



The Boeing Company
Dr. William Lyons
18 April, 2018

WHAT WE DO TODAY / The Next 100 Years



COMMERCIAL AIRPLANES

Boeing 7-series family of airplanes leads the industry



BOEING CAPITAL CORPORATION

Financing solutions focused on customer requirements



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



Connect and protect people globally

What Will Change Aerospace?

Digitization

Artificial Intelligence

Autonomy

Advanced Manufacturing

Electrification

Increased Competition

Increased Access to Space

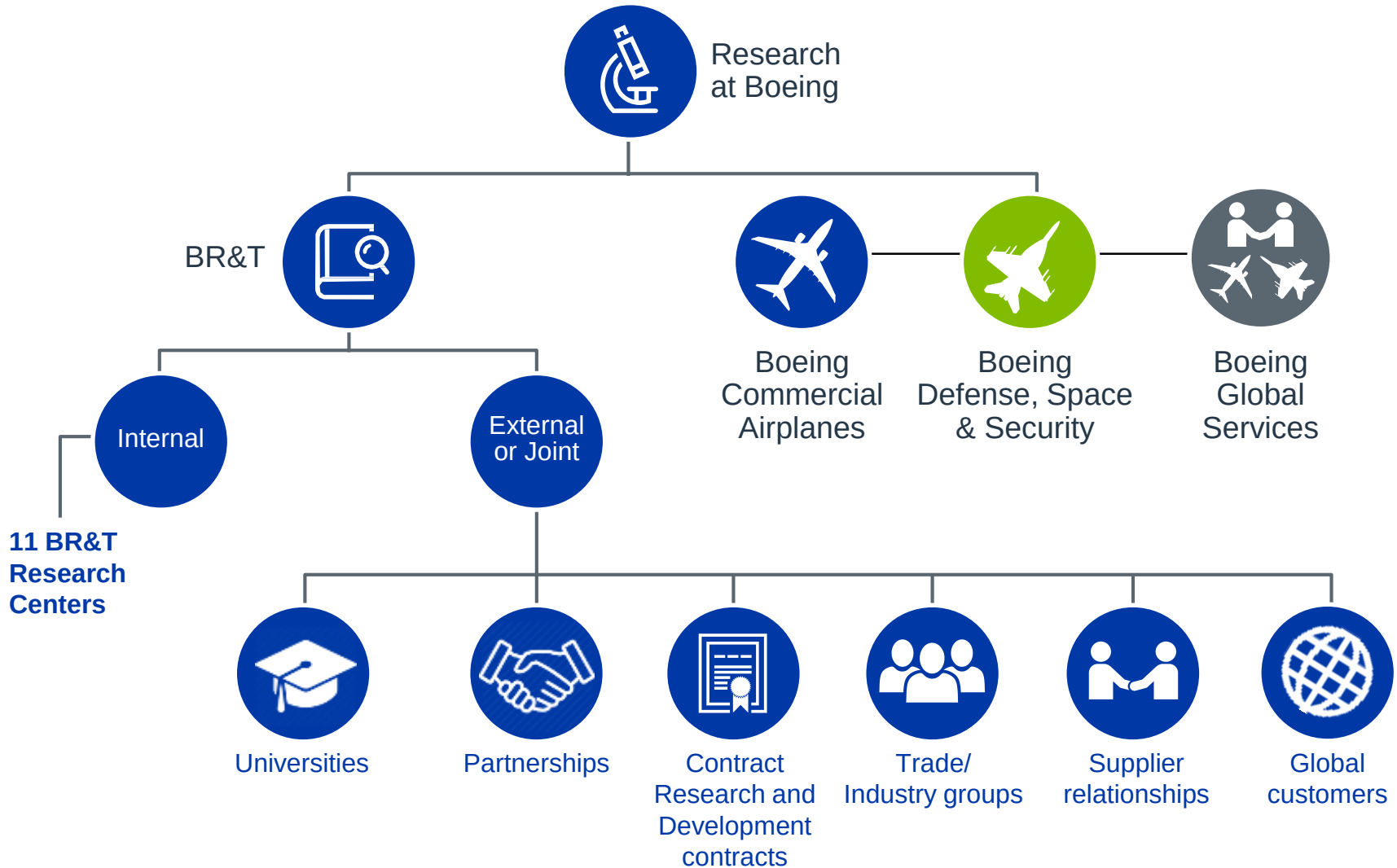


How Do We View Innovation?



