Technology Transition at The Boeing Company

David O. Swain
Chief Operating Officer
Integrated Defense Systems

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Boeing Innovation Strategy

People

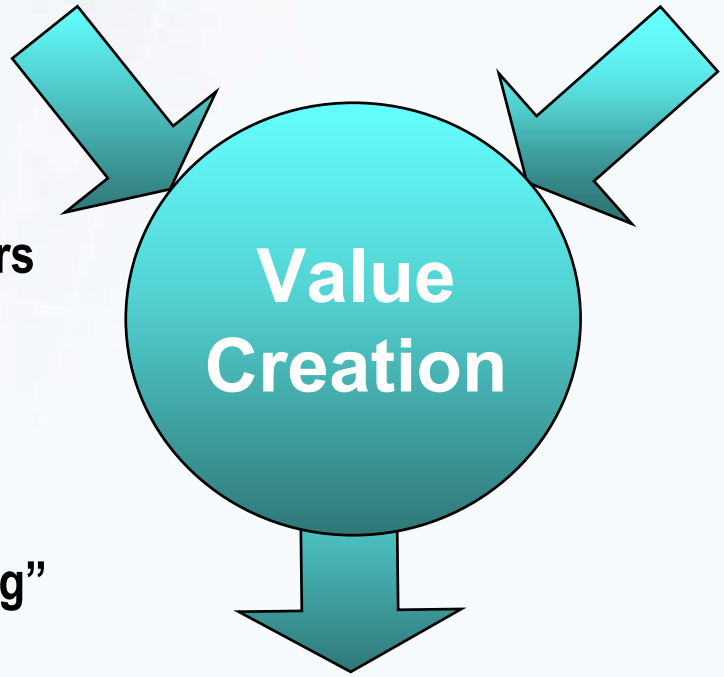
Foster Well-Educated, Dedicated Talent

Develop Effective Leaders

Create an Innovative Environment

Leverage Diversity

Leverage "Best of Boeing"



Technology

Focused Boeing Investments

Technology Contracts

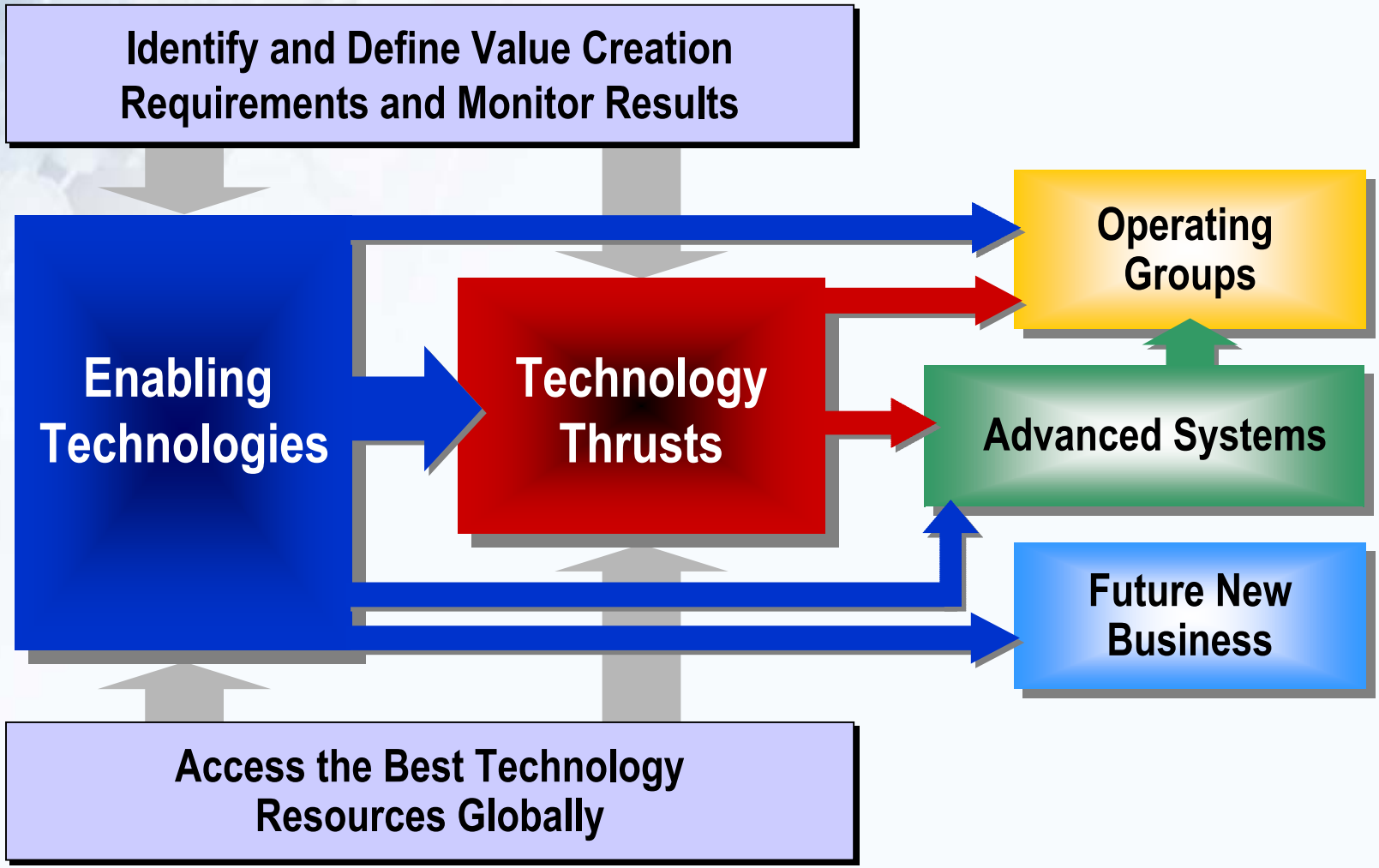
Partnerships

Global Relationships

Value Through:

