



# e-LINCS

*Electronic Industry-wide Network for  
Characteristics & Specifications*

**Program Launch**  
May 17, 2004

# 100 Years of Aerospace

## What's Changed?

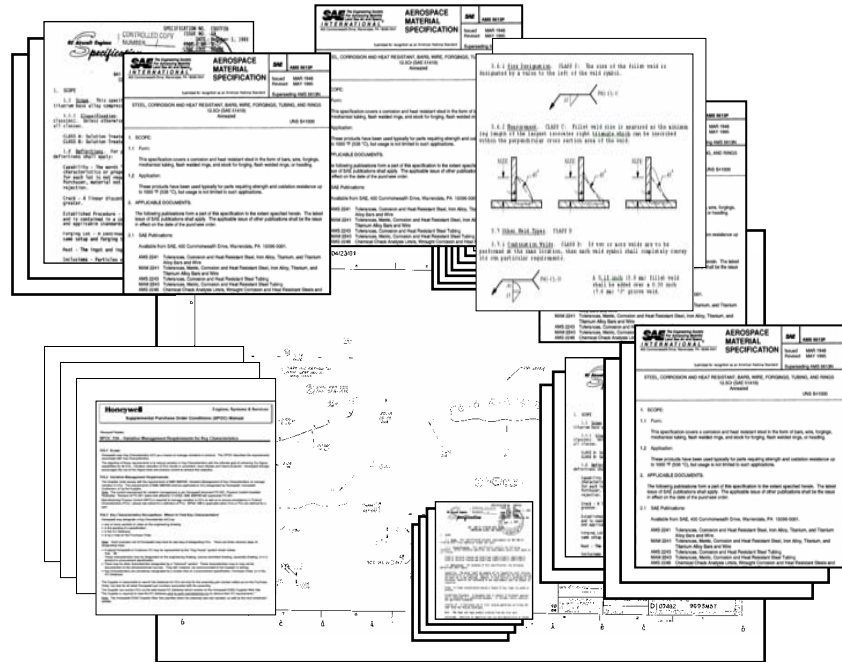
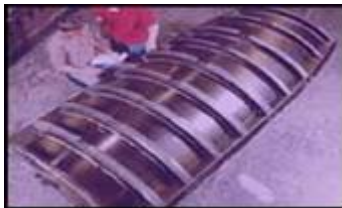


*From 12 seconds to transcontinental flight; from bicycle shop to factories; from nothing to \$150 billion industry; from 2 to 800,000 employees; \$55 billion in annual exports; \$15 billion in R&D; \$139 billion order backlog; biplanes, tri-planes, monoplanes; from wood and cloth to titanium and advanced composites; from zero to 16,000 US military aircraft; jet engines; mach 3 flight; from hand-made to advanced manufacturing technology; space flight; electronics & avionics; space stations; lunar landings; radar; stealth technology; from airmail to international airlines; jumbo jets; supersonic airliners; intercontinental missiles; cruise missiles; helicopters; vertical takeoff/landing; space shuttle; etc., etc., etc.*

**Virtually everything . . .**

# 100 Years of Aerospace

## What Hasn't Changed?



**Flowdown of requirements -- more cumbersome than 100 years ago**

# So What?

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- **Cost of Quality**
- **Barriers to Entry**
- **Aging Aircraft, Sustainment, Diminishing Sources**
- **First Articles**
- **Bundling**

# Typical Requirements Package

## *A Recent Solicitation from for F-16 Landing Gear Part*

- **Over 30 specs**
  - Mil Specs and Standards
  - AMS Specs
  - ASTM Specs
- **Multiple Special Processes**
  - Heat Treat, FPI, Plating, Shot Peen etc.
- **ISO-9002 Quality**
- **First Article Inspection (FAR 9.308)**
  - Thousands of characteristics

***“The contractor shall certify to the Government in writing full compliance with manuals, specifications, and standards . . . Contractor is responsible to completely search these manuals and standards and fully understand the requirements.”***

# The Critical Questions

## *How Do We Enable These Suppliers To:*

***“certify to the Government in writing full compliance with manuals, specifications, and standards . . . [and] completely search these manuals and standards and fully understand the requirements”—per ALC Solicitation***

***and***

***“. . . provide objective evidence that all engineering design and specification requirements are properly understood, accounted for, verified, and documented”—per AS9102***