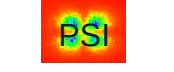
Research & Development at Boeing

Robust and widespread



USA Boeing Research & Technology consortia

Delivering advanced technology in collaboration with industry, academia and government partners

 SCPNT - Stanford Center for Position, Navigation and Time	 GRI – Gear Research Institute	 CPAC – Center for Process Analysis and Control	 TWS - Third Wave Systems	 IMS - Intelligent Maintenance Systems Consortium	 CCCS – Collaborative Center in Control Science
 CCM - Center for Composite Materials	 CUMIRP - Center for Industry Research on Polymers	 CFAP - Center for Fundamentals and Applications of Photo- polymerization	 AVSI - Aerospace Vehicle Systems Institute	 SwRI - Southwest Research Institute ROS Industrial Consortium	 CSR - Center for Surveillance Research
 COWA - Center for Optical Wireless Applications	 HDP - High Density Packaging User Group International	 AMTAS - Advanced Materials in Transport Aircraft Structures University of Washington	 ACTT- Advanced Cutting Tool Technology Center	 ANFAC - Center for Advanced Nonferrous Structural Alloys	 CHAMP - Center for Hybrid Materials using Additive Manufacturing
 CNDE - Center for Nondestructive Evaluation	 NCMS - National Center for Manufacturing Sciences	 CFSP - Center For Friction Stir Processing	 Digital Lab for Manufacturing	 FHE MMI - Flexible Hybrid Electronics Manufacturing Innovation Institute	 Berkeley Wireless Research Center
 CAMT - Center for Aerospace Manufacturing Technologies	 CMSIPMS – Characterization and Modeling of Surfaces/Interface of Polymeric Materials and Systems	 NCN - Network for Computational Nanotechnology / Center for Predictive Materials and Devices	 IACMI – Institute for Advanced Composites Manufacturing Innovation	 AREA - Augmented Reality for Enterprise Alliance	 NAMII - America Makes/National Additive Manufacturing Innovation Institute

