



Aerospace Staffing Challenges



LIFECYCLE
SOLUTIONS

ICAO Next Generation of Aviation Professionals 2011

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Do These Headlines Look Familiar?

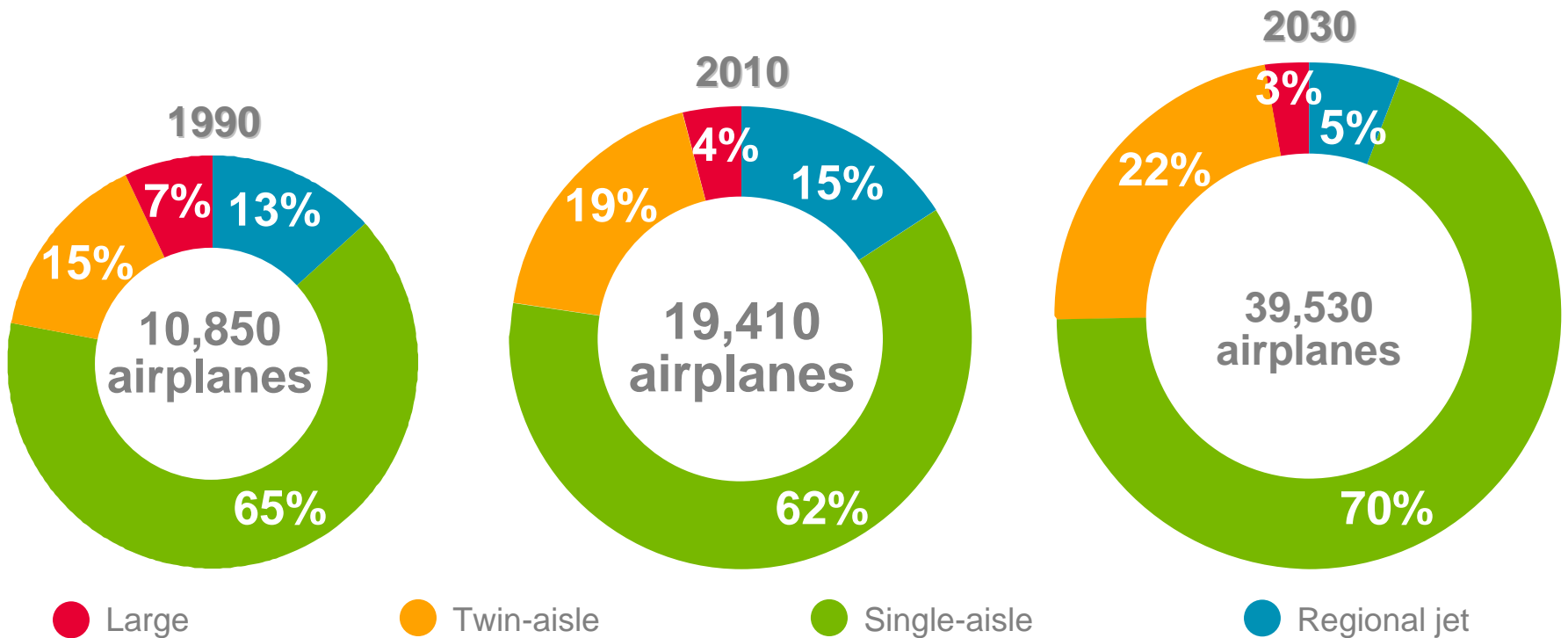
- **Is a Mechanic Shortfall Looming?** (ATE&M, 2008)
- **Retiree Flood Waits in the Aerospace Wings**
(Seattle Times, 10 Feb 2008)
- **Baby Boomer Retirements Could Trigger Aerospace and Defense Crisis** (AWST, 12 March 2008)
- **Aging Jets Worsen Mechanics Shortage**
(NY Times News Service, 1989)
- **Help Wanted** (AWST, 20/27 Sept 2010)
- **Pilots Needed for Cockpits as Asia Boom Creates Shortage** (Bloomberg, 5 Sept 2010)

Magnitude of the Shortages

- Airlines will need over 33,000 new airplanes in the next 20 years (Boeing Training & Flight Services, 2010)
- Studies show that we will need 650,000 aviation technicians & 459,600 pilots by 2030. (Boeing Training & Flight Services, 2011)
- Average age of aircraft maintenance engineer/ technician/engineer in Europe is 40, and in the US, its 53 years of age. (AWST 2008)
- In 2017 the aviation personnel shortage in Canada will be equal to the 2008 Canadian aviation workforce. (NGAP Roundtable, 2009)
- What about the Experience Gap???????

