Boeing’s Digital Transformation Journey

Kenny Swope
Boeing Commercial Airplanes Engineering
The Boeing Company
A New Century of Innovation and Achievement

CONNECT

PROTECT

EXPLORE

INSPIRE
HISTORY / The First 100 Years

Founded in 1916 in the Puget Sound region of Washington state

Became a LEADING PRODUCER of military and commercial aircraft

Completed a series of strategic mergers and acquisitions to become the WORLD’S LEADING AEROSPACE COMPANY

A heritage that mirrors the history of flight
WHAT WE DO TODAY / The Next 100 Years

COMMERCIAL AIRPLANES
Boeing 7-series family of airplanes leads the industry

DEFENSE, SPACE & SECURITY
World’s largest manufacturer of military aircraft and satellites and major service provider to NASA
Large-scale systems integration, networking technology and solutions provider

GLOBAL SERVICES
A dedicated services business focused on the needs of global defense, space and commercial customers

BOEING CAPITAL CORPORATION
Financing solutions focused on customer requirements

Connect and protect people globally
WHERE WE ARE / Global Boeing

Products and services support to customers in more than 150 COUNTRIES

$101.1 BILLION in 2018 revenues

Manufacturing, service and technology partnerships with companies around the world

Contracts with more than 20,000 suppliers and partners globally

More than 150,000 BOEING EMPLOYEES across the United States and in more than 65 COUNTRIES

Excellence in Sustainability
Committing to zero growth in greenhouse gas emissions, water intake, solid waste to landfill, and hazardous waste generation from company operations

Boeing creates positive changes in local communities through charitable giving, volunteering and the way we operate our business

More than $284 million invested by Boeing, its employees and retirees to help build better communities worldwide in 2018

Partnering worldwide for mutual growth and prosperity

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Boeing’s Global Footprint
## Digital Evolution at Boeing

|-------------|-------------|------------|-------------|

- **1960 - 1990**: Images showing early aircraft design and engineering processes.
- **1990 - 2005**: Images featuring digital design and manufacturing tools.
- **2005 - Now**: Images highlighting modern digital design and virtual reality technologies.
- **Future State**: Images depicting futuristic visions and possibilities for the future of aviation design and manufacturing.

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Electronic Document Conference 2019: Boeing’s Digital Transformation Journey

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Digitalization for Boeing’s 2nd Century
Digitalization: Connected Factory

Source: Boeing IT EA; AMR Reference Architecture
BOEING ANALYTIX encompasses everything big data and analytics related at Boeing. It focuses on providing services to our customers, and identifying internal opportunities for gains in efficiency and performance.
Boeing Model Based Definition (MBD)

- Pervasive adoption & deployment of Model Based Definition
  - 787, 737, H47F/G, V22, T-X, C17, Phantom Swift, UCLASS, …
- All parts are designed as a 3D MBD – CATIA V5 or NX9
  - Solid model
  - Dimensions, Tolerances and Annotation (PMI)
  - Engineering notes and attributes
- MBD data used throughout supply chain and by customer airlines for in-service support and modifications

>71M Documents in distribution repository

>3M Models in distribution repository

>200k 3D PDF Views per month

40K Technical Data Packages on one program

16k Technical Data Package downloads per month
3D PDF Use Cases

- **Delivery in compliance with MIL-STD-31000**
- **Delivery / Access to Co-Production Partners**
- **Delivery / Access to Customers**
- **Delivery / Access to Suppliers & Shopfloor**
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