

# AEDT Functionality Comparison

Function Availability	INM	EDMS	AEDT				
			2a	2b	2c	2d	3b
64-bit application				X	X	X	X
ESRI ArcGIS	N/A	N/A	10.0	10.2.5	10.2.5	10.2.5	10.2.5
Database Platform	DBF	DBF	SQL 2008 R2	SQL 2008 R2	SQL 2008 R2	SQL 2012	SQL 2012
BADA Family 3 aircraft performance model			X	X	X	X	X
BADA Family 4 aircraft performance model							X
Procedures with altitude controls			X	X	X	X	X
Procedures with speed controls							X
Reduced thrust profiles and alternative weight profile <sup>i</sup>							X
User-defined BADA 4 profiles							X
Runway to runway sensor path operations			X	X	X	X	X
Partial sensor path operations (arrivals or departures)							X
Unified study for global/regional/airport analysis				X	X	X	X
Multithreaded execution	X		X	X	X	X	X
Real-time status and logging	X	X		X	X	X	X
Distributed computing execution			X	X	X	X	X
System data protected from user changes; user-defined data creation from system data template	X	X		X	X	X	X
Integrated function for updating Study versions	X	X		X	X	X	X
Only a single study database to manage				X	X	X	X
Terrain, ambient, and weather references saved	X			X	X	X	X
Creation and maintenance of studies through the user interface	X	X		X	X	X	X
Checking for study internal consistency	X	X		X	X	X	X
Generation of administrative file, including complete study database, log files, and study input report	X			X	X	X	X
Conversion of INM and EDMS studies to ASIF format				X	X	X	X

Function Availability	INM	EDMS	AEDT				
			2a	2b	2c	2d	3b
ASIF import	N/A	N/A	X	X	X	X	X
ASIF partial study import	N/A	N/A	X	X	X	X	X
ASIF export of aircraft definitions	N/A	N/A		X	X	X	X
Metric results definitions as a more-flexible replacement for scenarios and cases				X	X	X	X
Workflow (wizard) feature for defining metric results				X	X	X	X
Copy-edit of scenarios/metric results definitions	X	X		X	X	X	X
Workflow (wizard) feature for creating operation				X	X	X	X
Workflow (wizard) feature for editing operations					X	X	X
Workflow (wizard) feature for creating multiple operations (bulk create)						X	X
User-editable annualizations (scaling factors on operation groups/cases)	X		X	X	X	X	X
Display of all aircraft equipment available	X	X	X	X	X	X	X
Make new airplane from existing airplane	X	X		X	X	X	X
Editing of aircraft parameters and flight profiles <sup>ii</sup>	X	X		X	X	X	X
Editing of non-aircraft parameters		X		X	X	X	X
Creation and editing of equipment groups	X			X	X	X	X
Editing of group percent distributions	X			X	X	X	X
Flights distributed across tracks using group percent <sup>iii</sup>	X			X	X	X	X
Aircraft noise-power-distance table plotting	X		X				
Creation and editing of custom noise metric	X	X		X	X	X	X
Creation and editing of grid/receptor set	X	X		X	X	X	X
Point/grid/population receptors	X		X	X	X	X	X
Dynamic grid support (recursive grid in INM) for dB-based metrics	X			X	X	X	X
Dynamic grid support for time-based metrics						X	X
Dynamic grid support for user-defined noise metrics							X
Dynamic grid restricted by a boundary							X
Creation and editing of quarter-hourly/daily/monthly operational profiles		X		X	X	X	X
Annual average airport weather specification and editing	X	X	X	X	X	X	X
Usage of National Climatic Data Center (NCDC) ASOS weather sources		X		X	X	X	X

