Developing Better Pilots, Faster

Singapore
September 3rd, 2019

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Senior Director, Training Strategy & Services

Your worldwide
training partner
of choice

CAE

Our vision statement guides everything we do

Our vision is to be the recognized global

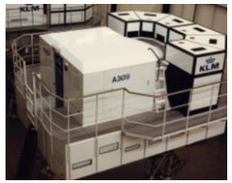
training partner of choice

to enhance safety, efficiency and readiness.

CAE – 70+ years of training innovation

Founded in 1947, created first flight simulator for training

1947



Developed the world's first level-D approved training simulator

1982

Launched a global training network

2000

Launched the 7000XR FFS – the gold standard in pilot training

2015

Strengthened courseware and digital solutions

Launched the 600XR – Flight Training Device

Introduced CAE RiseTM Training System – Real-time Insights and Standardized Evaluations

Launched Project Digital Intelligence to develop next generation training solutions

2018

55+
Training Locations

290+
Full Flight Simulators

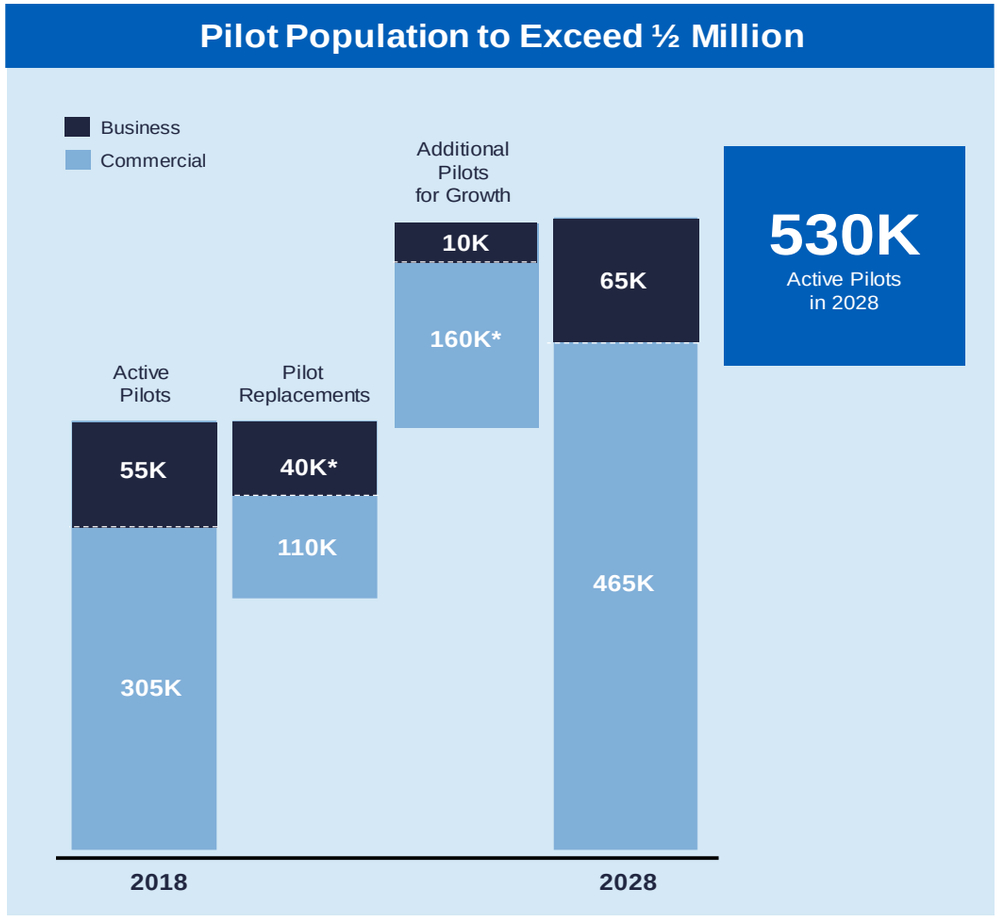
170+
Aircraft

2000+
Instructors

CAE trains **135,000+ pilots** every year

300+
Airline & Business Jet Operators

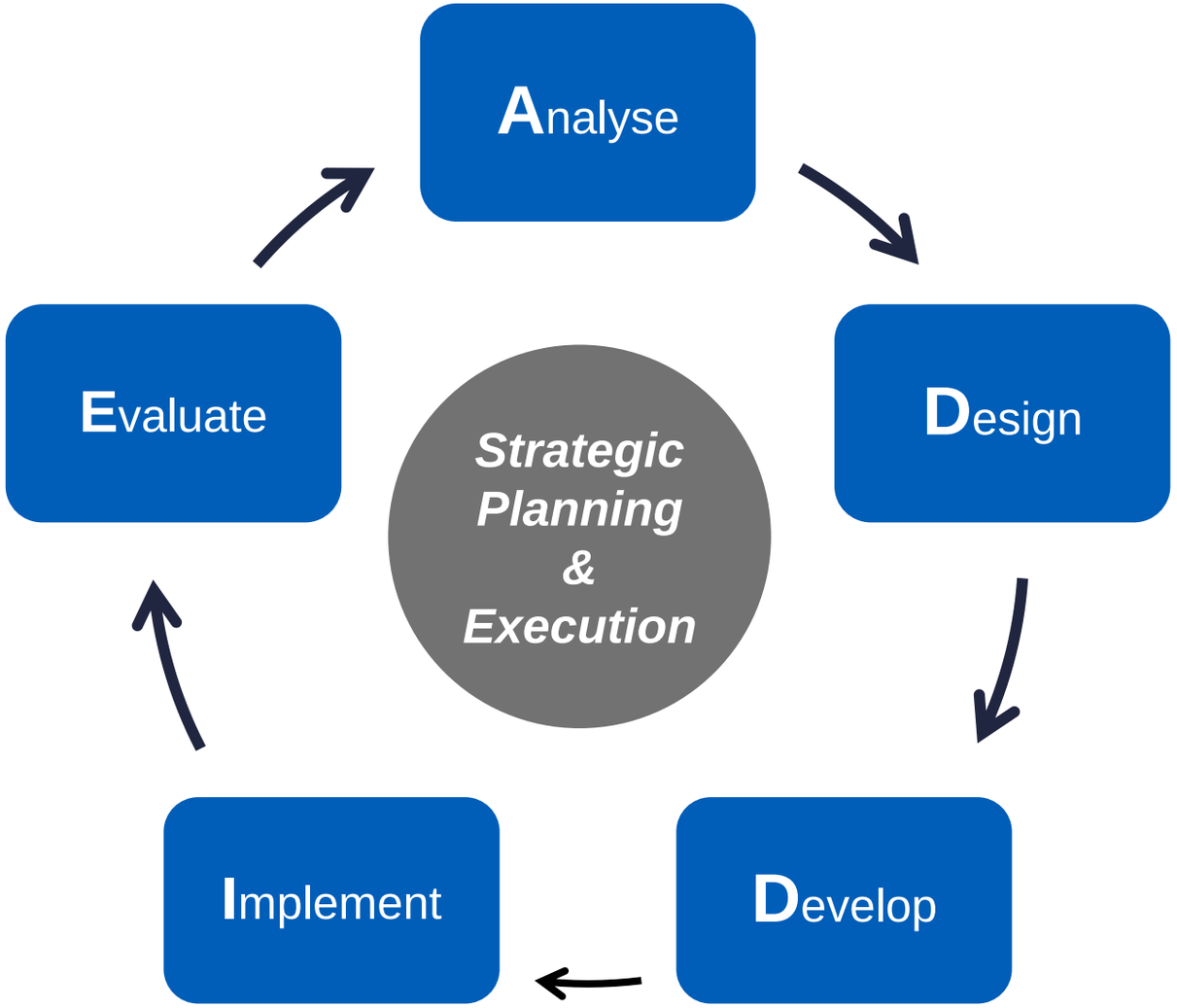
10-year pilot demand outlook



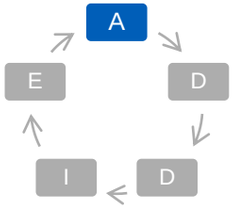
*Including a net 20K business jet pilots movement to airlines
To read *CAE's Airline and Business Jet Pilot Demand Outlook: Update* see cae.com/civil

Developing Better Pilots, Faster – requires adaptive programs

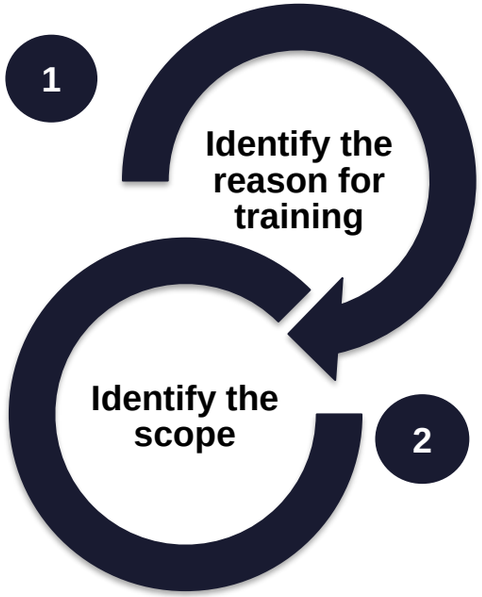
- Program development and execution are supported by quality processes that ensure alignment with our vision
- Evidence of alignment is captured from sources that are:
  - internal to the CAE training organisation,
  - from the customer's organisation, and
  - from the wider industry.