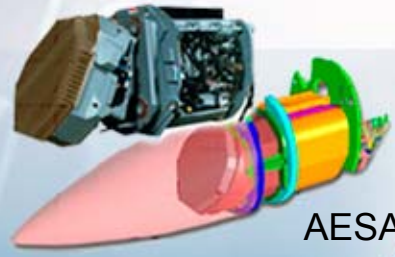
Technology Transition
New Customer Solutions
Licensing Revenue
New Ventures

Integrated Technology Planning and Execution Process



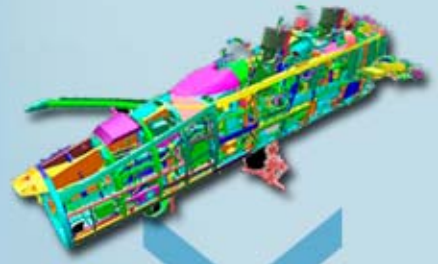
F/A-18E/F Technology Insertion Examples

Advanced Displays



AESA and Wideband Radome

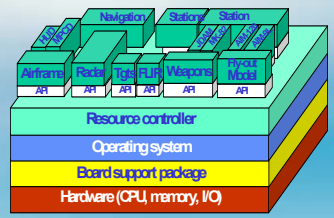
Advanced Product Definition



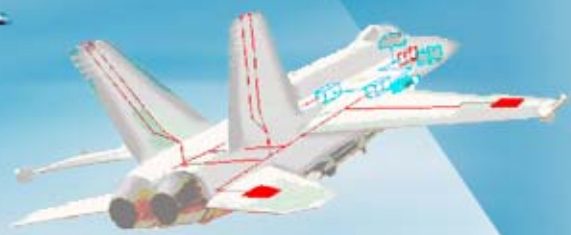
Deployed to Production

Delivered to the Fleet

Lot 26 First Flight – 21 July '03



Software
- Open systems design
- Multi-Platform reuse
- Auto-coded display SW



Fiber Optic Network

JDAM Technology Evolution

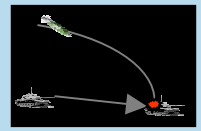
1998
First JDAM Delivery (MK-84 / BLU-109)
Improved GPS (12 Chan Rcvr)
2000
Improved (2nd Gen) Mission Computer
Improved GPS (All-In-View SW)
2002
First MK-83 JDAM Delivery
2004
50,000th JDAM Delivery
First MK-82 JDAM Delivery
Improved (3rd Gen) Mission Computer
2006
Improved GPS (SAASM/Anti-Jam)
Integrated Low Cost Electronic Systems
2008
Precision Targeting (IR/Laser Seekers)
Extended Range (ER)

Annual SW Upgrades Implement Improved Capabilities

Future

Alt Warheads

Moving Target Capabilities



Legend:

- Baseline and Alternate Warheads
- Technology Insertions
- Derivative Capabilities

737NG

The 737 Family Has Continuously Evolved

Future: e-Enabling, Flight Deck Technologies, 737-900X*

Vertical Situation Display (VSD)

Moving Production Line

First Blended Winglet Equipped Aircraft

HUD Provisions

180 minutes ETOPS Certification

First Flight of 737 "Next Generation"

Rumbold modular lavatories

737-500 First Delivery

737-400 HGW First Delivery

Multi-thrust CFM56-3C

737-400 First Delivery

Improved APU

Windshear alerting and guidance

New wide-aisle interior

EFIS (option)

Three module-wide aisle stand

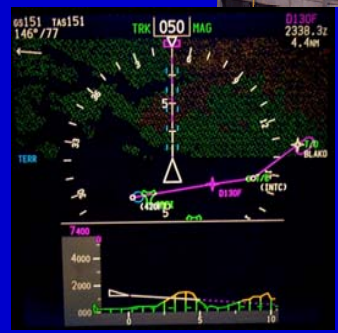
138,500-lb MTOW

22,000-lb thrust capability

737-300 First Delivery

737 Classic

Next-Generation 737



More than 30,000,000 hours of in-service experience

*Product Development Study Items

737NG

737NG - A New Airplane Based on Customer Input and In-Service Experience

New corrosion-resistant materials and treatments

New wing design

New interior design

100% Digital Design

New technology in flight deck

New auxiliary power unit (APU)

New vacuum lavatory system

New wheels, tires and brakes

Optional blended winglets

New advanced-technology engine with FADEC controls

Pipeline of Technology Transitions That:

Enhance Safety, Simplify Designs, Enable Commonality, Simplify Maintenance, and Increase Performance, Efficiency, & Reliability

Continuous Feedback of Best Technologies, Processes & Practices

Design in Solids

Factory Design

Automatic Numerical Control, Program Management Best Practices

X-32 Prototypes

Integrated Design, ToolLess Assembly, Advanced Avionics & Materials

Continuous Feedback of Lessons Learned

7E7

Continuous Feedback of Lessons Learned

Essential Elements of Successful Technology Transition

- Clearly Defined Needs
- Technology Maturity at the Right Level
- Leadership from both the Technology and Product/Service Organizations
- Metrics – What gets measured gets done!
- Feedback:
  - Lessons Learned
  - Actions for Continuous Improvement


BOEING
Forever New Frontiers