Geometry and grid overview
NASA Langley Geometry Lab

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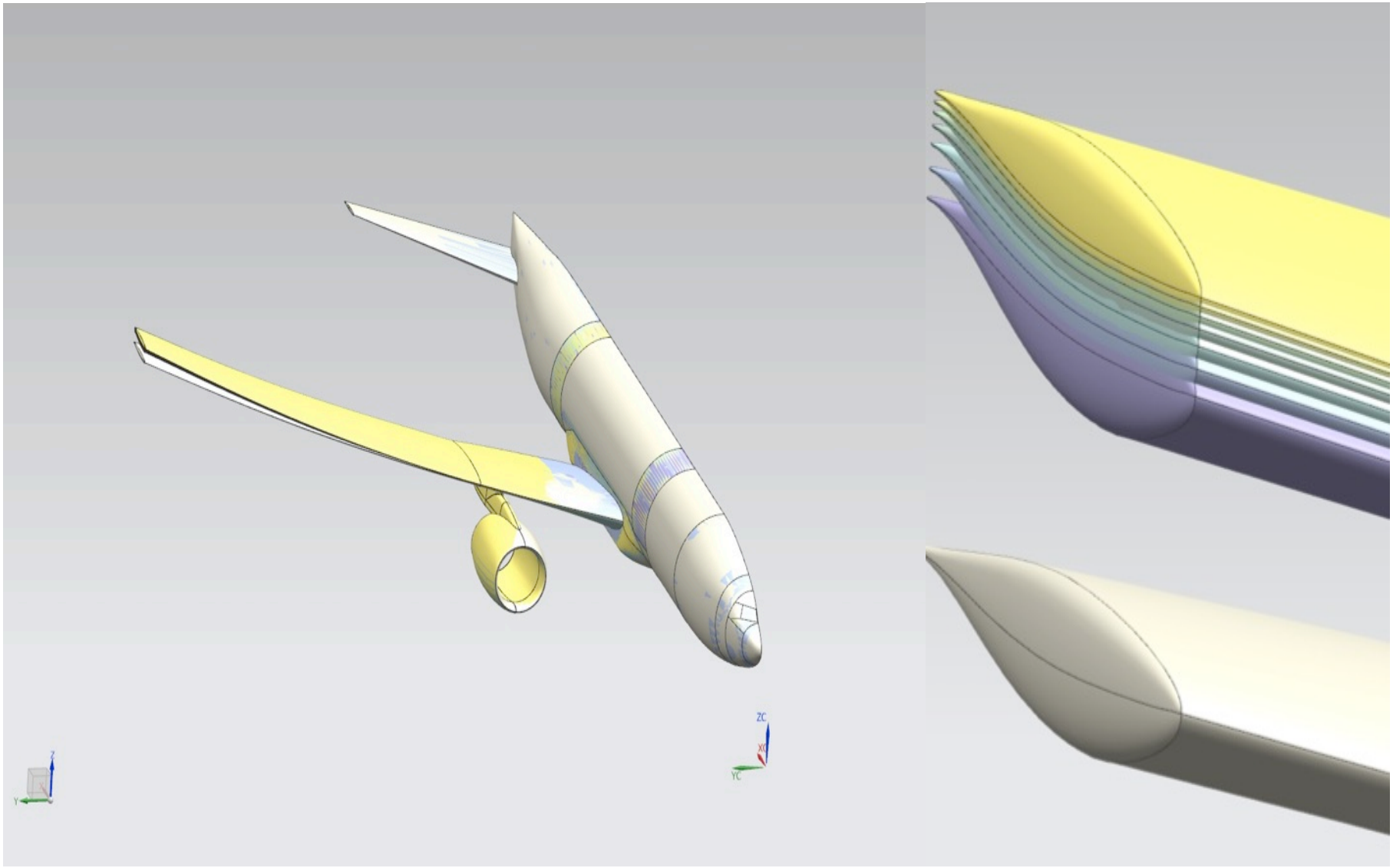
Slides and Grids created by:

