

**Aerospace Industry Consolidation**  
**- News from the Front Lines -**

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## **I. Aerospace Industry Consolidation - Defense Driven**

### **➤ Both Boeing-McDonnell Douglas & Lockheed Martin-Northrop Grumman Mergers Were Primarily Driven By Defense Considerations**

- “Defense tail wagging prime contractor consolidation dog”
- Consolidation driven by DoD budget implosion
- DoD actively encouraged mergers (“The Last Supper”)

#### **A. Boeing-McDonnell Douglas Merger**

##### **Boeing already held commercial dominance**

- Global marketshare - 64%
- Douglas Aircraft Co. (DAC) only had 3.3%
- MD-XX canceled (Oct. 25, 1996)
- \$15B recapitalization was required to revive DAC

##### **McDonnell Douglas Aerospace (MDA) - A Defense “Crown Jewel”**

- MDA has healthy programs
  - ⇒ F/A-18 E/F SuperHornet
  - ⇒ AH-64 Apache Longbow (multi-year)
  - ⇒ F-15 Eagle
  - ⇒ C-17 (multi-year)
- MDA now part of Boeing JSF team

### **➤ Defense “driver” of Boeing acquisition suggested by phase out of MD-80s & MD-90s (Nov. 3, 1997)**

## **Aerospace Industry Consolidation - Defense Driven (Cont.)**

**B. Lockheed Martin-Northrop Grumman Merger**

**Lockheed Martin Will Acquire Additional Military Platforms**

- Additional aircraft platforms (F-14, EA-6B, E-2C, B-2, AWACS, JSTARS, AH-64)
- Becomes prime contractor for all tactical fixed-wing aircraft except F-15 and F/A-18
- Controls all EW & C3 aircraft

**Northrop Grumman A/C**

F-14  
B-2  
JSTARS  
AWACS  
EA-6B  
E-2C

**Lockheed Martin A/C**

F-117      C-141  
F-22      UAVs  
F-16      S-3  
AH-64      P-3C  
C-130      JSF  
C-5

**Lockheed Martin Obtains Northrop Grumman's Defense Technology**

- Airborne radars (targeting & missile control radars, *i.e.* F-117, F-22, AH-64, E-2C, AWACS, B-1B, C-130J, Darkstar UAV, EA-6B, EF-111A, JSTARS, F-16)
- Electronic Warfare capability
- Stealth monopoly (F-117, B-2, stealth UAVs)
- Additional in-house systems integration capability (particularly electronics systems)

## II. Market Consolidation - A “Sea-Change” in the Business Model

### A. Old Business Model -- DoD previously acquired “Federated Systems”

#### ⇒ Government:

- Generated requirements & specifications
- The Government’s “drivers” were control over design (*e.g.* size, weight, power source, vibration, loads) and production
- The Government was the *de facto* systems integrator

#### ⇒ OEM/Suppliers:

- “Worked” DoD customer (IR&D) so that products were designated “GFE” (pre-empting aircraft OEM)
- Develop “strategic alliances” with aircraft production houses to “piggyback” product onto all platforms
  - Goal was to place the “**box into the rack,**” or “**hang on the airframe**”
  - Different interfaces favored “legacy” or “proprietary” systems (life cycle revenue)
- Did not incur major R&D costs or responsibility for integration of “box” into platforms (early version of “Plug and Play”)
- “frozen design” focused on “produceability”
- Owned the entire “box” or “structure” (“get healthy” through Engineering Change Proposals)

## **Market Consolidation - A “Sea-Change” in the Business Model (Cont.)**

### **B. Emerging Business Model**

- **Both DoD and commercial A/C manufacturers now acquire *integrated systems* (e.g. propulsion, airframe, fuselage, wings, cockpit, radar, navigation, etc.)**
    - Prime translates performance specifications into subsystem requirements (“drives” technical requirements)
    - Primes want subcontractors to “step-up” to deliver “turnkey” subsystems
    - With “just-in-time” manufacturing, subcontractor failure or delay has enormous cost and schedule impact on production
    - Consequently, premium placed on subcontractor performance capabilities
    - Prime now likely to pay for reliability, as opposed to lowest-cost offered by old “build-to-print” shop (acceptable risk for reasonable price)
  - **Subsystem integrators also now have a “prime” role, establishing technical requirements, engineering, and integrating the suite of subsystems (pushing subsystem integration down to suppliers)**
    - Must deliver an entire subsystem assembly to remain a viable subcontractor
    - Must now participate in design, development, and cost-sharing with prime
    - **Drives new requirement for (1) additional capital, (2) additional engineering & integration staff, and (3) assumption of increased risk (subcontractor becomes an “investor” in the program)**
- ⇒ **Increased risk requires strong Corporate Resolve, but should generate greater “Return on Investment”**