Needs Analysis results in a specification of what must be trained,



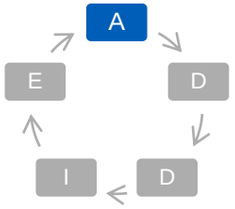
- A new task / role
- A new aircraft type or variant
- A change to an existing task / role
- A new or changed regulation
- Identification of an operational risk
- Training evaluation process identifies an area for improvement in existing training



Pre-determined topics or tasks can be the starting point:

- Appendix 9 (EASA) or equivalent
- OSD/FSB report
  - ODR Tables, TASE
- Safety bulletin
- Training gaps identified by a Risk Analysis

Needs Analysis results in a specification of what must be trained, to what standard



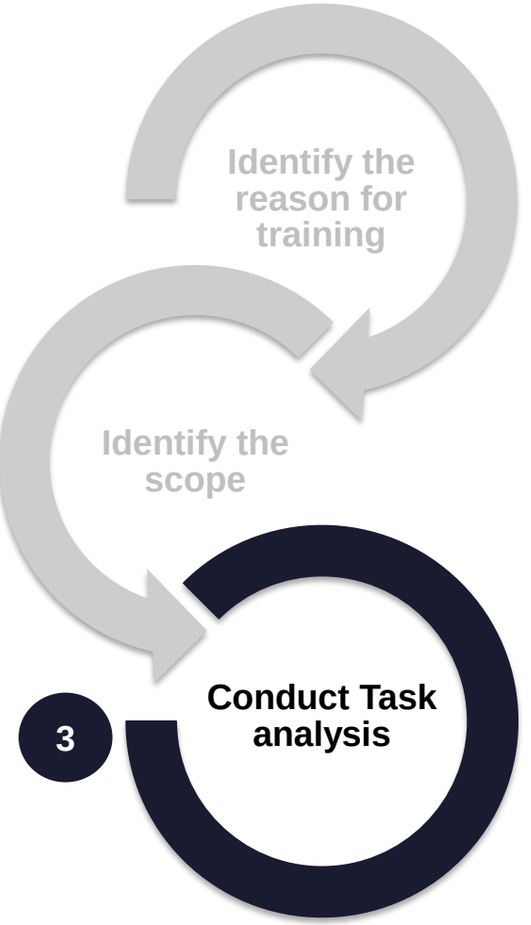
The task / role being analysed is broken down into goals, tasks and/or sub-tasks.

To determine their absolute and relative priority, each task is subject to a:

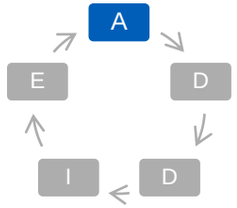
- Difficulty, Importance, Frequency analysis
- Trainee Population analysis
- Training Criticality Analysis

To aid in the subsequent program design, each task and/or subtask is tagged with:

- The most relevant competencies,
- The required Knowledge, Skill and Attitude (as applicable)
- Any defined/regulated standard of performance required



Needs Analysis results in a specification of what must be trained, to what standard and using what medium



Different training methods and tools can be used :

Pre-course Training preparation and management

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Ground school training

CAE SimfinityXR SERIES

- Virtual Simulator (VSIM)
- Maestro suite
- Instructor Toolbox

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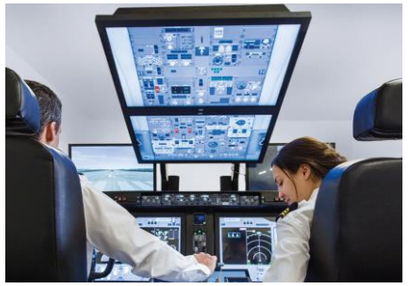
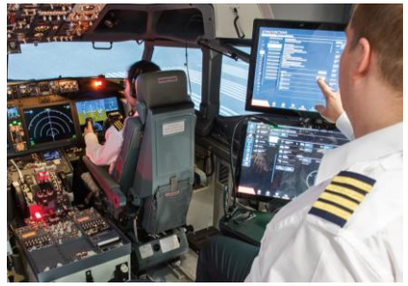


