country**



# Unified Testing Specification

- **Goal**

- To drive a **universal master fabric standard** by which all material used in tents and selected technical fabrics would follow a **standardized test methodology** and **testing procedure to achieve testing uniformity**



# Key Testing Parameters

## Destructive tests / SOP's

1. Weight (ASTM D 751, Sec. 10.2)
2. Breaking Strength (ASTM D751, Sec. 11, Procedure B)
3. Tear Strength (ASTM D 751, Sec. 33, Procedure B, 8 x 8 specimens @ 12" min. rate)
4. Stiffness – Tenious Olson ASTM D747, the group would need to further determine the following (angular deflection, weight, bending modulus weight with specimen size and span)
5. Flammability (ASTM D 6413-99)



# Key Testing Parameters

## Destructive tests / SOP's (Con't)

6. Adhesion (ASTM D 751, Sec. 51.1.1 for laminates, Sec. 51.1.2 for coated products)
7. Blocking (ASTM D751, Sec. 89, and 180 degrees for 30 minutes)
8. Hydrostatic Resistance (ASTM D 751, Sec 41 Part a, procedure 1)
9. Gloss (ASTM D 523)
10. Cold Crack (ASTM D 751, Sec. 66 low temp Crack Std @ -20 degrees)
11. Mildew Resistance – Committee to establish set criteria



# Abrasion Testing Sub-Committee

Objective: To improve correlation of abrasion testing of coated fabric military specifications to actual tent programs and wear life.

...From desert sand to freezing snow  
to jungle heat humidity.



# Abrasion Methods Cross Reference

<b>Commercial</b>	<b>Fed Std 191A</b>	<b>Description</b>	<b>Comments</b>
ASTM D3885	5300	Flexing, Folding Bar	Stoll
ASTM D3886	5302	Inflated Diaphragm	Stoll
AATCC 119	5303	Wire Screen	Frostina
ASTM D4157	5304	Oscillatory Cylinder	Wyzenbeek, ASTM discontinued
ASTM D3884 <sup>3</sup>	5306	Rotary Platform, Double Head	Taber, ASTM discontinued
ASTM D4158	5308	Uniform Abrasion	Schiefer
	Appendix Nugget E	Wire Screen	Textile Webbing



# Path Forward

- Develop realistic abrasion test methods that better relate to end use requirements
  - From sand blasting (desert)
  - To cold bending & cracking (arctic)

... This must be a cross-functional government / industry objective. We must have participation to successfully resolve this performance issue



# Carbon Arc Accelerated Weathering

## Sub-Committee

...Short Wavelengths → Poly Degradation

...Long Wavelengths → Fading & Color Change



# Accelerated Weathering Equipment Options

- Carbon Arc
- Xenon

Fluorescent (QUV)