Norma Farr and Mike Wiese, Craig Technologies/GEOLAB

DPW6 geometries, deflections for alpha = 0, 2.5, 2.75, 3.0, 3.5, 3.75, and 4 degrees



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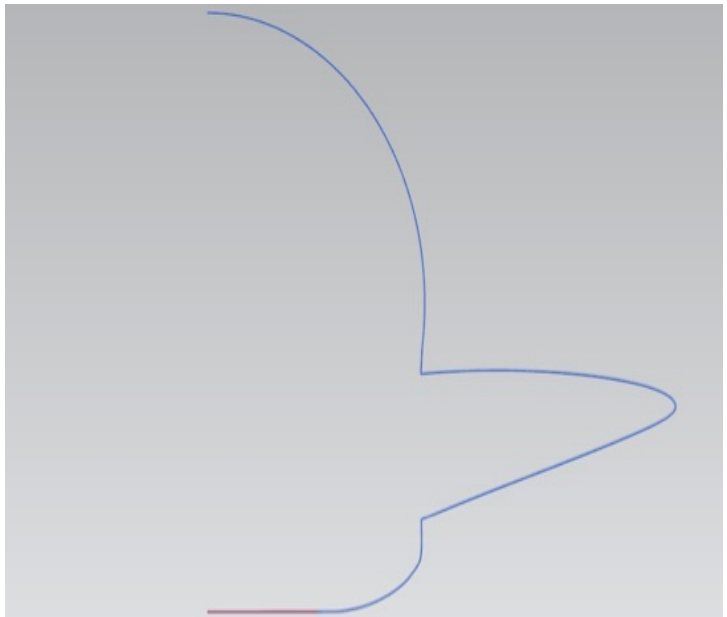
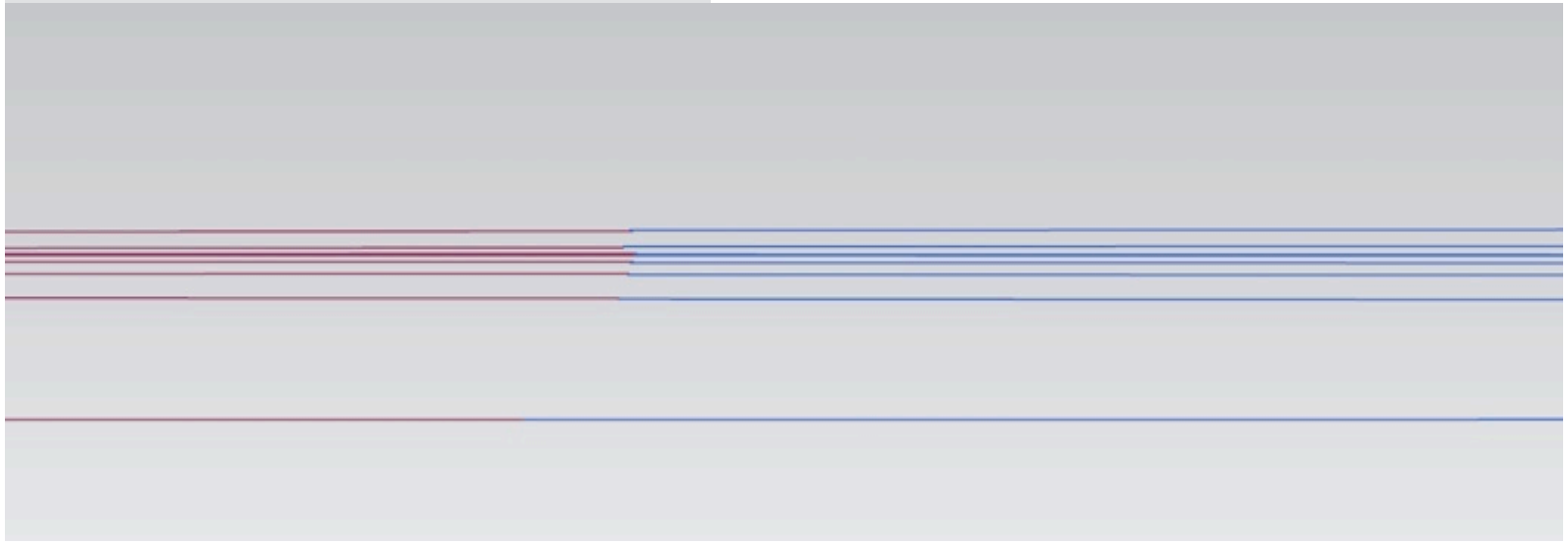