Function Availability	INM	EDMS	AEDT				
			2a	2b	2c	2d	3b
Usage of RUC/RAP, NCAR, and GEOS/MERRA weather			X	X	X	X	X
Application of study boundary to limit the area covered by high fidelity weather (RUC/RAP, NCAR, GEOS)			X	X	X	X	X
Usage of MERRA-2 and WRF weather						X	X
Apply weather at the metric result level						X	X
Direct use of US Census data for population exposure	X			X	X	X	X
Airport and runway locations for tens of thousands of airports globally	X	X	X	X	X	X	X
Creation of user-defined airports and runways	X	X		X	X	X	X
Point and polygon airport gates with adjustable emissions dispersion parameters		X		X	X	X	X
Creation and editing of buildings for emissions dispersion modeling purposes <sup>iv</sup>		X		X	X	X	X
Airport layout editor undo and redo	X			X	X	X	X
Airport configuration assignment		X		X	X	X	X
Editing of airport capacity parameters		X		X	X	X	X
Flight track – display on map	X		X	X	X	X	X
Flight track – disperse point tracks	X			X	X	X	X
Flight track – edit dispersed tracks on the map and in dialog						X	X
Flight track – point track creation by point-and-click	X			X	X	X	X
Flight track – vector track creation and editing	X					X	X
Taxi network graphical design with adjustable emissions dispersion parameters		X		X	X	X	X
Taxiway, taxipath, and airport configuration editing		X		X	X	X	X
Taxipath connectivity verification		X		X	X	X	X
Taxi time-in-mode emissions modeling		X		X	X	X	X
Taxi delay and sequencing of operations		X		X	X	X	X
Modeling of emissions sources other than aircraft main engines, including ground support equipment and auxiliary power units <sup>v</sup>		X		X	X	X	X
Non-aircraft emission factor deterioration based on equipment age		X		X	X	X	X
Modeling of scheduled aircraft operations	X	X	X	X	X	X	X
Modeling of operational profile operations for aircraft and non-aircraft emissions sources		X		X	X	X	X

Function Availability	INM	EDMS	AEDT				
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Modeling of touch-and-go operations	X	X		X	X	X	X
Modeling of circuit operations	X			X	X	X	X
Modeling of helicopter taxi operations				X	X	X	X
Noise modeling of runup operations	X			X	X	X	X
Map navigation tools (zoom, pan, rotate)	X	X	X	X	X	X	X
Conversion calculator from X/Y to latitude/longitude	X						
Comprehensive geographic feature attribute viewing	X	X		X	X	X	X
Graphical rendering of ESRI Shapefile layers	X			X	X	X	X
Import of satellite imagery and other GIS map services				X	X	X	X
Export GIS layers to shapefiles	X			X	X	X	X
Color and symbol legends for flight operations and airport designs	X		X	X	X	X	X
User-adjustable transparency on map layers				X	X	X	X
Last map location saved	X			X	X	X	X
Screenshot function for map view image capture				X	X	X	X
Option to compute flight performance only			X	X	X	X	X
Track angle checking	X		X	X	X	X	X
Bank angle modeling	X		X	X	X	X	X
Application of study boundary to truncate/extend tracks			X				
Adjustable fuel sulfur content for emissions modeling purposes		X		X	X	X	X
Adjustable sulfur-to-sulfate conversion rate for emissions modeling at non-US airports		X	X	X	X	X	X
Usage of 3CD terrain models	X		X	X	X	X	X
Usage of USGS DEM terrain models	X	X	X	X	X	X	X
Usage of Gridfloat terrain models	X		X	X	X	X	X
Viewing of terrain model on map display	X						
Default terrain values for missing terrain data	X			X	X	X	X
Visualization of missing terrain data	X						
Line-of-sight blockage modeling for noise metrics	X			X	X	X	X

