



Nadcap

*..... An Industry Teaming and
Management Performance Enhancement
Program Applicable to the Space Industry*

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Director Global Business Operations
Research and Development
Industry Managed Programs

December 08, 2006

Key Components of the Nadcap Model

- **Genesis and Mission**
- **Industry Managed Structure**
- **Unprecedented Global Growth**
- **Critical Technical Decisions**
- **Auditor Effectiveness**
- **Supplier benefits**
- **Prime benefits**
- **24/7/365 Web based Information access**
- **Strategic Intelligence**

Nadcap Genesis and Mission

- November 1985: **Government/Industry Equal Partners Conference recommends consensus solution to duplication of supplier quality assurance systems and significant variability in supplier chain assessments.**
- **Key Goals:**
 - Reduce risks and improve safety
 - Utilize industry resources to Best in Class Suppliers
 - Reduce costs
 - Improve suppliers consistency and development
- **Nadcap:** The leading worldwide cooperative program of major companies designed to manage a cost effective consensus approach to special processes and products and provide continual improvement within the aerospace and automotive industries.

Legal Organization

- **Nadcap** is administered by the Performance Review Institute (PRI) - a not-for-profit affiliate of SAE whose mission is to: *Provide global, unbiased, independent manufacturing process and product assessments and certification services to the mobility industry for the purpose of adding value, reducing total cost, and facilitating teaming between primes & suppliers.*

Nadcap Programs

◆ **Special Processes**

- **Nondestructive Testing (NDT)**
- **Materials Testing (MTL)**
- **Heat Treating (HT)**
- **Coatings (CT)**
- **Chemical Processing (CP)**
- **Welding (WLD)**
- **Nonconventional Machining & Surface Enhancement (NMSE)**

◆ **Systems & Products**

- **Sealants (SLT)**
- **Distributors (DIST)**
- **Aerospace Quality Systems (AQS) -AC7004**
- **Fluid Distribution Standards (FLU)**
- **Elastomer Seals (SEALS)**
- **Composites (COMP)**
- **Electronics (ETG)**

◆ **Under Development**

- **Fasteners (FAST)**

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Nadcap Members

Heroux Devtek Inc.

NASA Goddard Space Flight Center

MTU Aero Engines

MD Helicopters

Vought Aircraft

Hamilton Sundstrand

Rolls-Royce plc

DCMA

Latecoere

Air Force, WPAFB

Pratt & Whitney

BAE Systems

GSA

Honeywell Aerospace

Raytheon Aircraft Company

Bombardier

Smiths Aerospace

Rockwell Collins

Parker Aerospace Group

Lockheed Martin

Eaton Aerospace

ZODIAC

The Boeing Company

ITP



United Space Alliance

Eurocopter

Spirit AeroSystems

Liebherr-Aerospace SAS

BAE Systems - Air Systems

EADS Defense & Securities Systems

Rolls-Royce Corporation

AIRBUS

SONACA

AVIO S.p.A

EADS Military Transport Aircraft Div. (MTAD)