How will Commercial Aviation respond?

Market growth is exponential



Data Source: Ascend & Boeing CMO

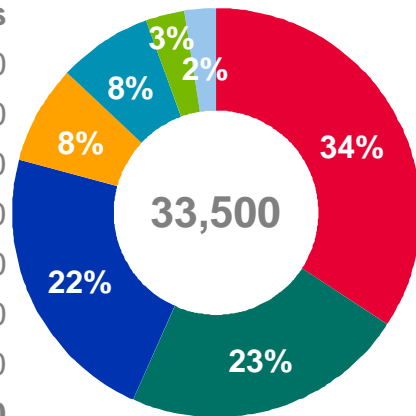
33,500 *new* airplanes in the system by 2030



New airplane deliveries by region

2011–2030

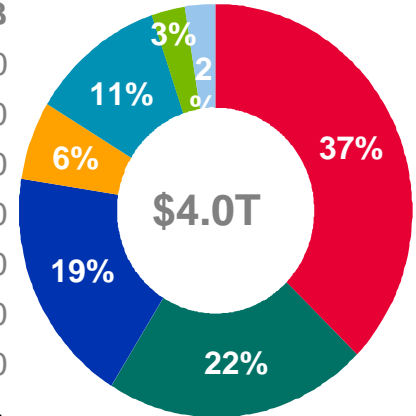
Region	Airplanes
Asia Pacific	11,450
Europe	7,550
North America	7,530
Latin America	2,570
Middle East	2,520
C.I.S.	1,080
Africa	800
World Total	33,500