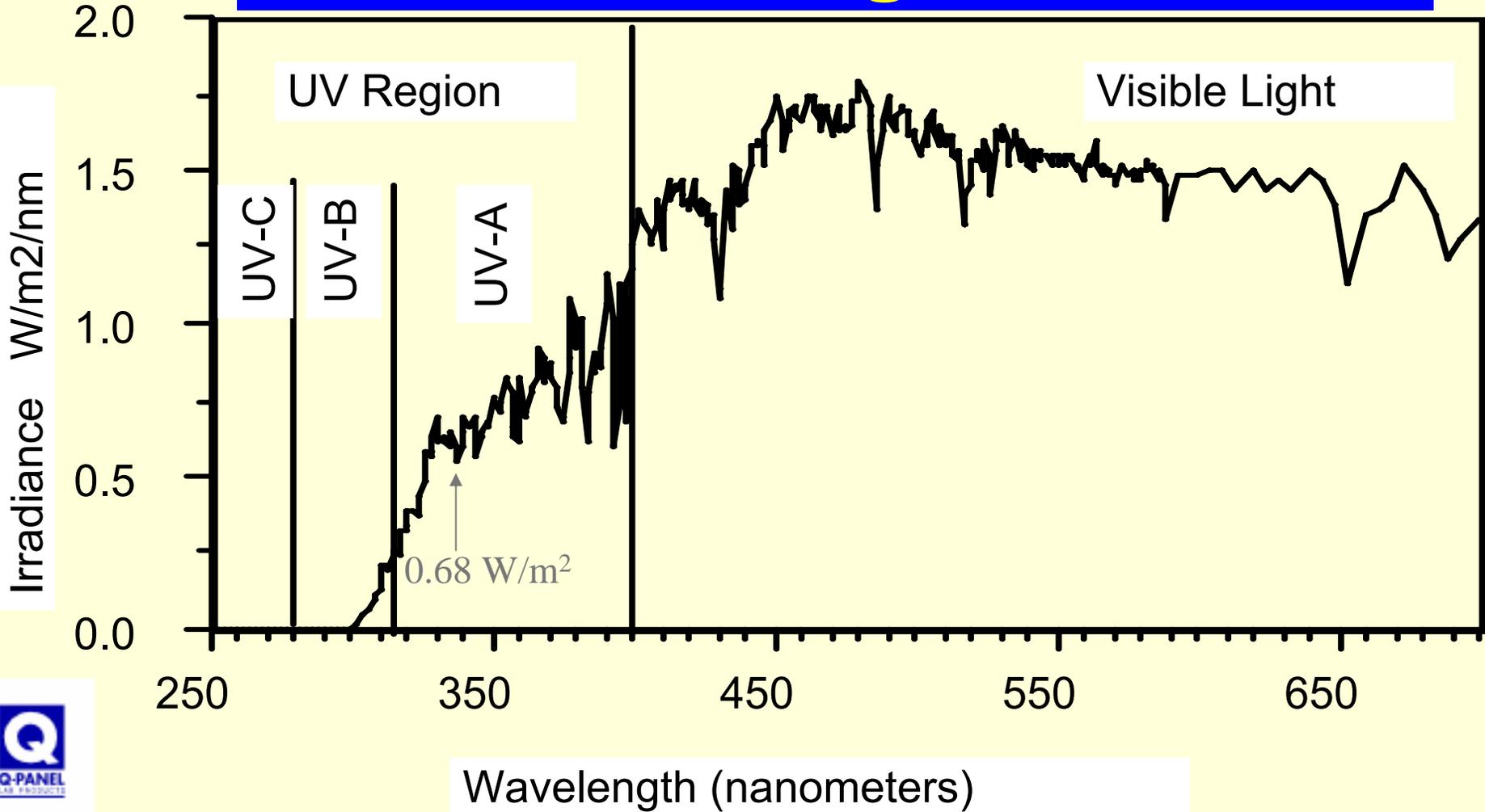


# Carbon Arc → Current Military Test Methods For Coated Fabrics

- Developed in 1933
- Slow cycle time – delivery issues
- Expensive
- Outdated and inefficient apparatus part supply
- Environmentally unfriendly – Carbon tube disposal
- Availability of carbon tubes
- Cannot calibrate machines
- Fit for use??