Sikorsky Aircraft

GE Aviation

Thales

SAFRAN Group

Alenia Aeronautica SpA

Cessna Aircraft Company

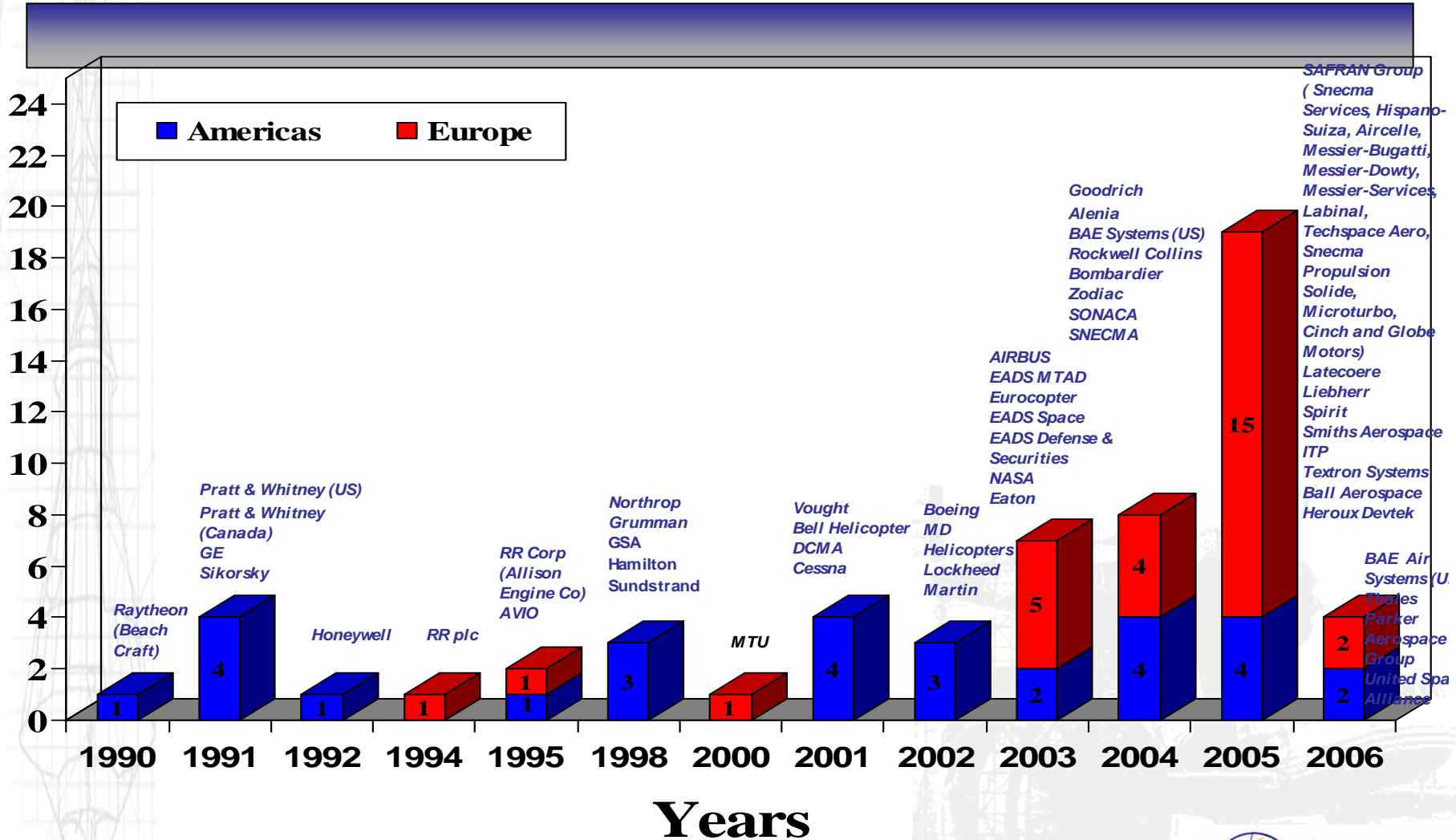
EADS Space

Bell Helicopter Northrop Grumman Corporation Goodrich Corporation

Ball Aerospace & Technology Corp.



Time line of Primes



SAFRAN Group
(Snecma
Services, Hispano-
Suiza, Aircele,
Messier-Bugatti,
Messier-Dowty,
Messier-Services,
Labinal,
Techspace Aero,
Snecma
Propulsion
Solide,
Microturbo,
Cinch and Globe
Motors)
Latecoere
Liebherr
Spirit
Smiths Aerospace
ITP
Textron Systems
Ball Aerospace
Heroux Devtek

BAE Air
Systems (U
K)
Parker
Aerospace
Group
United Spa
Alliance

Goodrich
Alenia
BAE Systems (US)
Rockwell Collins
Bombardier
Zodiac
SONACA
SNECMA

AIRBUS
EADS MTAD
Eurocopter
EADS Space
EADS Defense &
Securities
NASA
Eatons

Vought
Bell Helicopter
DCMA
Cessna

Boeing
MD
Helicopters
Lockheed
Martin

Northrop
Grumman
GSA
Hamilton
Sundstrand

RR Corp
(Allison
Engine Co)
AVIO

Pratt & Whitney (US)
Pratt & Whitney
(Canada)
GE
Sikorsky

Raytheon
(Beach
Craft)

Honeywell

RR plc

MTU

PRI/Nadcap Organizational Structure

Executive leaders

- Legal entity
- Fiduciary responsibility
- Set policy
- Provide the Vision

PRI Board of Directors

Nadcap Executive Strategic Planning Board (NESPb)

Nadcap Regional Advisory Bodies

Nadcap Management Council (NMC)

Administrative Staff

Task Groups

Special Processes

Nondestructive Testing

Materials Testing

Heat Treating

Coatings

Chemical Processing

Welding

NCM/Shot Peening

Systems & Products

Distributors

Sealants, Elastomer Seals

AQS (AC7004)

Fluid Distribution Systems

Composites

Supplier Support Committee

Senior quality leaders & managers

- Oversee operation of Nadcap
- Establish & implement policy & procedures
- Task group coordination & development
- Identify, develop and deploy improvement

Senior Quality Leaders

- Develop strategic plan and vision
- Promote Nadcap among prime contractors
- Support launch of new task groups
- Promote continuous improvement

Technical Experts

- Determine requirements
- Develop documents
- Accept corrective action
- Final decision on accreditation



PRI Board of Directors

- **Scott A. Collinge**
 - Director, Business & General Aviation Customer Quality
 - Honeywell Aerospace
- **Barbara F. O'Dell**
 - Vice President Director Manufacturing & Quality
 - The Boeing Company
- **Xu Huangang**
 - Senior Vice President
 - AVIC I
- **Paul Carter**
 - Aerospace Purchasing Operations Director
 - Rolls-Royce plc
- **Raymond A. Morris**
 - Executive Vice President
 - SAE International
- **Dennis O. Little**
 - Vice President Product Assurance & System Safety
 - Lockheed Martin Corporation
- **Tesfaye Aklilu**
 - Vice President Quality & Manufacturing
 - United Technologies Corporation
- **Kinsuke Hara**
 - Director, Quality Assurance
 - Mitsubishi Heavy Industries, Ltd.
- **John Saliture**
 - Director Of Supplier Quality & Technical Performance
 - Northrop Grumman Corporation
- **Robert Briggs**
 - General Manager Supply Chain Quality
 - GE Aviation
- **Mario Langlois**
 - Quality Director
 - Bombardier, Inc.
- **Joël Rémond**
 - Vice President Quality & Continuous Improvement
 - SAFRAN Group
- **Dieter Horst**
 - Vice President Management ECD
 - Eurocopter