Market value by region

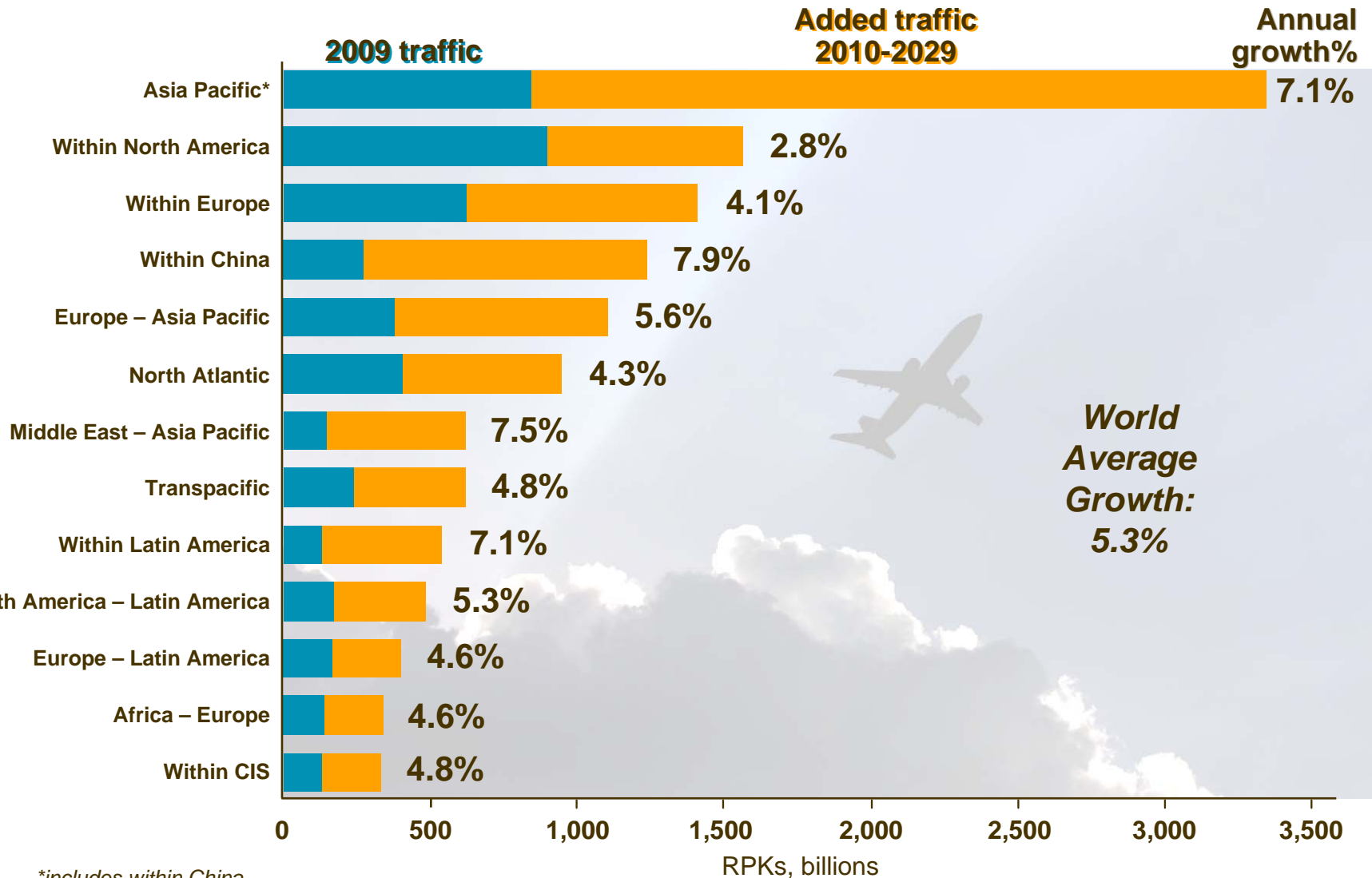
2011–2030

Region	\$B
Asia Pacific	1,510
Europe	880
North America	760
Latin America	250
Middle East	450
C.I.S.	110
Africa	100
World Total	\$4,060B



World Total \$4,060B

Air travel growth varies by market

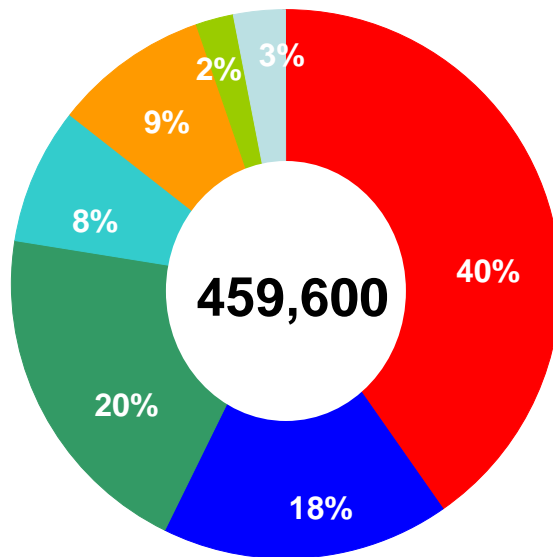


*includes within China

Need for Commercial Airline Pilots



New pilots by region
2011–2030

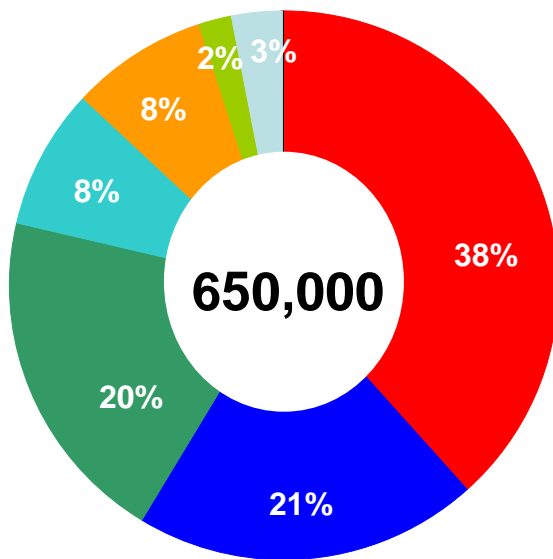


Region	Pilots
● Asia Pacific	182,300
● North America	82,800
● Europe	92,500
● Middle East	36,600
● Latin America	41,200
● CIS	9,900
● Africa	14,300
Total	459,600

Need for Commercial Airline Technicians Reflecting



**New technicians by region
2011–2030**



Region	Technicians
Asia Pacific	247,400
North America	134,800
Europe	129,600
Middle East	53,000
Latin America	52,500
CIS	13,500
Africa	19,200
Total	650,000