### **III. Emerging Business Model Is Driving Consolidation at Lower Tiers**

#### **A. DoD Consolidation (“Famine”)**

- The shrinking DoD budget is driving “vertical integration” of the supply chain (primes re-assessing “make or buy” decisions)
  - Aircraft primes now are vertically integrated with in-house systems integration & subsystem production capability
  - DoD’s position: vertical integration can be addressed through “firewalls” (*Defense Science Board Report, April 1997*)
- DoD typically delegates procurement authority over aircraft subsystems to primes (*e.g.* JSF program) (GFE subsystems virtually eliminated)
  - Jettisons “full and open” competition requirement for subsystems
  - Increases risk that prime contractors “cannibalize” subcontractor’s workshare (50% workshare to subcontractors)

#### **B. Commercial aerospace consolidation (“Feast”)**

- Explosion in orders for new commercial aviation aircraft
- Boeing is effectively outsourcing non-core engineering functions
- Supply crunch affecting new Boeing aircraft deliveries (*Aviation Week, Oct. 13, 1997*)
  - Potential for late deliveries
  - Significant financial and logistical impacts
- Closer coordination with suppliers
  - Preferred subcontractors with demonstrated engineering & integration capability
  - Minimize supply disruption or throughput risks from subcontractors
  - Acceptable risk for reasonable price

## **Emerging Business Model Is Driving Consolidation at Lower Tiers** **(Cont.)**

- **Under either the “feast” or “famine” scenario discussed above, OEM/Suppliers must develop full subsystem capability:**
    - Emerging Business Model creates pressure for lower tiers to:
      - Acquire full subsystem capability via M&A;
      - Or form “strategic alliances” (preferred subcontractors, IPTs, teaming arrangements)
    - Once “alliances” are formed, it will be nearly impossible to successfully enter the market
- ⇒ **The bottom line for OEMs/Suppliers is that the race is on to “acquire or ally” integration & engineering capability**

## **IV. Industry Consolidation - Creates Anti-Competitive Concerns**

### **A. Mergers & Acquisitions**

- The days of DoJ/FTC's "great deference" to DoD on mergers are over
- Antitrust Legal Test: "ability to exercise market power"
  - ⇒ "relevant market" (mission requirements)
  - ⇒ "geographic market" (global v. traditional CONUS)
  - ⇒ current players & barriers to market entry (1 year)
  - ⇒ can merging contractors exercise market power? (long-term price hike)
  - ⇒ if anti-competitive, will "efficiencies" outweigh risk?
  
- **Must be facilitated and shepherded to avoid DoJ/FTC/DoD "dealbreaker"**

### **B. Strategic Alliances**

- "Preferred supplier systems" may raise anti-competitive concerns with DoJ, FTC, or DoD ("market collusion" & organizational conflicts-of-interest)
- "Marriage of necessity" (downstream issues must be addressed)
  - Major up-front investment (wholly funded R&D, facilities, personnel)
  - Payment issues
  - Dispute resolution (no privity with DoD)
  - Ownership of proprietary data and software
  - Collection and exit strategies

## **V. Conclusions**

⇒ **Emerging Business Model will drive OEM/Suppliers to merge or acquire to achieve full subsystem capability under Feast or Famine scenarios**

- No DoD support or overview
- Little, if any, restructuring cost reimbursement by DoD
- Major up-front investment required
- Legal implications (“Marriage”)

⇒ **OEM/Suppliers must be careful of defense-specific acquisition policy and “bleed over” to commercial operations**

⇒ **Senior Management must timely assess contractual and legal risks and capital requirements to anticipate Emerging Business Model and generate strong RoI for shareholders**

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