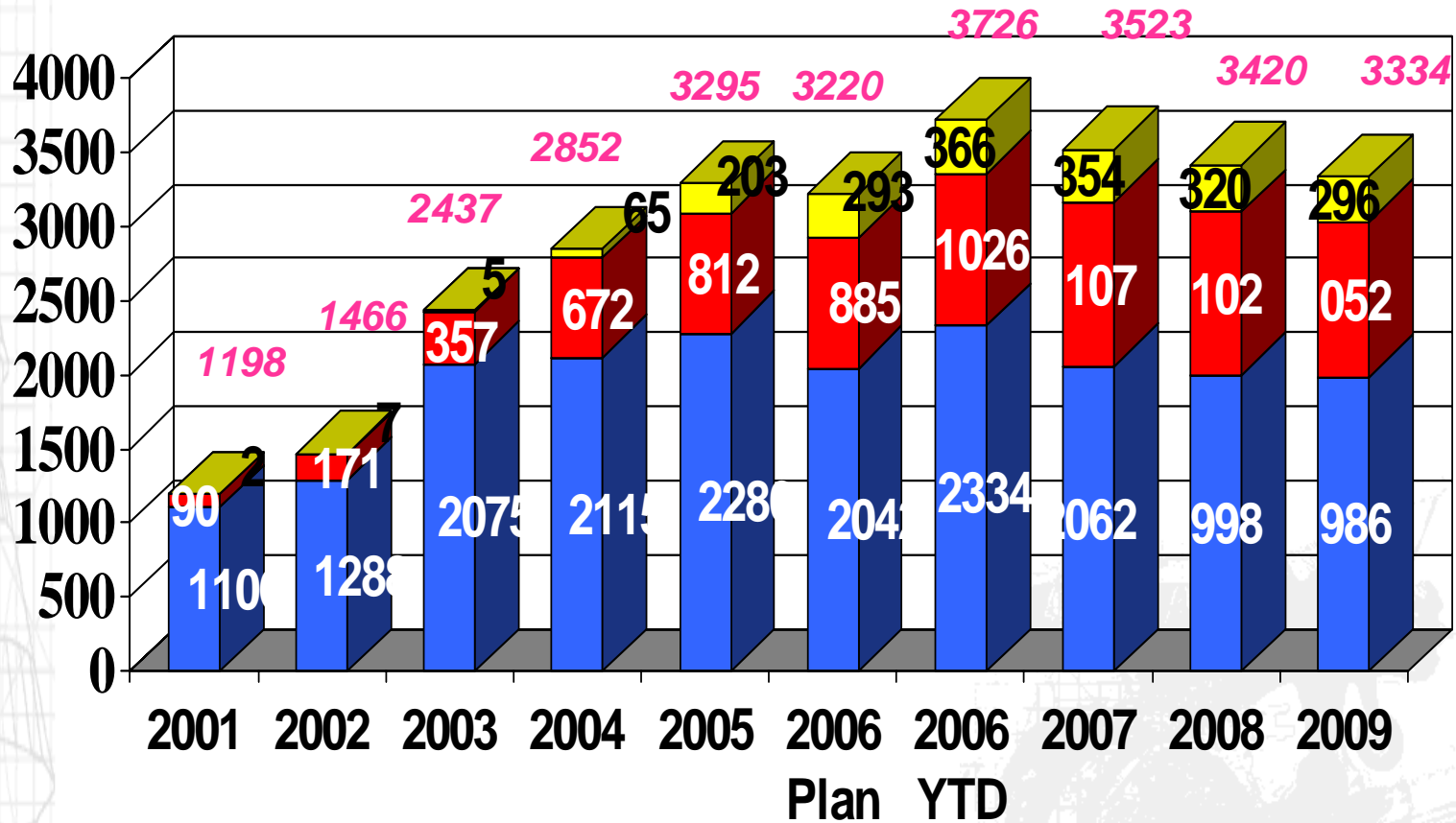
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Nadcap 3 Year 2007 – 2009 Projections