 Signifies consortia where both Boeing and Rolls Royce are members

Enterprise Technology Domains

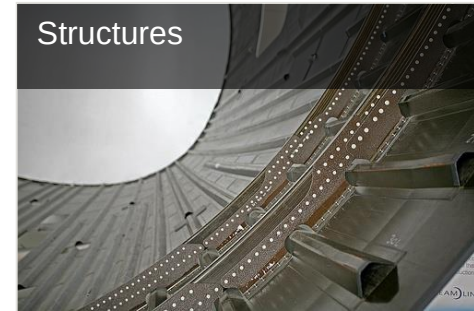
Platform Systems & Subsystems



Platform Performance



Structures



Manufacturing



Cybersecurity



Support & Services



Environment & Safety



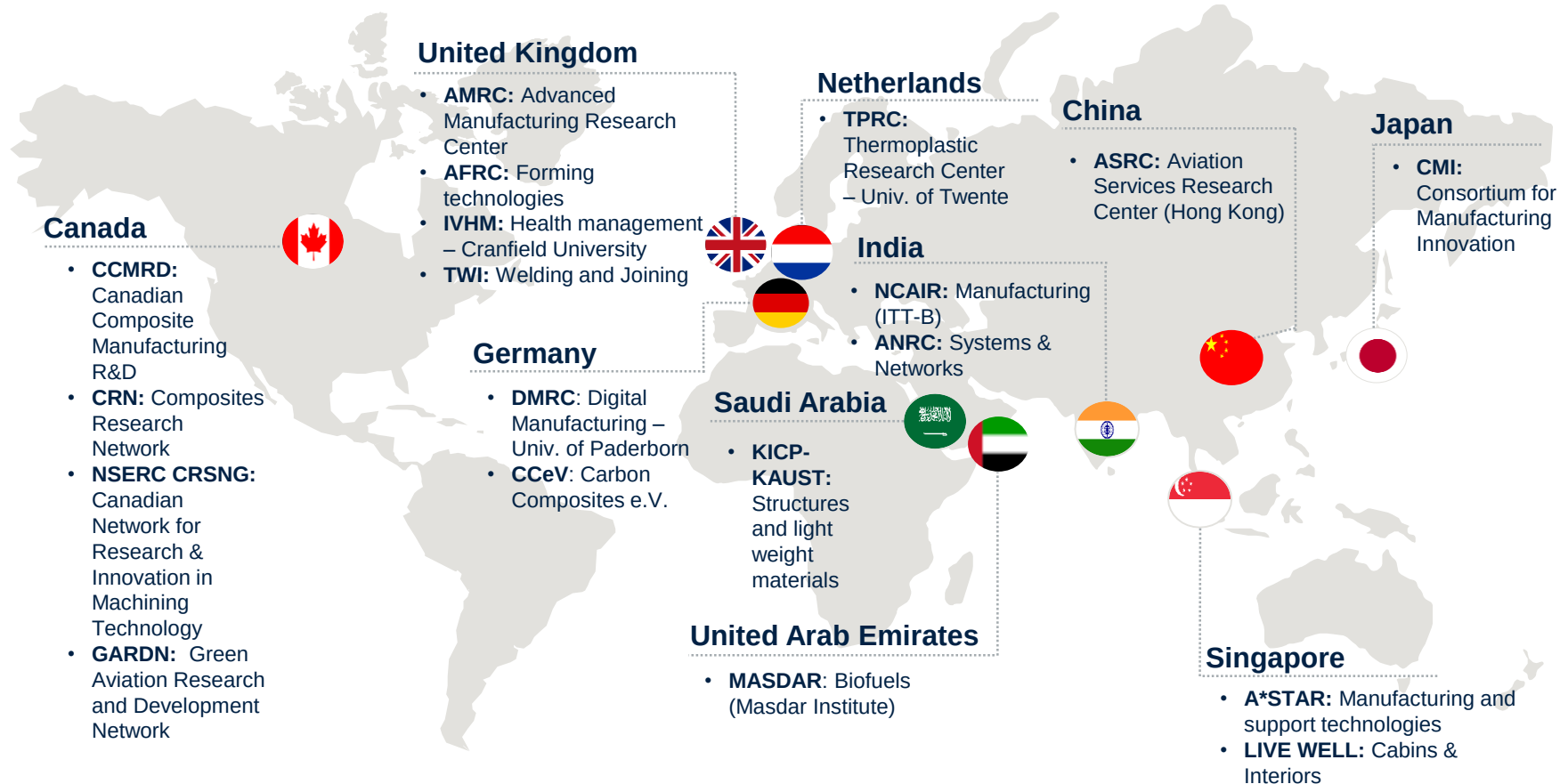
Systems Engineering



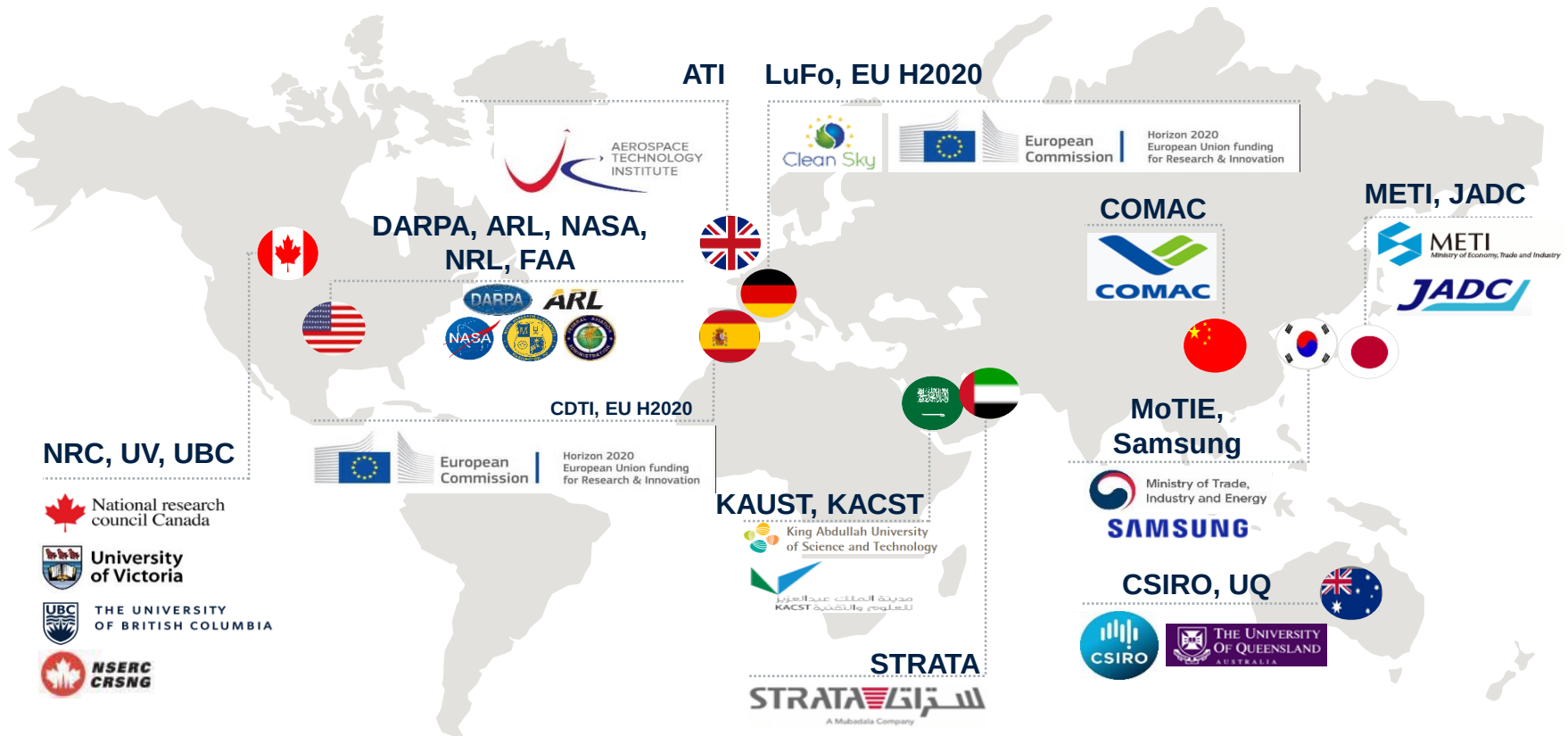
An important structure that helps maximize our R&D ROI

