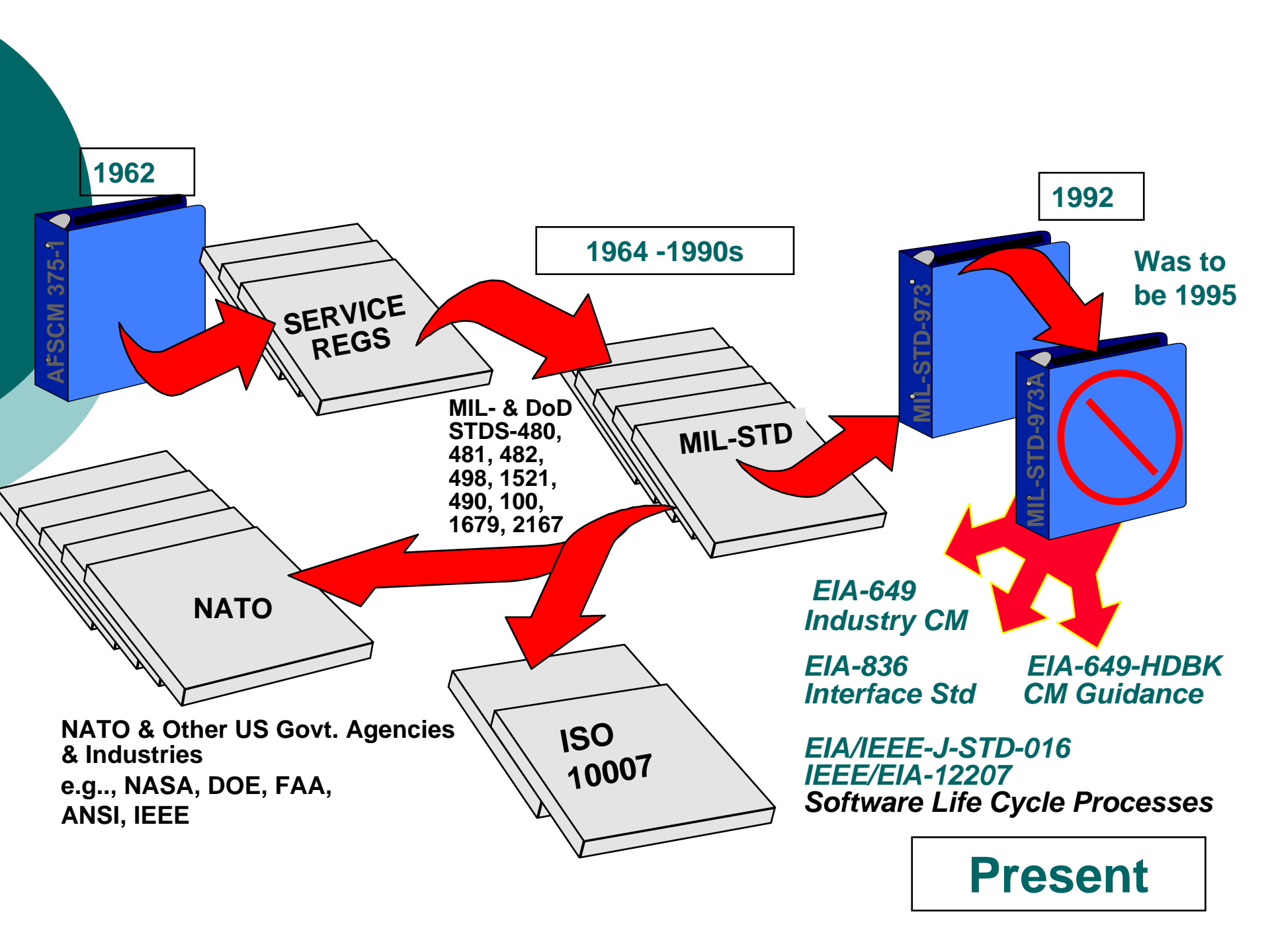# Configuration Management

based on the

National Consensus Standard for Configuration Management ANSI/EIA-649

Best Practices

➢ **Industry "Best Practices" Reference Material**

- ❑ **ANSI/EIA 649; "National Consensus Standard for Configuration Management"**
- ❑ **IEEE/EIA 12207.0; "Software Life Cycle Processes"**
- ❑ **MIL-HDBK-61A; "Configuration Management Guidance"**
- ❑ **MIL-STD-100G; "Engineering Drawing Practices"**
- ❑ **ASME Y14.100M; "Engineering Drawing Practices"**
- ❑ **ISO 10007; "Quality Management – Guidelines for Configuration Management"**
- ❑ **CMMI℠; "CMMI℠ for Systems Engineering, Software Engineering, and Integrated Product and Process Development"**

1962

1992

AFSCM 375-1

SERVICE REGS

1964 -1990s

Was to be 1995

MIL-STD-973

MIL-STD-973A

MIL- & DoD STDS-480, 481, 482, 498, 1521, 490, 100, 1679, 2167

MIL-STD

NATO

EIA-649 Industry CM

EIA-836 Interface Std

EIA-649-HDBK CM Guidance

NATO & Other US Govt. Agencies & Industries
e.g.., NASA, DOE, FAA, ANSI, IEEE

ISO 10007

EIA/IEEE-J-STD-016
IEEE/EIA-12207
Software Life Cycle Processes

Present

> **Purpose of Standard:**

This standard describes Configuration Management functions and principles and defines a neutral Configuration Management Terminology for use with any product line. Development began in 1994, with the Electronic Industries Alliance's (EIA) G-33 Committee on Data and Configuration Management initiated a task to develop an industry Configuration Management standard.