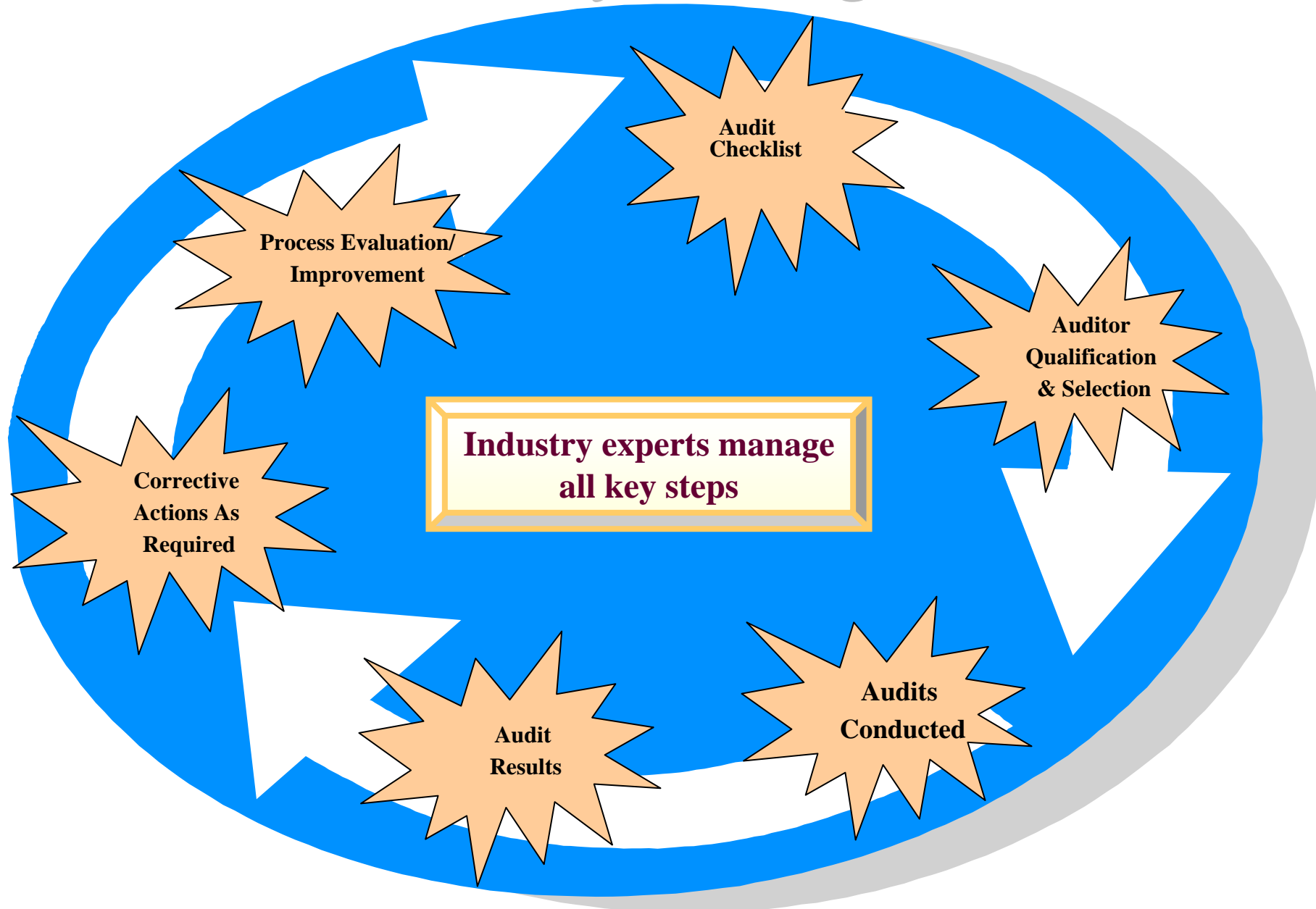
Audits



Key Components of the Nadcap Model

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Industry Managed



Audit Checklist

**Process Evaluation/
Improvement**

**Auditor
Qualification
& Selection**

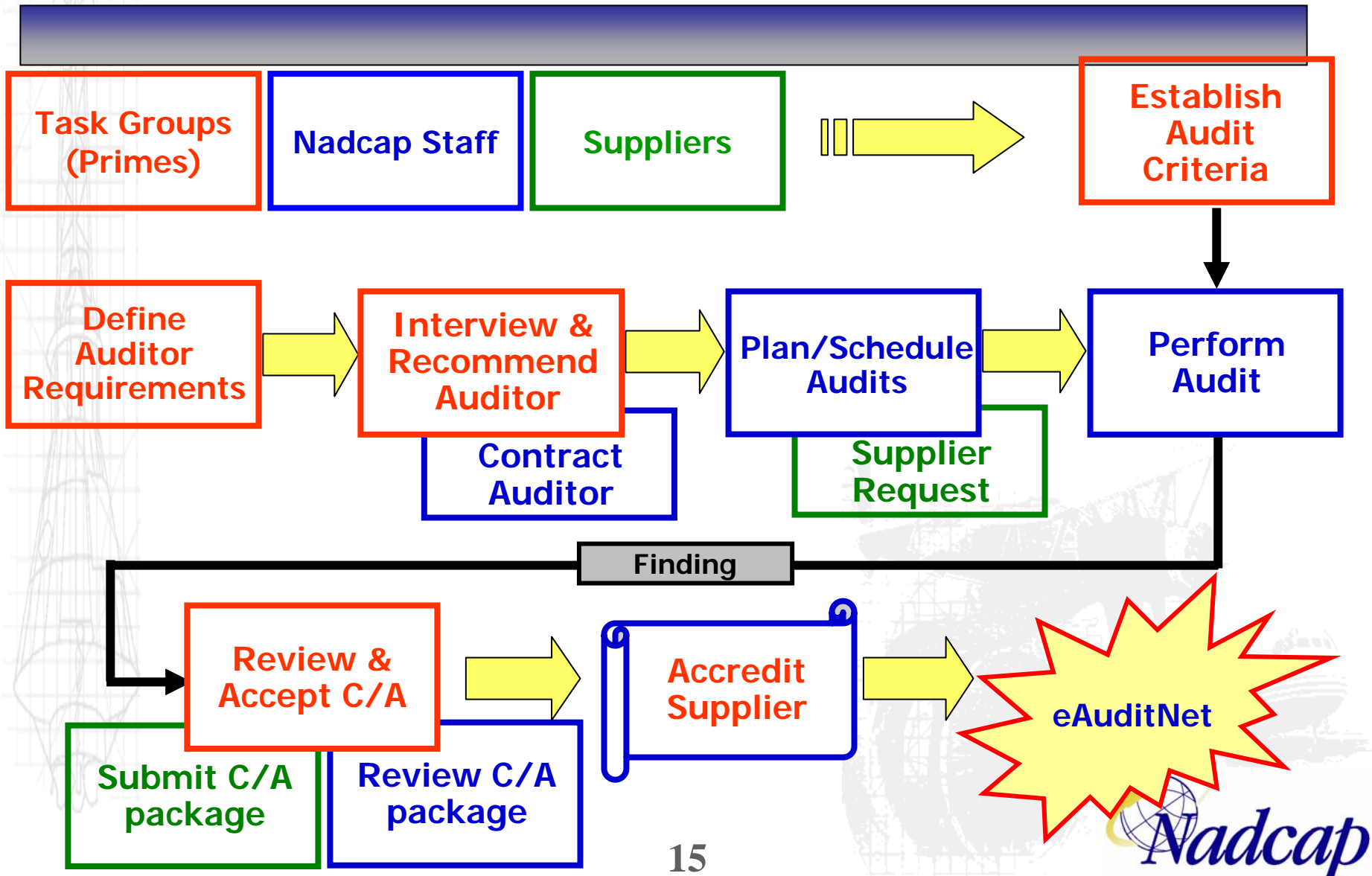
**Industry experts manage
all key steps**