"unstructured_NASA_GeoLab_REV00"

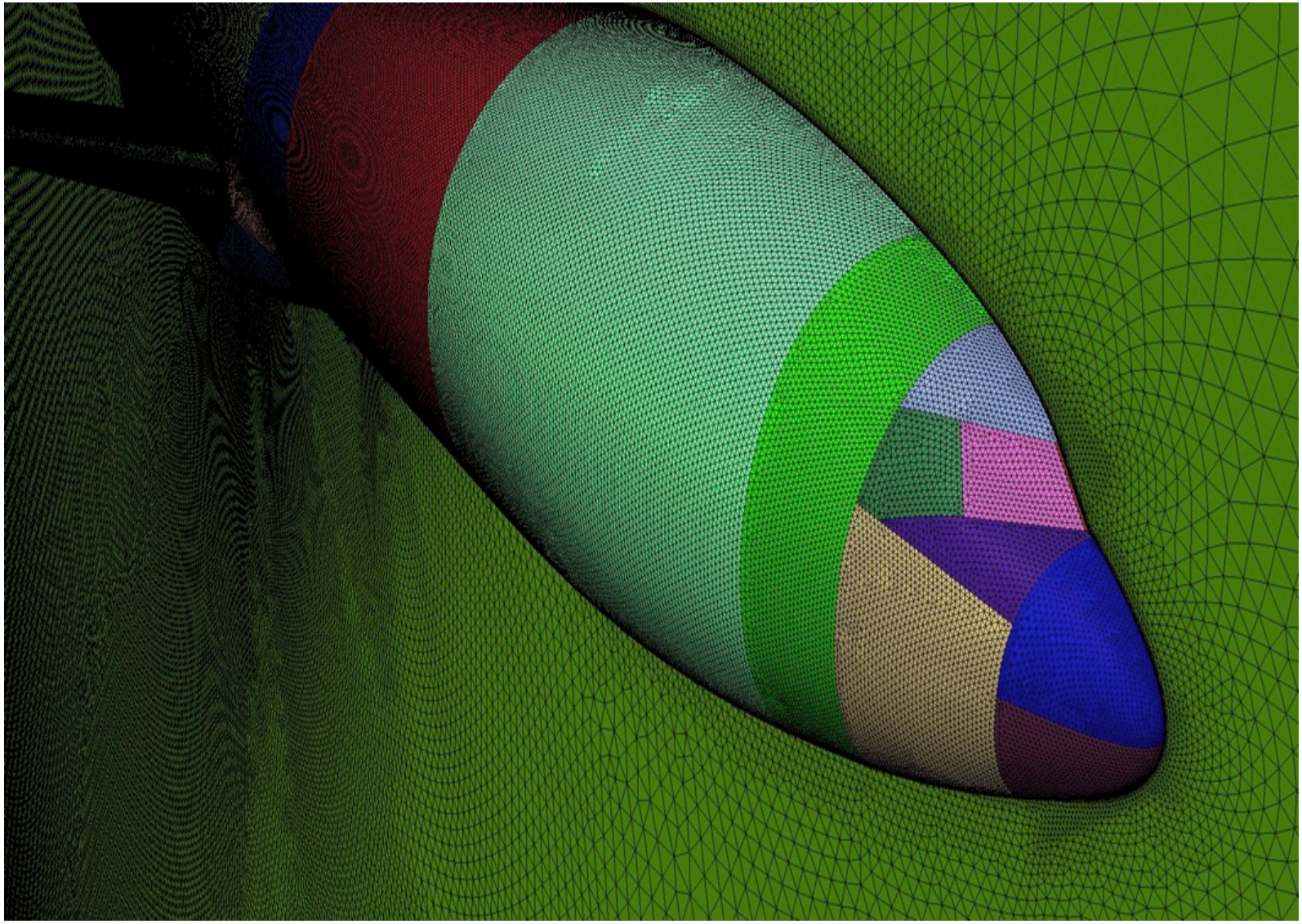
X station cut at 1300"