New Generation of Aircraft

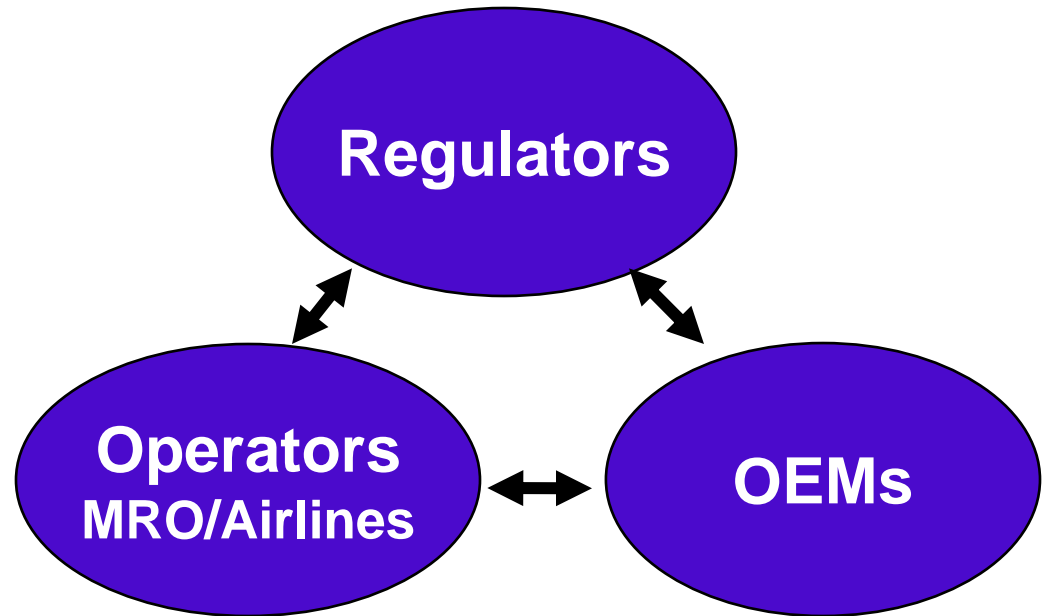
- “Retiring labor-intensive air transport aircraft, such as the A300, DC9, Boeing 737 and 747 Classics, will help decrease maintenance man-hours per aircraft by 12% for narrow bodies and 25% for wide bodies, according to AeroStrategy...”
- The Boeing 787 and A350XWB won’t impact the MRO market much by 2018 because they only represent 5% of the events at this time.” (AWST, 30 Nov 2009)
- Common cockpit designs allow for reduced pilot training time.
 - 777 to 787 Five days
 - 747-400 to 747-8 Three days

Fundamental Industry Questions

- What will we need from our future employees?
- What do they want from us?
- How can regulatory bodies help this situation in a global environment?
- How do we incorporate the new technologies with mature technologies in the license training?
- Should there be separate specialized training or included as part of the basic license?
- Level of training required for MRO and flight training staffs?
- How will we regulate training and qualifications for the wide range of aircraft ages and technologies?

Current Challenges

- New aircraft require new skills and knowledge
- Lack of harmonization in global regulations limit movement of aviation professionals
- Global initiatives to update regulation/ guidelines
- Any solution must involve an integrated solution involving industry and the regulators.
- Recruitment challenges from other industries



Global Initiatives

- ITQI – IATA Training and Qualification Initiative – Competency Based Training (includes MPL)
- ICAO – NGAP – Next Generation of Aviation Professionals
- EASA NPA 2009/01 (21.039) – Operational Suitability Data

Facts of Modern Transport Aviation

Three things are a fact:

- Training time on the real airplane is becoming more difficult and more expensive
- No one is going to take apart an operational aircraft in the name of training.
- Must have regulatory acknowledgement that the ***airplane is not always the best device on which to conduct training!***