**Corrective
Actions As
Required**

**Audit
Results**

**Audits
Conducted**

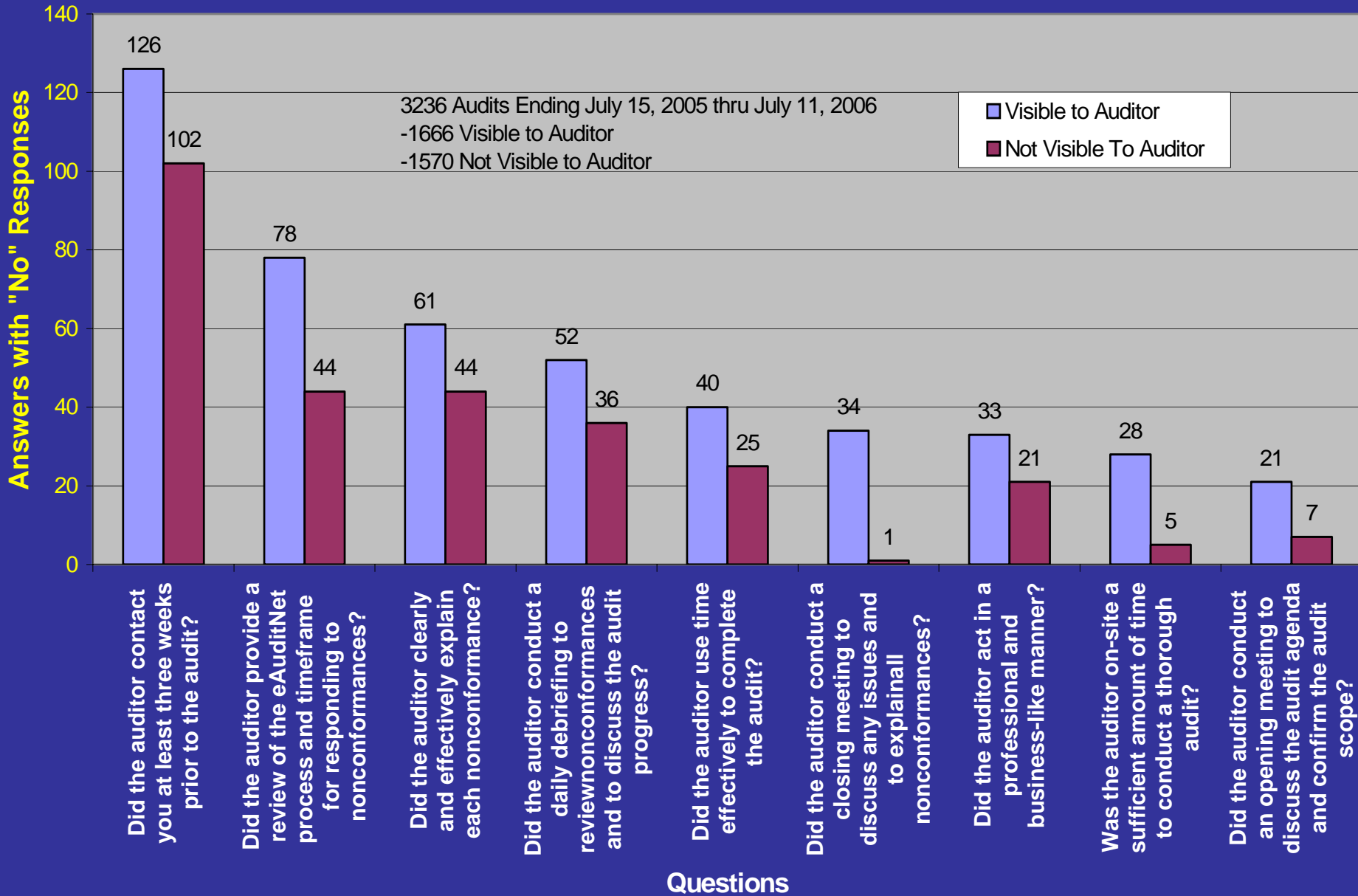
Nadcap - Industry Working Together



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Number of Responses with a "No" Answer to Supplier Feedback Question



Auditors Critical to Nadcap

- **Highly skilled technical background with average of 30 years experience in the Special process audited**
- **Unlike ISO or EN 9000 based audits, Nadcap auditors do not make the final decision**
- **Nadcap auditor goal is to evaluate and report the technical competency and compliance of the supplier**

Key Components of the Nadcap Model

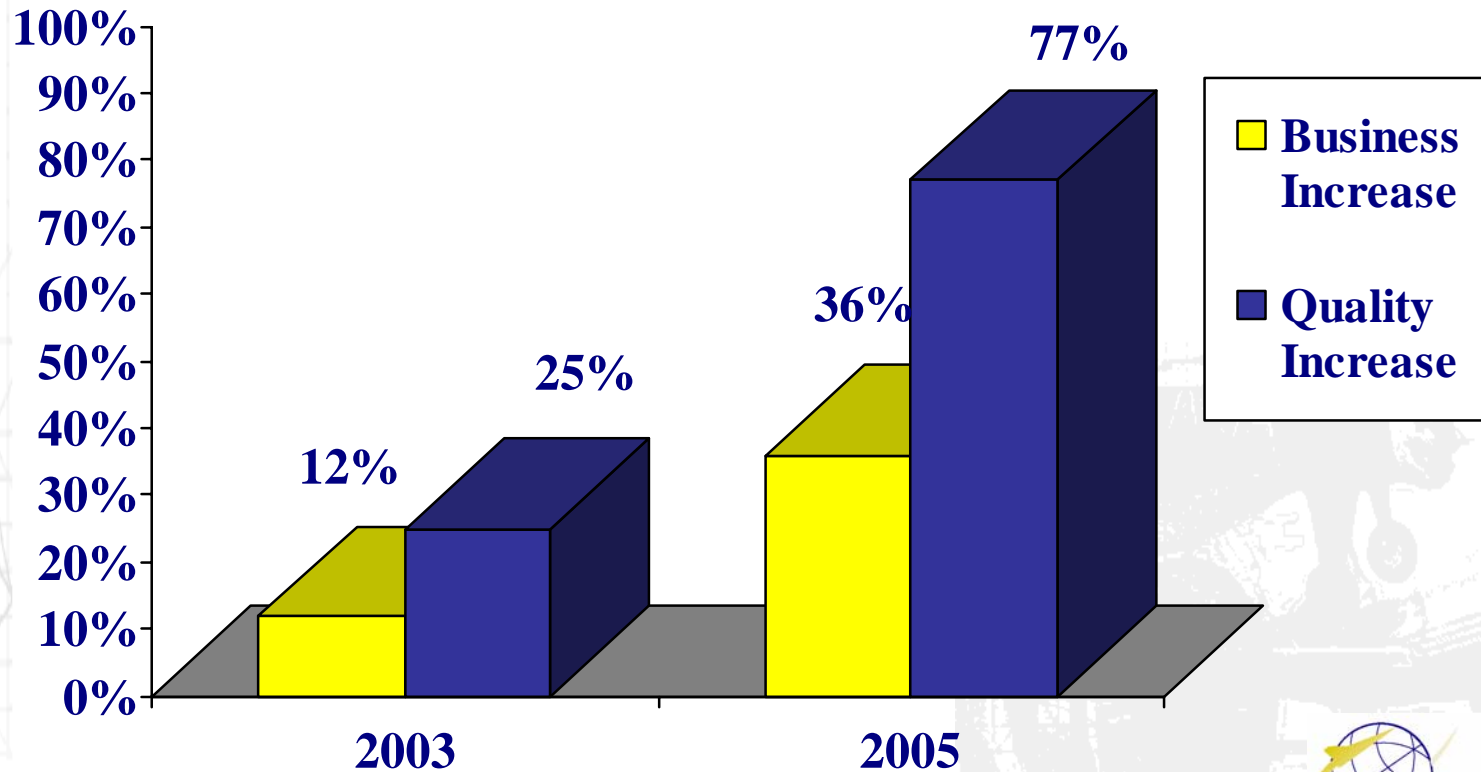
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Quality Improvements for Suppliers