Change from 0^0 aero elastic deflection to 4^0 deflection, results in a change in the Z Of the bottom surface of ~.1"

Corrected in "unstructured_NASA_GeoLab_REV01"



DPW6 unstructured grid layout



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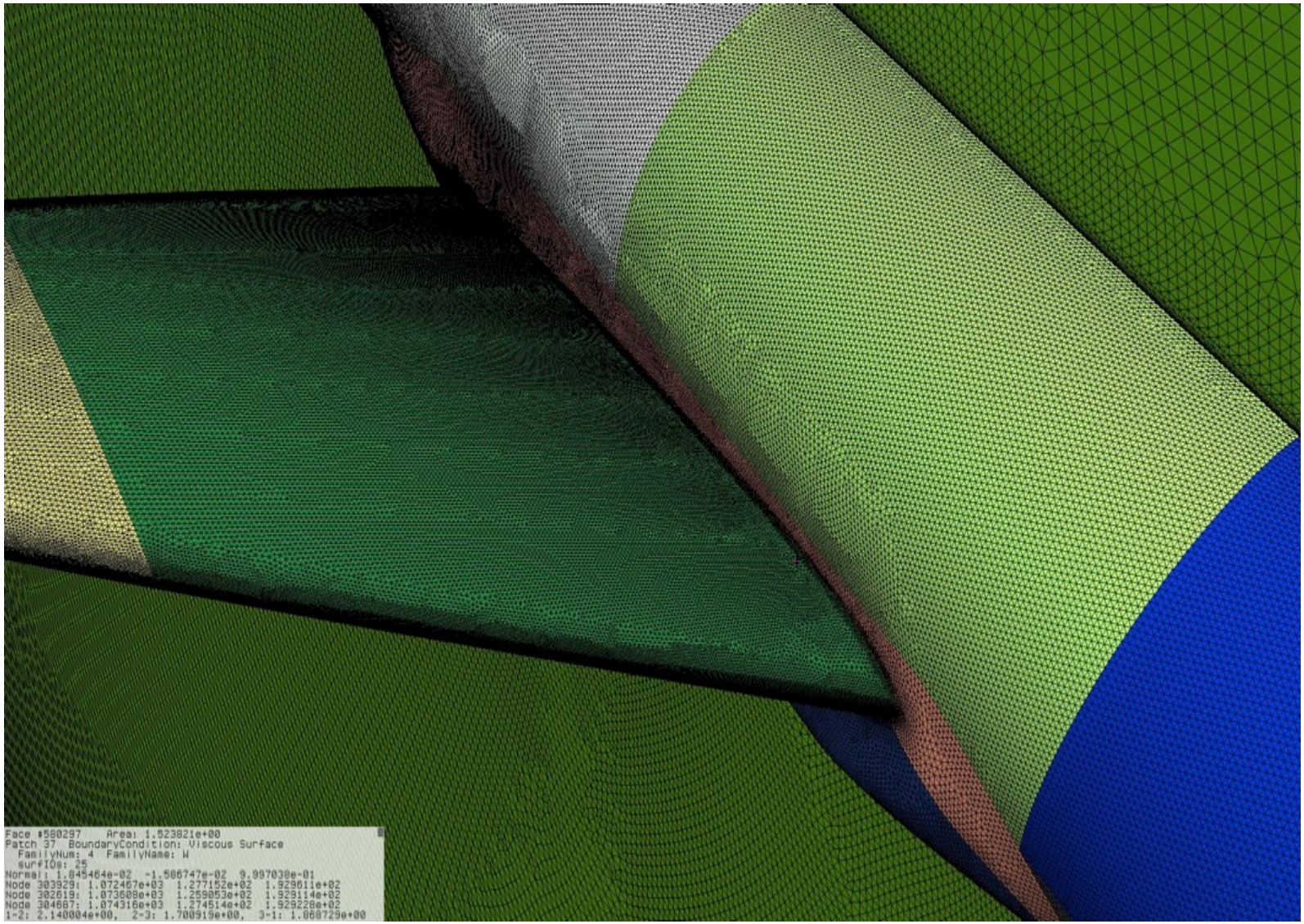
DPW6 unstructured grid layout