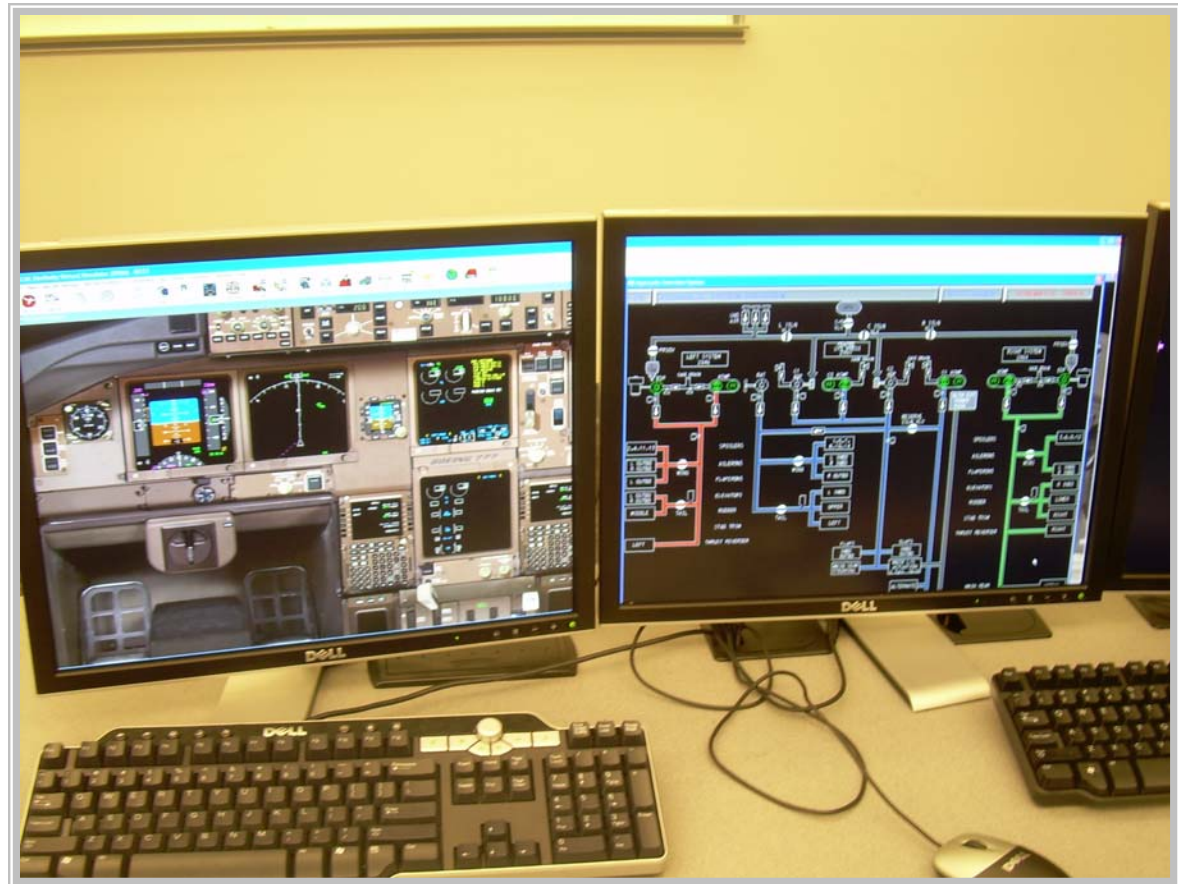
Off Airplane Training Devices

- New synthetic training devices are required.
- High fidelity simulation
- The shift in emphasis is away from just systems knowledge and much more toward systems integration and troubleshooting.