(SSC 2005 Survey)

Q8 – If your company has been accredited for 1 year or more and your company measures business and/or quality trends, have you seen improvement in this area(s) related to your Nadcap accreditation(s)? Select all that apply.

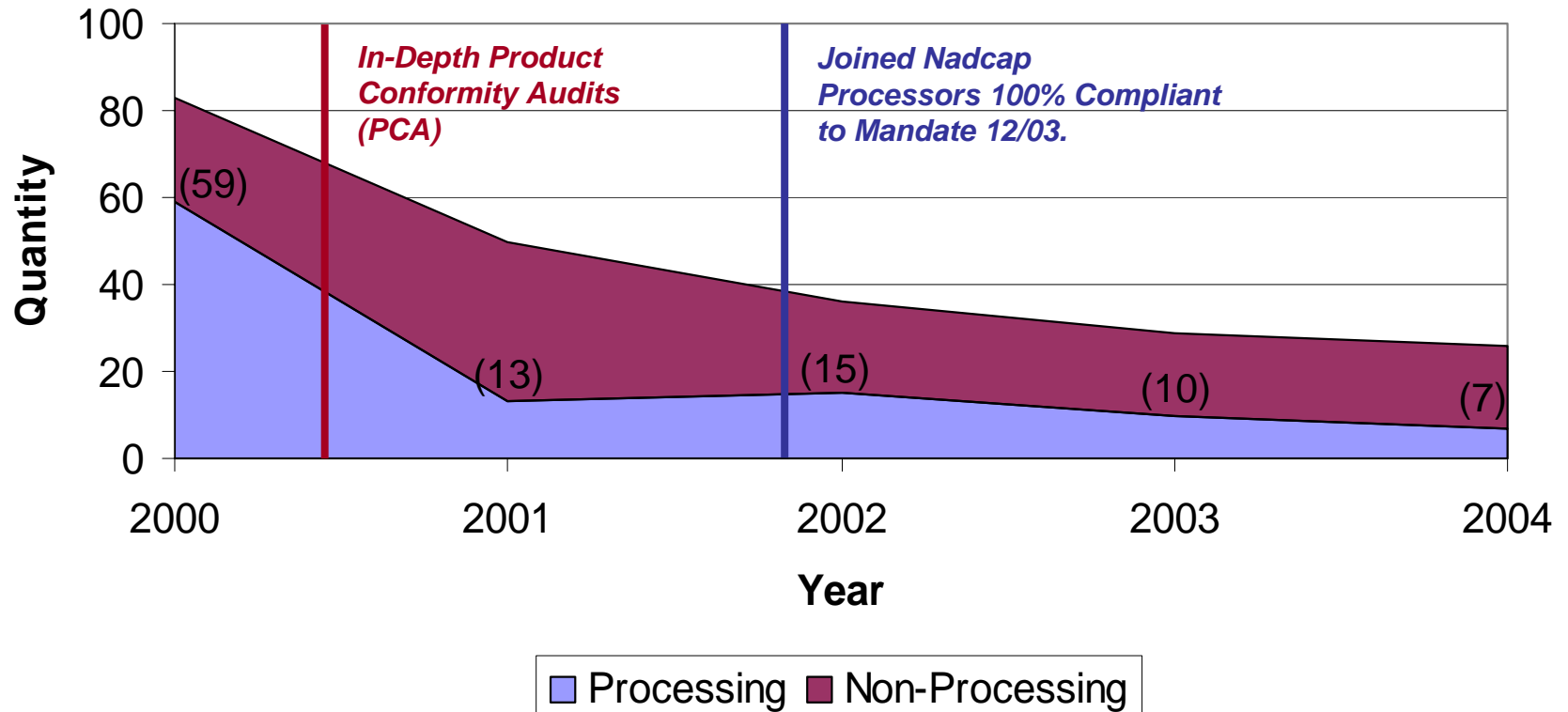


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Prime A - Supplier Escapes

Supplier Notifications of Escape (Special Processing Related?)