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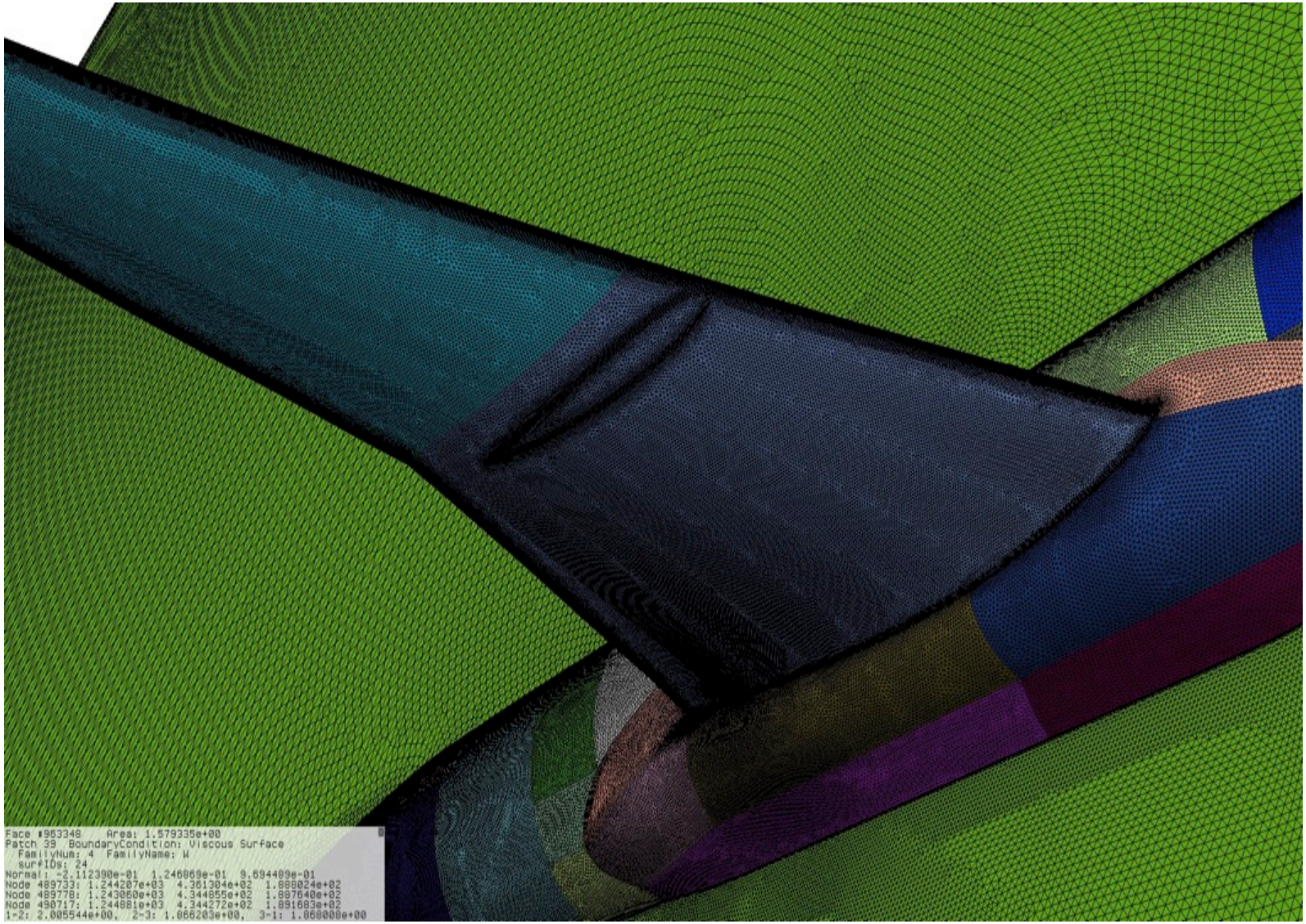
DPW6 unstructured grid layout