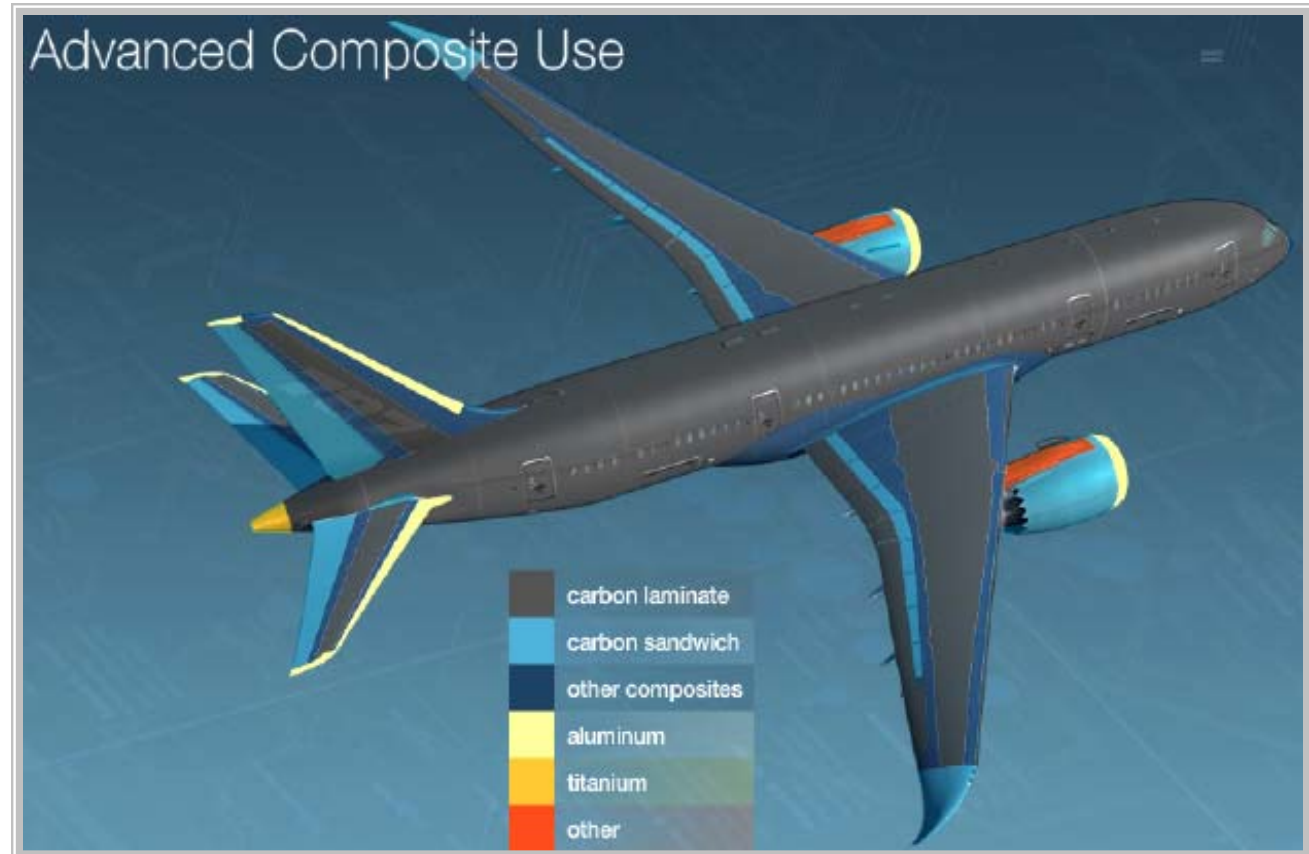
Realistic examinations

- Standards multiple choice exams are even dated for testing basic systems knowledge
- Synthetic Based Training (SBT) exams hold great promise as regulations allow



Specialty Training

- Advanced Composite repair
 - ATA 104 update
 - Is regulatory involvement required?
- Fiber Optic Training
- Aviation IT/Database Infrastructure



www.boeing.com

Recognition for Previous Learning

- “Recognition of Previous Learning (RPL)”
- Entry criteria for technicians from other technology trades
- Recognition for experience/competency
- Acknowledge similar training to meet certification standards
 - Most regulators have some form of this for military technicians
- Offshore technicians may get credit toward certification



Older Aircraft Training

- Mature Aircraft
 - While updates occur, many “non computer, non-glass, non-high-bypass fan” aircraft are still flying in commercial aviation
- Aging Aircraft issues
 - Is new technology/training/qualifications required to meet this need?
- Regulations can't overlook previous generation of aircraft



Regulatory Challenges

- Fundamentals must be taught and tested
- Advanced synthetic training devices are becoming a necessity.
- Update knowledge and practical assessment criteria to include modern technologies
- Balance next generation and mature technologies in regulatory oversight
- Must not lose sight that safety is a vital consideration

Recruitment Challenges

- Competition from other industries
- Requirement to properly staff non-licensed aviation positions
- Advanced Technologies
 - Composites
 - Computer driven aircraft
- Experience Gap
- Teaching the “iPad Generation +”
- Can’t teach old technologies only

Questions?

Thank You