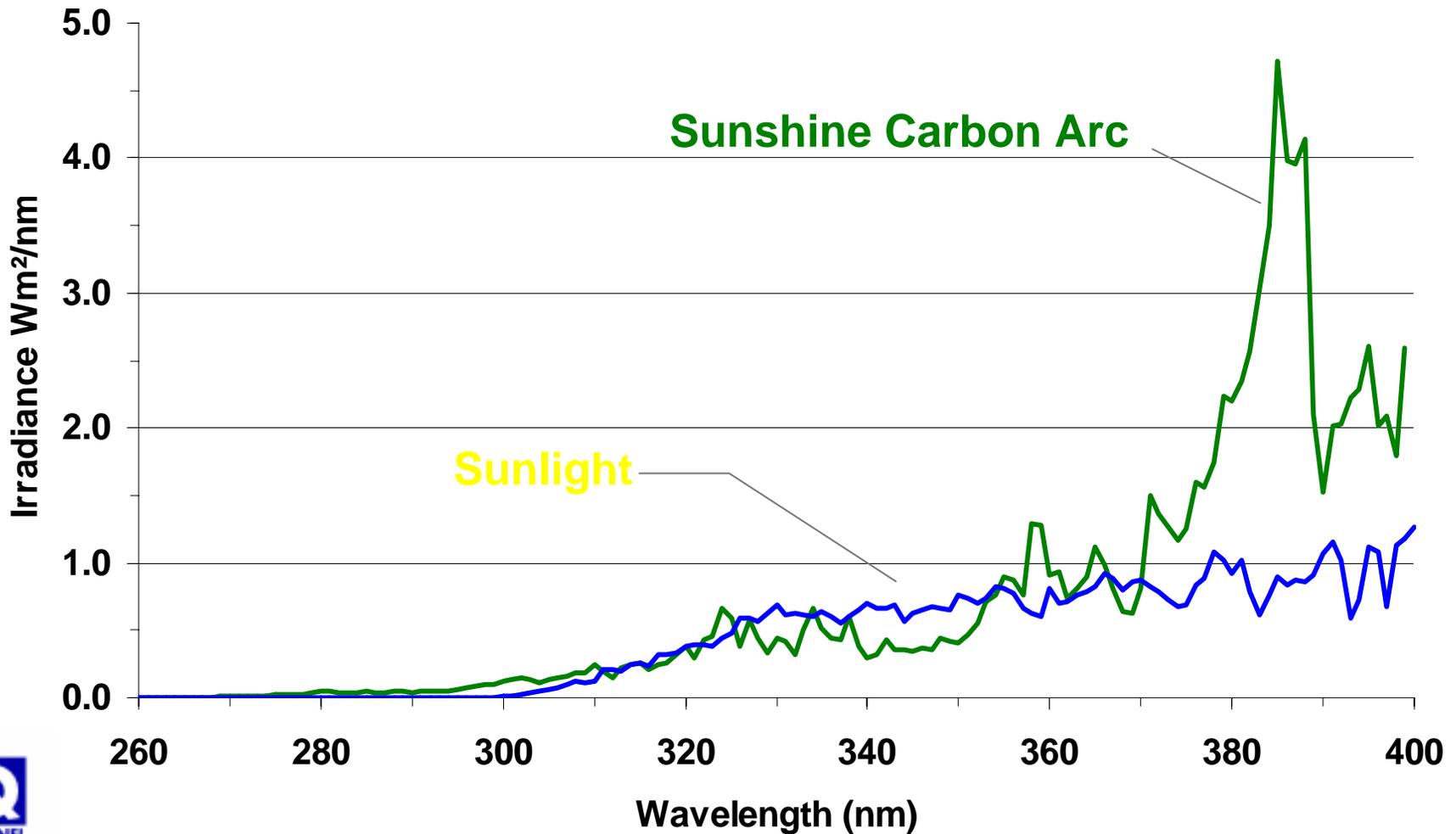


# Summer Sunlight Standard





# Summer Carbon Arc vs. Sunlight





# Fluorescent vs. Xenon

- UVA-340 best simulation of short-wave UV
- UVB-313 might be too severe
- No visible light
- Stable spectrum
- Irradiance control
- No RH control
- Water spray or condensation
- Full spectrum
- Best simulation of long wave UV & visible light
- Spectrum changes
- Irradiance control
- Relative humidity control
- Water spray

**... Better recognized industry methods**

**for product performance predictability**



# Accelerated Weathering Group Status

- USIFI/Q-Panel/Milliken study underway
- Group to review and compare to PIA study
- Review with AATCC
- Report presentation to USIFI Task Group
- Review / Discuss with Natick
- Determine path forward

...Industry goal is to offer alternative method for  
lightfastness testing and move to more accurate,  
consistent cost effective methods.



# Specifications In-Process

- USIFI-PEF-55308B
- USIFI-PRF-20696
- USIFI-PRF-44103
- USIFI-PRF-44423



# Task Group Mission Success

Strong support and participation of all government agencies and military branches in the process, verification of and acceptance of our specification changes.

...Quarterly meetings arranged with

DSCP Procurement....