Flight training devices (FTD)

CAE 400XR SERIES

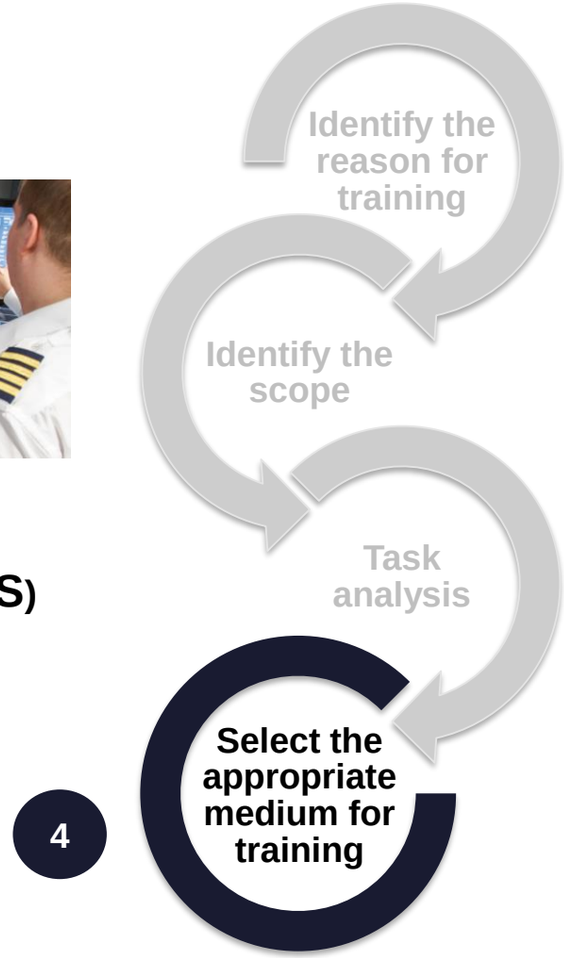
CAE 500XR SERIES

NEW CAE 600XR SERIES



Full-flight simulators (FFS)

CAE 7000XR SERIES



ODR tables may define training/checking methods & tools.

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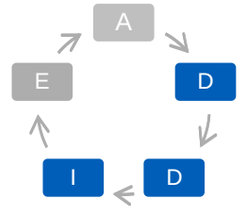
Learning objectives are constructed in the Design phase, allocated to training events and guide courseware Development



Course registration

Pre-course document exchange

eGrading, eDebrief & real-time data analytics

Records management

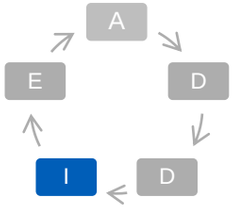
Plan | **Prepare** | **Learn** | **Simulator Training** | **On the Line**

Online course material & feedback

Ground training

Providing pilots with a unified training experience while gathering learning data

CAE Rise™ training system launched in 2018



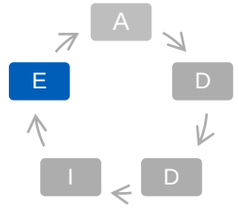
CAE Rise™ TRAINING SYSTEM

What is CAE Rise?

- Real–time Insights that assist Standardised Evaluation
- Customer SOPs
- De-briefing tool
- Training Data Analytics