CM Process Benefits:

✓ **When Configuration Management principles are applied using effective practices, return on investment is maximized and product life cycle costs are reduced. (ANSI/EIA 649 Rev A)**

➢ Introduction to CM:

✓ **Applies appropriate processes and tools to establish and maintain consistency between the product and the product requirements and attributes defined in product configuration information.**

✓ **Ensures that products conform to their requirements and are identified and documented in sufficient detail to support the product life cycle.**

✓ **Assures accurate product configuration information and enables product interchangeability and safe product operation and maintenance to be achieved.**

✓ **Requires a balanced and consistent implementation of CM functions, principles and practices throughout the product life cycle.**

✓ **Facilitates orderly identification of product attributes and provides control of product information and product changes used to improve capabilities; correct deficiencies; improve performance, reliability, or maintainability; extend product life; or reduce cost, risk or liability.**

➢ CM Functions and Principles:

The CM process is comprised of five (5) CM functions and their CM principles that together provide a flexible implementation structure. The CM process is use4d to provide consistency between product requirements, product configuration information and product attributes.

The five CM functions are;

1) **Configuration Management Planning and Management**
2) **Configuration Identification**
3) **Configuration Change Management**
4) **Configuration Status Accounting, and**
5) **Configuration Verification & Audit**

✓ **CM is a discipline providing**

❖ Assurance that the configuration of a product is
❖ known and reflected in product information

❖ Verification that product change is beneficial and
❖ effected without adverse consequences

❖ Proof that a change is managed from idea inception
❖ to incorporation into all affected items

✓ **Properly applied, CM:**

❖ Serves both provider (developer, producer, supplier) and user (customer) of a product

❖ Facilitates product support and product maintenance

❖ Is a Cost Avoider not a Cost Driver!!!

What does CM do for the Provider?

- Prevents technical anarchy
- Avoids trial and error engineering and program management
- Avoids embarrassment of customer dissatisfaction and complaint
- Captures information needed to make later decisions
- Avoids cost and catastrophe!

❑ **What does CM do for the user?**

❖ Provides customer choice on changes affecting customer interests

❖ Guarantees continued support of a product, or at least notice of obsolescence

❖ Assures consistency between the product and the information about the product

❖ Enables user and service person to distinguish between product versions and correlate to related instructions

Change Requests
- Improve design
- Increase reliability
- Enhance Maintainability
- Reduce Cost
- Etc.

Current
Configuration

IN   OUT

Change Management

Updated
Configuration
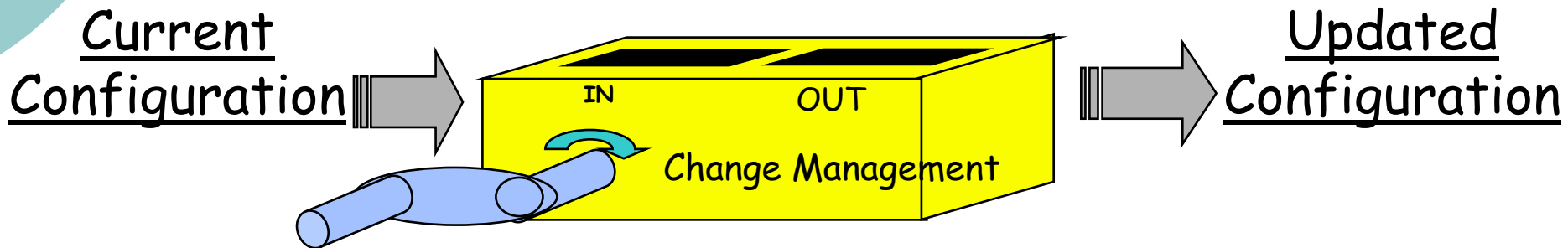
Controlling **changes** from idea inception to incorporation in all affected items

Purpose and Benefits

- Configuration Management process facilitates orderly management of product information and product changes

- Products are labeled and correlated with their associated requirements and design

- Product configuration is documented and a known basis for making changes is established

- Proposed changes are identified and evaluated for impact prior to making change decisions

Purpose and Benefits - continued

- ☐ Change activity is managed using a defined process

- ☐ Configuration information captured during the product definition, change management, product build, distribution, operation and disposal processes is organized for retrieval of key product information and relationships, as needed

- ☐ Actual product configuration is verified against required design attributes

- ☐ Incorporation of changes to the product is verified and recorded throughout the life of the product

CM PLANNING & MANAGEMENT

Selection, tailoring, guidance, oversight

CONFIGURATION IDENTIFICATION

Attributes, identifiers, baselines

CONFIGURATION STATUS ACCOUNTING

CM information & status

CONFIGURATION CHANGE MANAGEMENT

Manage changes

CONFIGURATION VERIFICATION/AUDIT

Verify performance & consistency

Summary

The Bridge Work is Complete,
When **All** the Functions are Included

Planning & Management

Verification
& Audit

Identification

Change Control

Status
& Accounting

- Configuration Management is a management process assuring that:

  - Products conform to the design and documentation governing their development and production
  - Documentation is controlled and reflects the latest, approved version
  - End users will have the capability to maintain and reprocure delivered products

Configuration Management is like a Cookbook -

You "must" know the receipe to be repeatative!