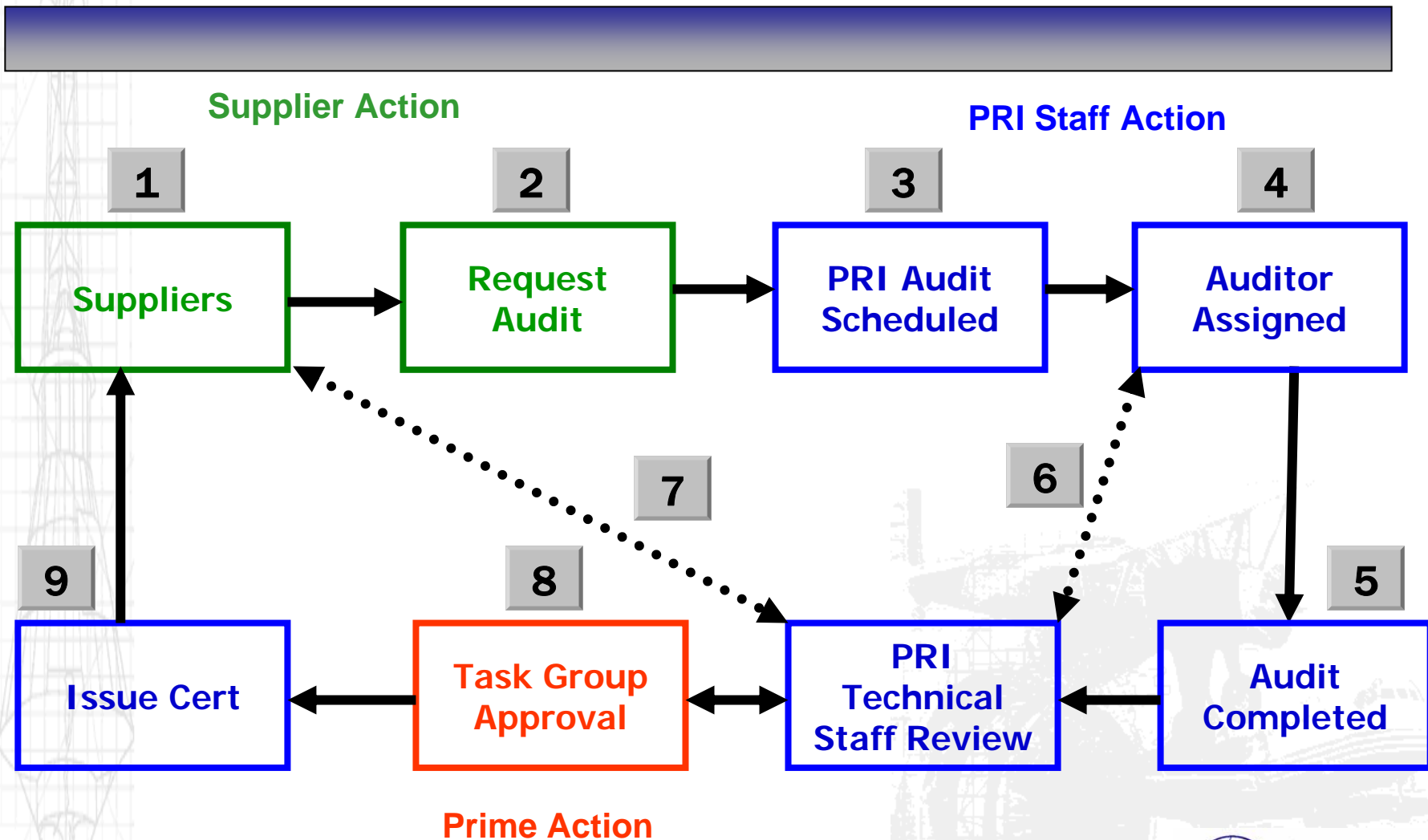
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eAuditNet – A Powerful Tool

- **Workflow package designed to provide real-time interaction regardless of location or time – 24 hours per day, 365 days per year**
- **Online system for everything relating to Nadcap audits officially launched on November 4, 2002**
- **Created to**
 - **Simplify audit report review**
 - **Shorten cycle time**
 - **Disseminate important information that Suppliers and Primes can access anywhere in the world**