We welcome your attendance



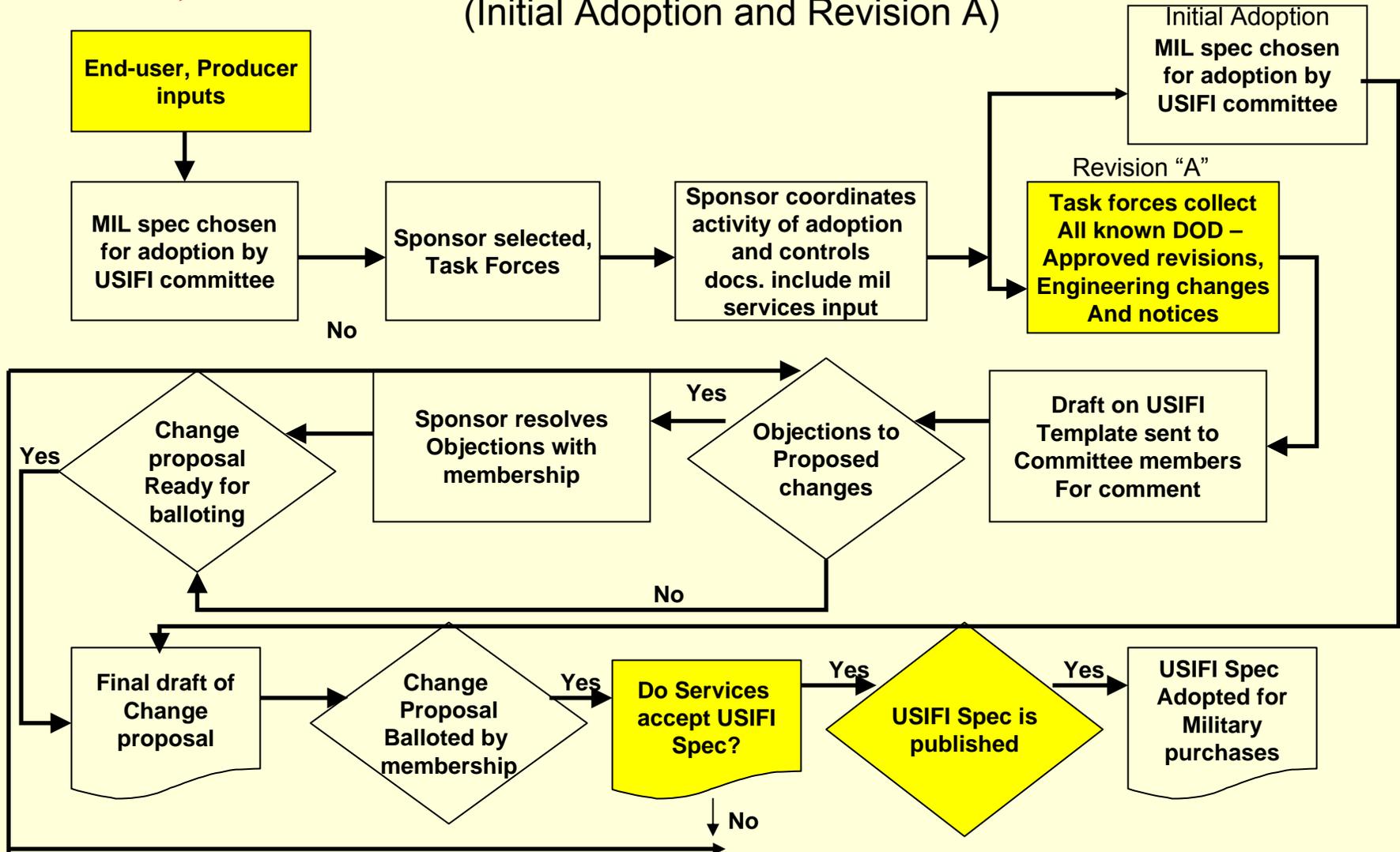
# Appendix

- Mil Specification process flow chart
- USIFI-PRF-55308A



# MIL Spec Adoption – Process Flow

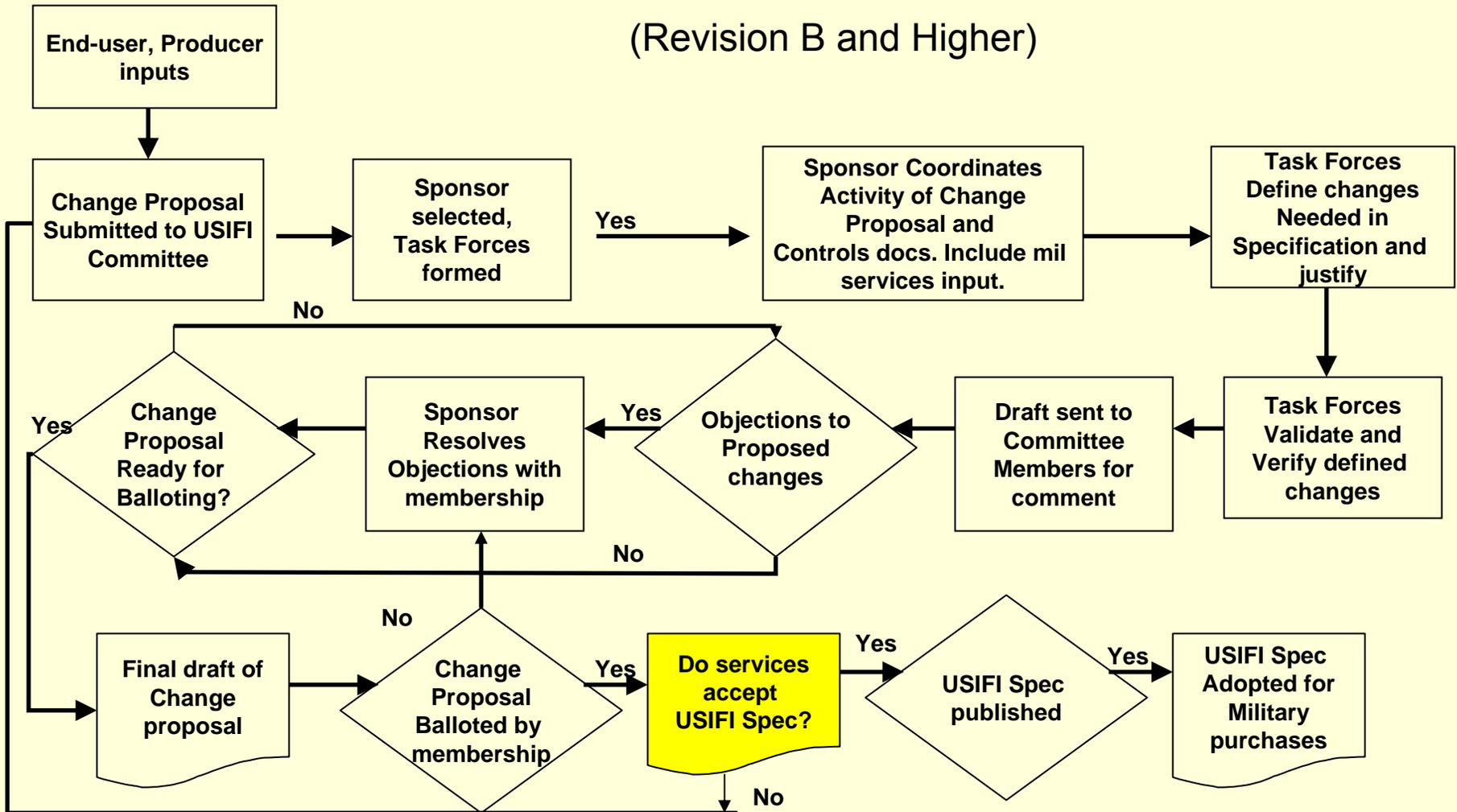
(Initial Adoption and Revision A)



...Cross functional with Governmental Approvals Required



# MIL Specification Revision – Process Flow



...Cross functional with Governmental Approvals Required