***and***

***Provide a consistent response to both ALC and industry requirements?***

# The e-LINCS Solution

*This?*



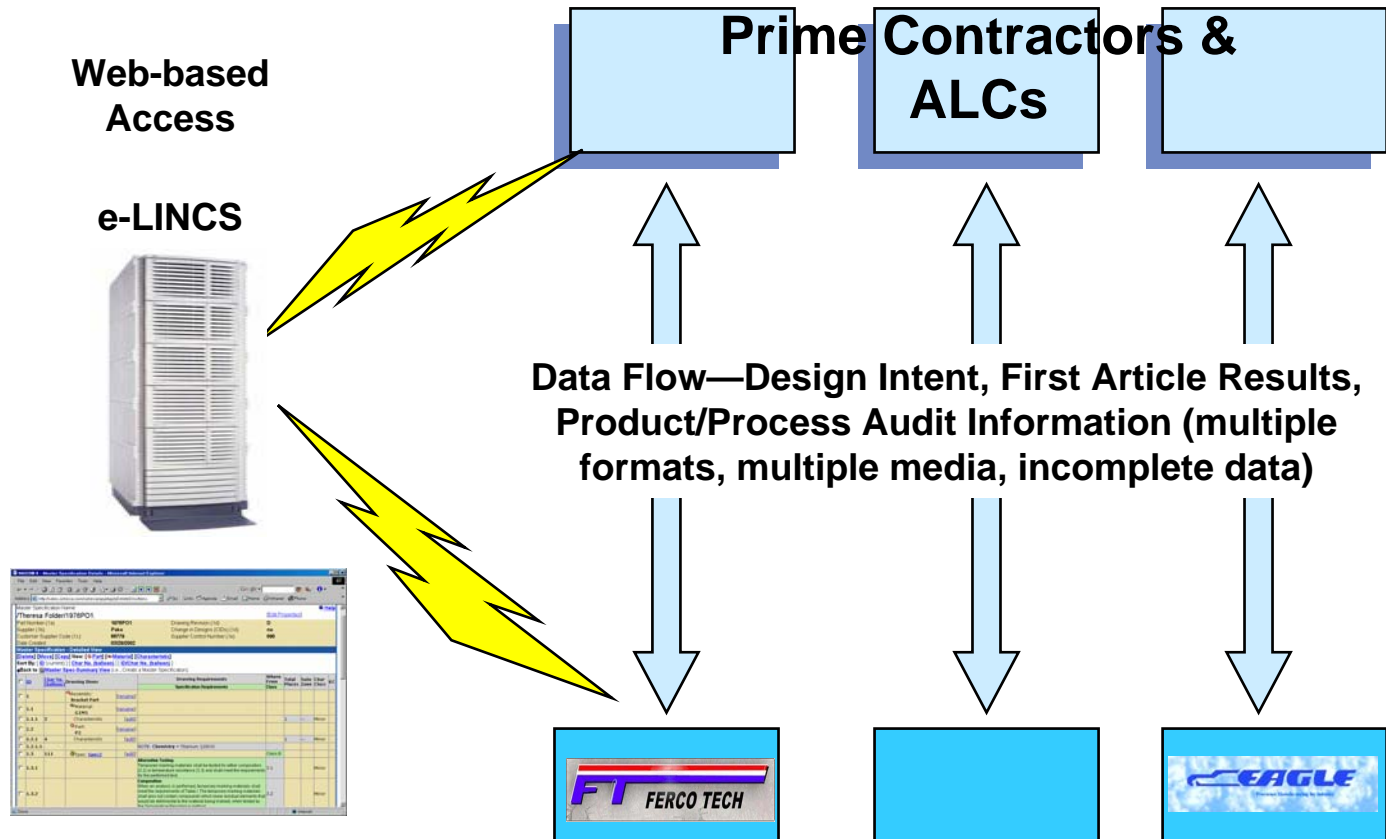
The stack of paper specifications that a user is required to read & understand to make one simple part.

*... Or This?*

ID	Char No. (Callouts)	Drawing Items	Drawing Requirements		Inspection/Test Results				Product Acceptance	
			Specification Requirements	Total Note Places/Zone	Results (Variable Data)	Measurement Equipment	Production Op. No.	Accept. Plan	Justification For < 100% Evaluation	
1.1.1	1	Characteristic		1	5-83	Passing				
1.1.1.1		Edit Results	Surface Profile Tolerancing (Linear) = 0.03 Inches			Surface Profile Tolerancing (Linear) = 0.03 Inches [Link]	Mil Cert	Microscope	isd	100%
1.1.2	2	Characteristic		1	3-05	Passing				
1.1.2.1		Edit Results	4.866 <= Width <= 4.916 Inches			Width = 4.9000 Inches [Link]	Patent Cert	Microscope	23	100%
1.1.3	3	Characteristic		1	5-C3	Passing				
1.1.3.1		Edit Results	Surface Profile Tolerancing (Linear) = 0.04 Inches			Surface Profile Tolerancing (Linear) = 0.04 Inches [Link]	Laser Beam	Material Cert	21232	Audit 1st Piece
1.1.4	4	Characteristic		1	3-C4	Passing				
1.1.4.1		Edit Results	0.290 <= Wall Thickness <= 0.340 Inches			Wall Thickness = 0.290 Inches [Link]	Microscope	Mil Cert	322	Audit Audit
1.1.5	5	Characteristic		32	5-08	Passing				
1.1.5.1		Edit Results	NOTE: S = MARK PER METHOD 2D OR 7A2 PART IDENT NO			Conforms [Link]			322	100%
1.1.6	6	Characteristic		1	3-43					
1.1.6.1		Edit Results	Surface Profile Tolerancing (Linear) = 0.025 Inches							100%
1.1.7	7	Characteristic		1	3-43					
1.1.7.1		Edit Results	Surface Profile Tolerancing (Linear) = 0.025 Inches							
1.1.8	8	Characteristic		3	3-75					
1.1.8.1		Edit Results	Surface Profile Tolerancing (Linear) = 0.025 Inches							
1.1.9	9	Characteristic		1	3-88	Failure				
1.1.9.1		Edit Results	3.740 <= Width <= 3.770 Inches			Width = 3.68 Inches [Link]	Microscope	Mil Cert	322	100%

The computer-based approach that distills all of the requirements into a web-based Master Specification.

# Phase I Pilot Concept



Master Spec

**e-LINCS Objective:**

*Establish and implement universally accessible tools for the flow of detailed technical requirements to every level of the aerospace and defense supply chain*

# Meeting the Objective—The e-LINCS Team

- Senior Advisors: Courtney Hill, GE Aircraft Engines; Bill Lewandowski, Aerospace Industries Association
- Cohesia Corporation, Dayton
- TechSolve, Cincinnati
- AT&T Government Solutions, Fairborn
- Sampson & Associates, Xenia
- Total Quality Systems, Inc., Ogden, UT
- Eagle Tool & Machine, Springfield
- Ferco Tech, Franklin
- LSMG, Springfield
- US Air Force Manufacturing Technology Division, WPAFB