International Boeing Research & Technology consortia

Delivering advanced technology in collaboration with industry, academia and government partners



Government co-investments & collaborations



Strategic Technical University (STU) focus areas



CALTECH
Aero sciences, applied
physics, electronics



CAMBRIDGE
Analytics and simulation,
cyber security, materials



CARNEGIE MELLON
Robotics, automation,
cyber security, materials



GEORGIA TECH
Advanced manufacturing,
materials, flow control



HOWARD
Materials, tribology



INDIAN INSTITUTE OF SCIENCE
Manufacturing, materials,
structures



MIT
Autonomy, applied physics,
flight sciences, robotics



STANFORD
Flight sciences, data
analytics, systems



TSINGHUA
Biofuel, cabin technology,
advanced materials



**UNIVERSITY OF ILLINOIS
URBANA CHAMPAIGN**
Trusted network, cyber
security, data analytics

Partnerships with the world's leading universities

BR&T Research Centers

BR&T-Alabama

- Simulation and Decision Analytics
- Lean Characterization Cell
- PSO

BR&T-California

- Flight Sciences
- Electronics and Networked Systems
- Structures

BR&T-Missouri

- Systems Technology
- Digital Aviation and Support Technology
- Rate Independent Production
- Next Gen Materials

BR&T-South Carolina

- Manufacturing Technology
- Composite Fuselage Manufacturing

BR&T-Washington

- Manufacturing Technology Integration
- Composite Wing Manufacturing



BR&T-Europe

- Trajectory Technologies on ATM and UAS Operations, Avionics Model Based Engineering, Fuel Cell Systems, More Efficient Composites Manufacturing and Additive Manufacturing, Systems Engineering for Safety Improvement, Metallic Metals & Fabrication

BR&T-Australia

- Resin Infused Composites, Unmanned Aerial, Human Factors, Robotics, Modeling and Simulation

BR&T-India

- Adv. Computational Methods, Active Flow Control, Propulsion, Composite Optimization
- NDI, Coatings, Polymers, Metallic Processes
- ATM, Cyber Security, EME, Airplane Health Management, Data Analytics

BR&T-China

- Biofuels, Advanced Materials, Support 7 Services, Cabin Technology

BR&T-Brazil

- Biofuels, Metals, ATM, AeroSciences & Remote Sensing

BR&T-Russia

- Materials and Process Technology, Aeronautics, Testing, Machine Learning and Data Analytics, Fire Modelling

BR&T-Korea

- Smart Factory, Smart Cabin
- Avionics Vertical
- Autonomy
- Materials & Parts

Our Challenge

Focus innovation around customers, who expect more for less

Generate greater value than the sum of our many parts

Improve development-program performance

Apply lessons learned; prevent repeat of missteps on future efforts

Find ways to innovate for significantly less cost

Use diversity, global footprint, partners and know-how around the world to excel in innovation

Boeing's Global Footprint and Innovative culture is the key to future innovation

Protecting the Second Century

Innovation that gives you a competitive edge



Leading aerospace
innovation that defines
Boeing's second century