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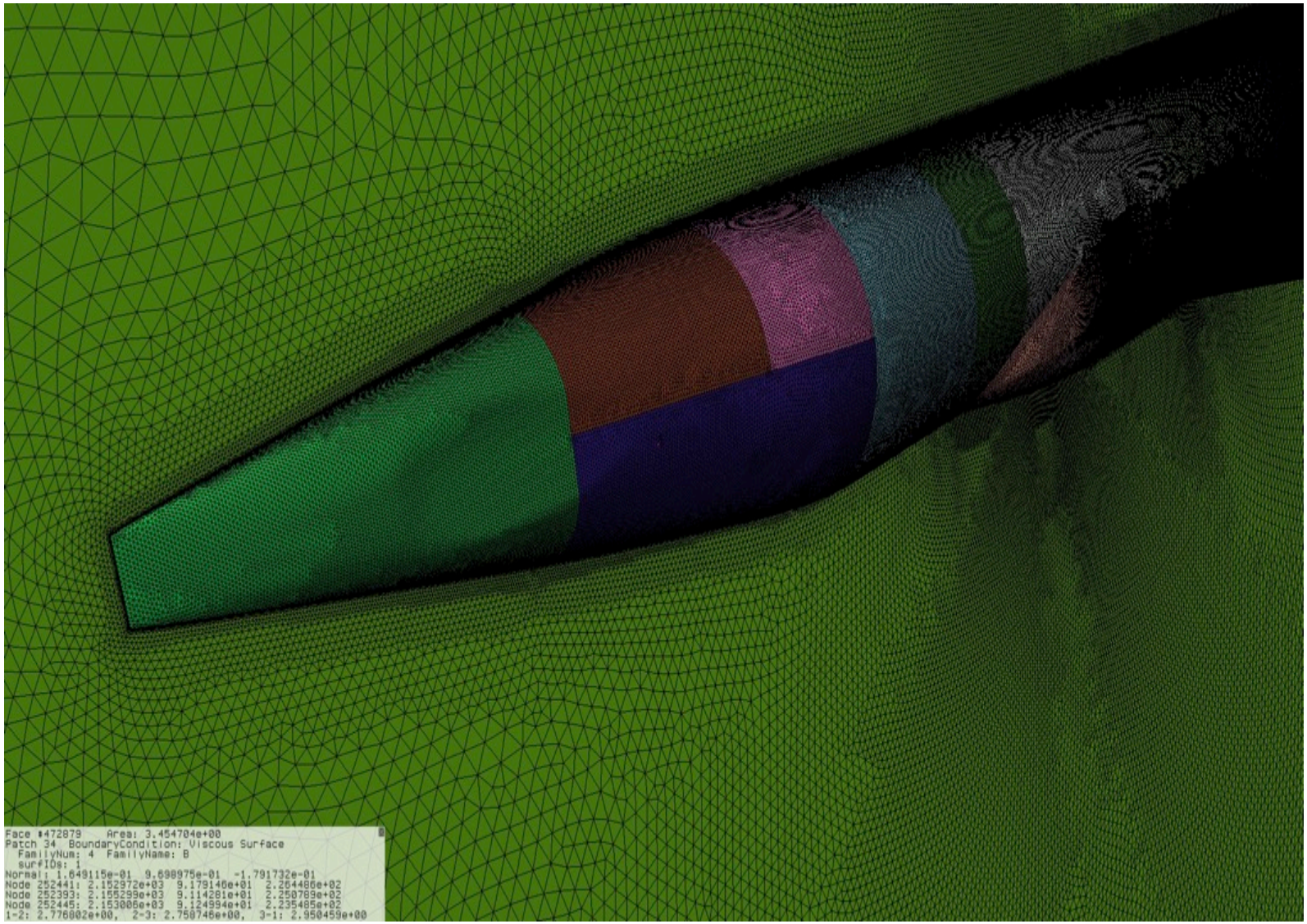
DPW6 unstructured grid layout