Function Availability	INM	EDMS	AEDT				
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Noise modeling lateral attenuation adjustment	X		X	X	X	X	X
Noise spectral cutoff calculation <sup>vi</sup>	X			N/A	N/A	N/A	N/A
SAE ARP 866A atmospheric absorption algorithm	X			X	X	X	X
SAE ARP 5534 atmospheric absorption algorithm				X	X	X	X
A-weighted noise metrics	X		X	X	X	X	X
Tone-corrected noise metrics	X		X	X	X	X	X
C-weighted noise metrics	X		X	X	X	X	X
Modeling of time based noise metrics	X			X	X	X	X
Noise ambient data screening <sup>vii</sup>	X			X	X	X	X
Restrict by boundary when running ambient screening	X				X	X	X
Restrict receptor grid by boundary					X	X	X
Application of study boundary to limit the area covered by contour grid calculations	X						X
Detailed noise grid computation with attribution to contributing flight operations	X			X	X	X	X
Number above noise level for LAMAX, LCMAX, SEL, and CEXP					X	X	X
Import and export of NMGF formatted noise results	X			X	X	X	X
Combine noise results from different receptor sets						X	X
Comprehensive input parameter report	X	X	X	X	X	X	X
Aircraft flight profile and performance graphs	X		X	X	X	X	X
X-Y plotting of flown aircraft trajectory	X		X	X	X	X	X
Emissions inventory reporting (segment to modal)		X	X	X	X	X	X
Emissions and fuel consumption table reports by source type, with adjustable units		X	X	X	X	X	X
VALE emissions reporting		X		X	X	X	X
Noise table reports	X		X	X	X	X	X
Noise contour generation and display	X		X	X	X	X	X
Non-closing noise contours	X						X
NIRS-format noise impact chart and table reports			X	X	X	X	X

Function Availability	INM	EDMS	AEDT				
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Noise ranking and flight track reassignment of aircraft operations for change analysis			X	X	X	X	X
Emissions dispersion table reports		X		X	X	X	X
Expansion of speciated organic gas emissions		X	X	X	X	X	X
Carbon dioxide, water, and particulate matter speciation for aircraft engines <sup>viii</sup>		X		X	X	X	X
Calculate & presentation of pollutant concentrations (based on AERMOD)		X		X	X	X	X
Pollutant concentration contours					X	X	X
Specify averaging period, source groups, and rankings before AERMOD run		X			X	X	X
Emissions dispersion of aircraft operations on curved flight tracks				X	X	X	X
Emissions dispersion of aircraft engine startup emissions		X		X	X	X	X
Emissions dispersion of emissions sources other than aircraft main engines, including APUs, GSE, and other airport sources		X		X	X	X	X
Background emissions concentrations					X	X	X
NO <sub>2</sub> dispersion modeling using Tier 1, Tier 2 and Tier 3 methods							X
SO <sub>2</sub> dispersion modeling using Tier 1 method							X
Support for 1-minute and 5-minute ASOS wind data for dispersion modeling							X
Low wind speed support (ADJ_U* option in AERMET)							X
Environmental justice population identification					X	X	X
Environmental justice Limited English proficiency							X

<sup>i</sup> Prior approval by the FAA Office of Environment and Energy (AEE) is required in order to use non-default profiles for review of FAA federal actions or other FAA regulatory purposes. Further information on requesting approval for use of non-default profiles is provided in the AEDT 3b User Guide, Appendix K.

<sup>ii</sup> In AEDT, edits to aircraft flight profiles must be made through import of ASIF aircraft/equipment.

<sup>iii</sup> In AEDT, user's access to Aircraft Equipment Group Percent Distribution processing is through direct SQL injection of AIR\_OPERATION table.

<sup>iv</sup> AEDT supports creating and editing of building definitions. The building downwash effects are not modeled.

<sup>v</sup> See the supporting MOVES documentation ("Using MOVES with AEDT") for roadways, or parking facilities, and construction operations. Users must use EPA MOVES to generate these sources

<sup>vi</sup> In AEDT, this is addressed by the dynamic gridding algorithm rather than pre-processing of aircraft source data as in INM.

<sup>vii</sup> Requires review and authorization by the FAA Office of Energy and Environment (AEE).

<sup>viii</sup> Aircraft particulate matter estimated only for engines in the ICAO Engine Emissions Databank.