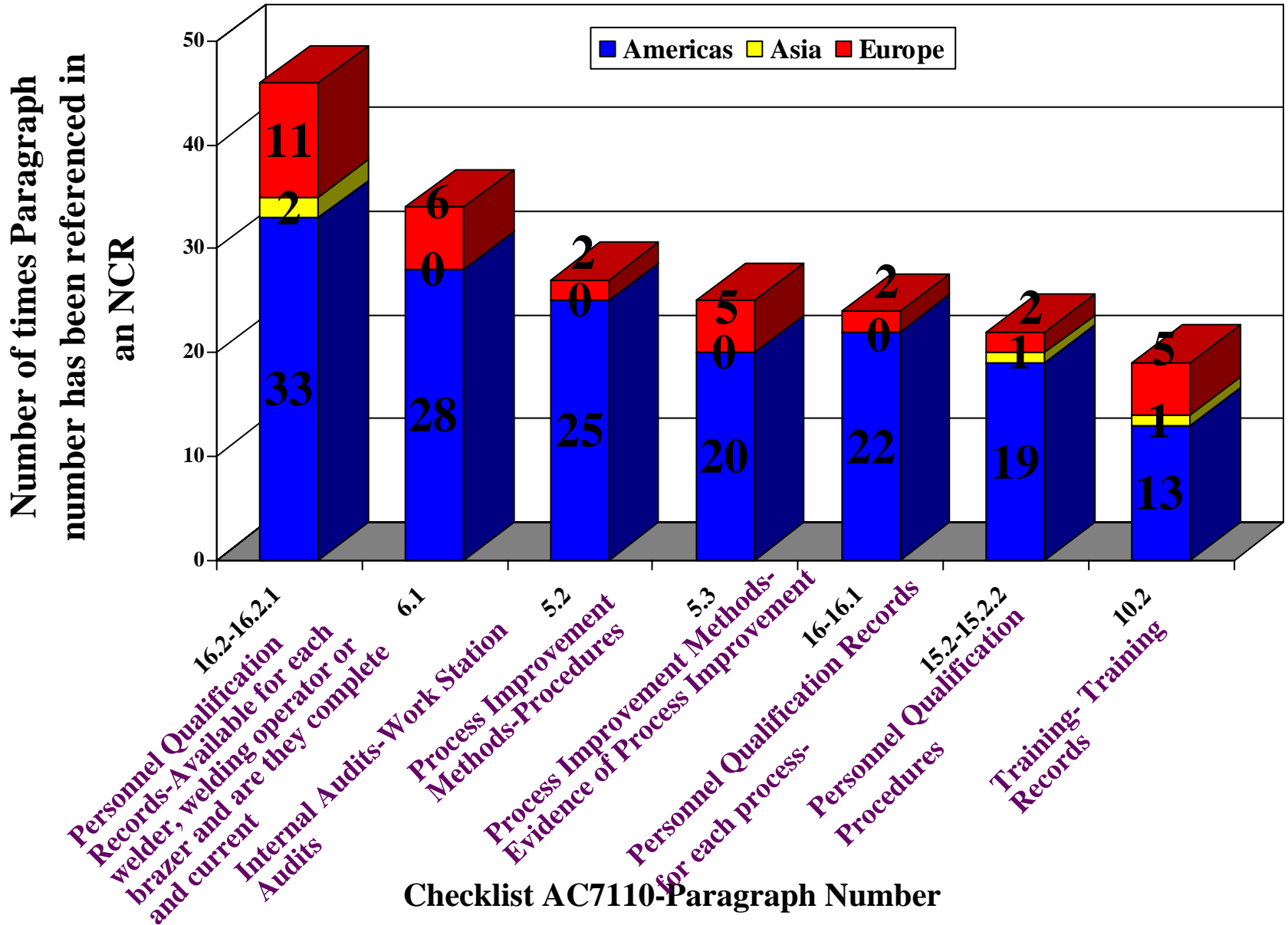
Nadcap eAuditNet Process



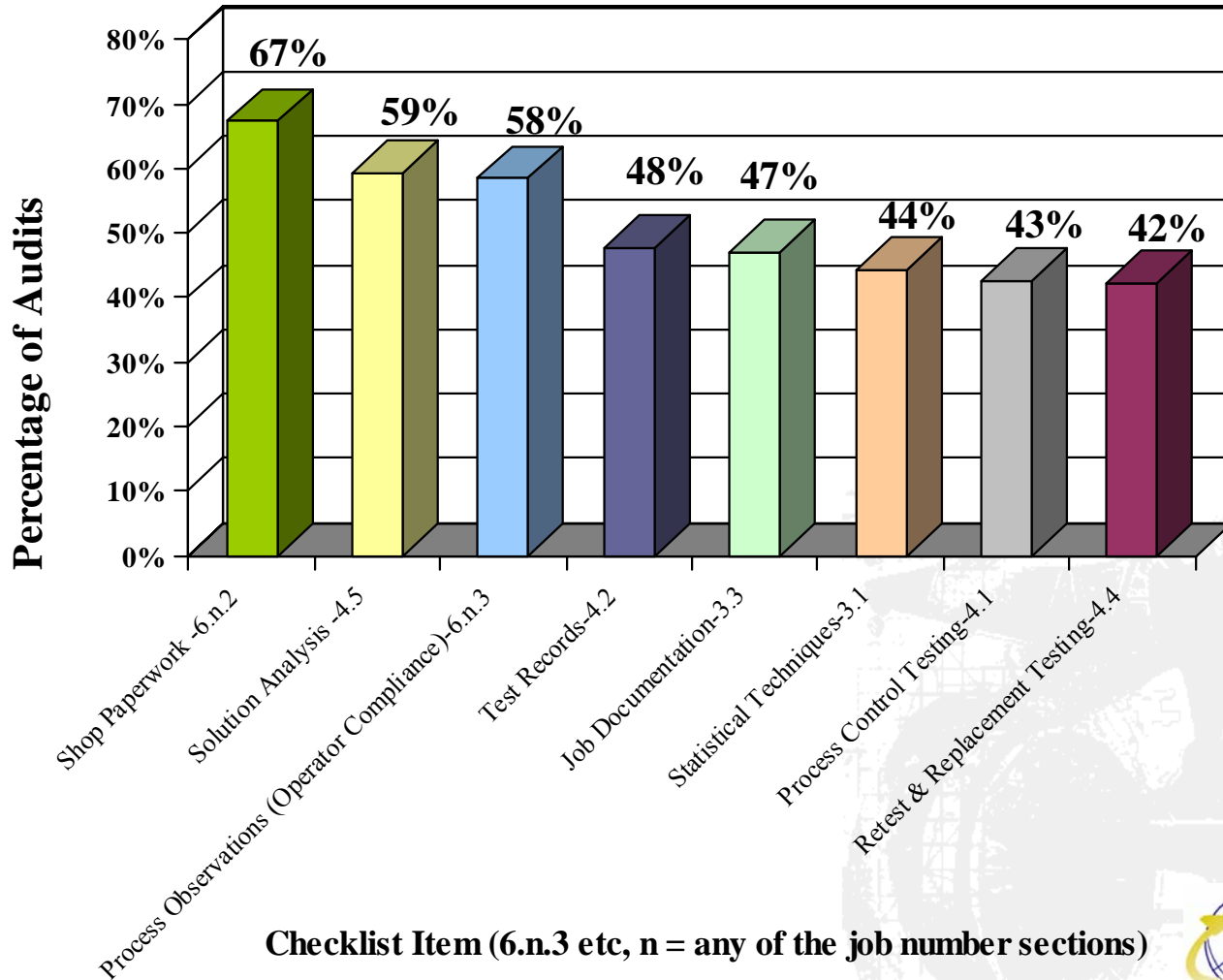
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Top Paragraph Numbers for Checklist AC7110 for Welding (2005 data)-Sector Breakdown



Percentage of Audits That Have Given Checklist Findings for Chemical Processing



Cooperation with the ESA Sinequanet

- **Key Challenges for the Space Industry:**
 - **Safety and Reliability**
 - **Quality & Low Volume of Customized parts/components**
 - **Need for highly skilled supplier chain**
- **Potential Solutions:**
 - **Nadcap Model is adaptable to the Space Industry (NASA, United Space Alliance etc as members)**
 - **Strategic Intelligence and Supplier Chain Management through a Customized eAuditNet for Space Industry**
 - **Global Industry participation provide solutions which would otherwise be addressed by individual companies**

Questions:

- ?