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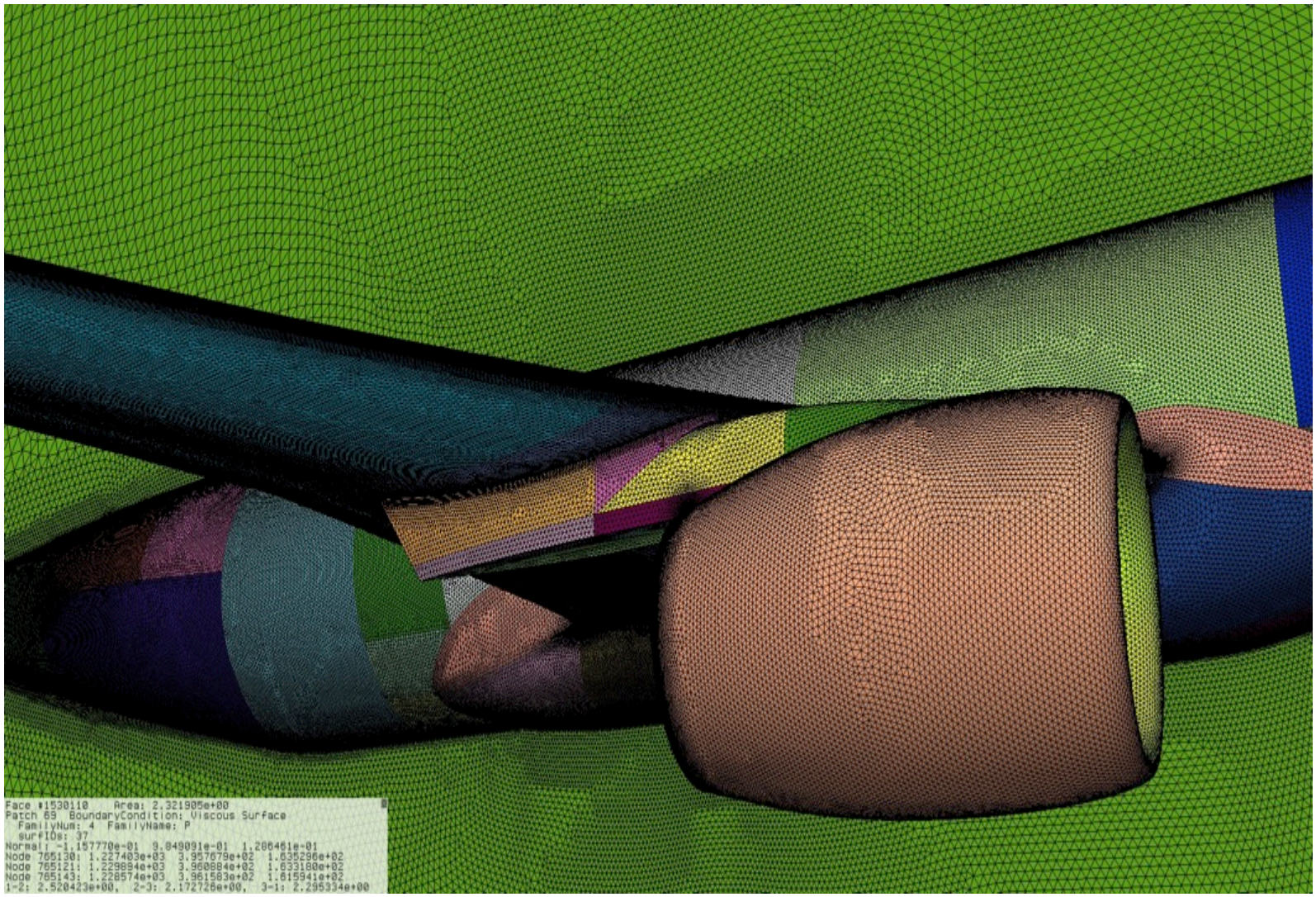
DPW6 unstructured grid layout