All enabled through a simple digital delivery platform

Sources of data for training programs evaluation



Trainee Feedback

Crew Survey reviews

Learning

CAERise™ TRAINING SYSTEM

Organizational Outcomes

Safety Investigations

Occurrence reports

FDA

LOSA

In-house research

Telemetry Data from Simulator

CAERise™ TRAINING SYSTEM

External Sources

Academic review

Accident / Incident data review

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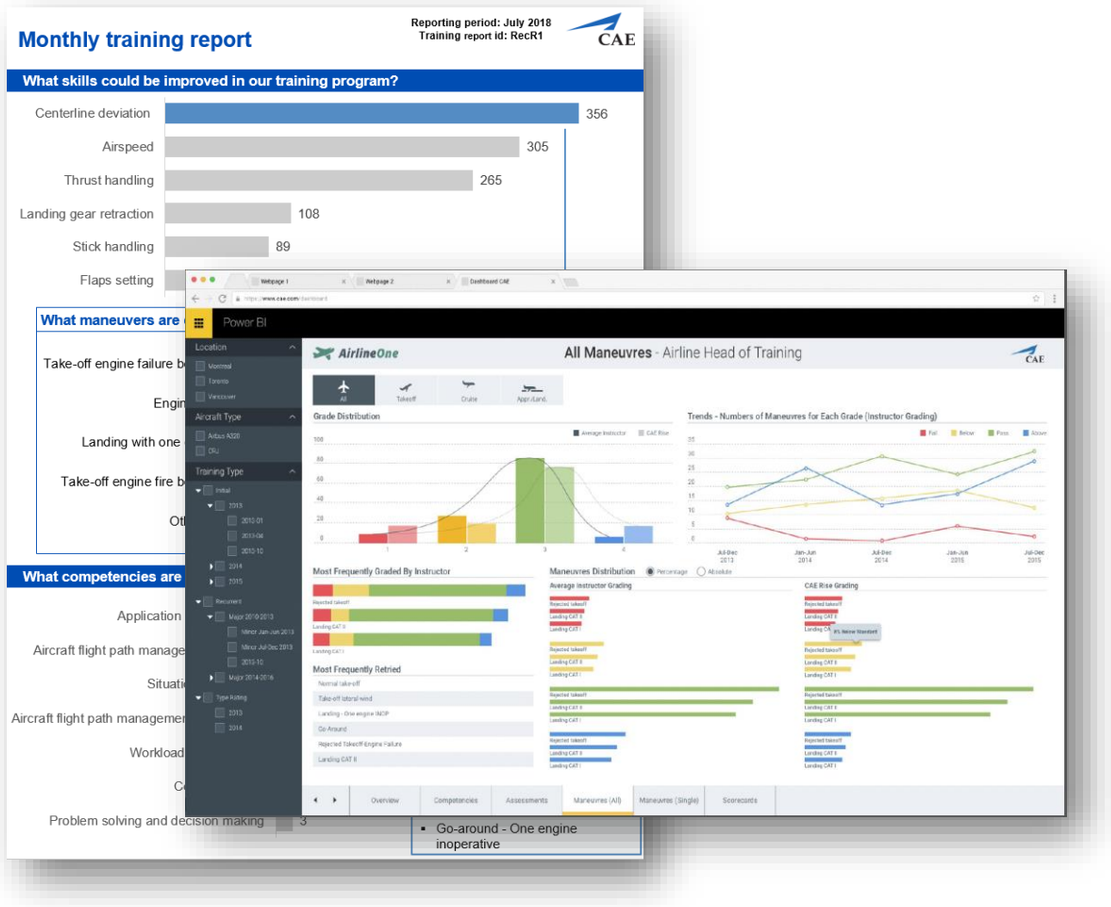
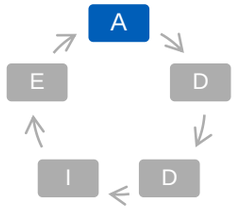
Data Analytics dashboards and reports



- Standardized dashboards and reports for different stakeholders
- Macro data (airline level) trends
- Micro data (individual level) trends
- Ability to benchmark internally and vs. the industry
- Outlier analysis to improve instructor standardization
- Integration of flight and training data to adapt your training program; fully addressing trends in normal and abnormal operations

Data driven training decisions

CAE Rise™ data unlocks new capabilities



Safety Data from the Airline

- FDA
- LOSA
- Voluntary safety reports
- Accident / Incident reports

Training Data

- Selection competency data
- Initial and recurrent competency data
- Telemetry and Biometric data

Data Analytics

CAERise™ TRAINING SYSTEM

- Highlight correlations of interest
- Determine training effectiveness and needs, based on the assessment of indicators and metrics

Training Scenario/Lesson Development

Enhanced Safety Management Systems (SMS)

Data enables the development of efficient and effective pilot training programs

How will the use of data evolve pilot training?

Individual Based Training

- Correlation of performance data with relevant demographic data, can identify training needs by relevant segments.
- Analysis of individual pilot performance data can support training scenario design based on behavioural indicators of relevance to that pilot.

Generation of aircraft

Operator Benchmarking

- Gathering data from more than one operator will enable benchmarking:
  - How does your fleet compare with other operators?
  - How do training risks for mixed-fleet operations?

Generation of pilots

Industry Collaboration on Training Data

- We can gather mountains of training data but we need to work together to turn this to improved safety and efficiency:
  - Unions, operators, regulators, industry, technology solutions people

Individual pilots

- Data acquisition and ownership
- Data integrity, security, privacy and compliance

Data driven training analysis and design, develops better pilots, faster

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