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Grid Statistics for NASA GeoLab Unstructured Grids

Wing Body Aero-elastic Sweep

AE DEG	1ST CELL SIZE	BL MAX GROWTH RATE	BOUNDARY NODES	BOUNDARY FACES	BL NODES	BL CELLS	TOTAL NODES	TOTAL CELLS
2.50	0.001118	1.15	1,125,555	2,251,106	22,400,868	127,488,333	44,158,719	259,240,907
3.00	0.001118	1.15	1,121,242	2,242,480	22,339,744	127,150,782	44,076,098	258,766,322
3.25	0.001118	1.15	1,123,880	2,247,756	22,348,358	127,185,981	44,077,100	258,758,138
3.50	0.001118	1.15	1,124,294	2,248,584	22,396,204	127,468,650	44,145,329	259,167,935
3.75	0.001118	1.15	1,124,810	2,249,616	22,382,789	127,386,228	44,132,000	259,084,730
4.00	0.001118	1.15	1,124,743	2,249,482	22,392,352	127,444,332	44,138,539	259,126,449

Wing Body Grid Refinement Study

GRID LEVEL	1ST CELL SIZE	BL MAX GROWTH RATE	BOUNDARY NODES	BOUNDARY FACES	BL NODES	BL CELLS	TOTAL NODES	TOTAL CELLS
TINY	0.001478	1.15	655,339	1,310,674	10,775,077	60,647,514	20,419,925	119,554,125
COARSE	0.001285	1.15	860,282	1,720,560	15,384,236	87,036,885	29,851,330	174,999,801
MEDIUM	0.001118	1.15	1,127,127	2,254,250	22,397,227	127,458,345	44,162,574	259,261,343
FINE	0.000972	1.15	1,475,823	2,951,642	33,385,212	191,210,919	66,089,940	388,564,128
X-Fine	0.000845	1.15	1,938,196	3,876,388	52,391,237	302,286,426	100,550,619	592,197,654
U-Fine	0.000735	1.15	2,554,937	5,109,870	78,076,307	454,864,240	151,009,898	890,287,118

Wing Body Nacelle Pylon Grid Refinement Study

GRID LEVEL	1ST CELL SIZE	BL MAX GROWTH RATE	BOUNDARY NODES	BOUNDARY FACES	BL NODES	BL CELLS	TOTAL NODES	TOTAL CELLS
TINY	0.001478	1.15	765,536	1,531,072	12,419,166	69,823,581	27,724,572	162,407,703
COARSE	0.001285	1.15	1,005,542	2,011,084	17,706,490	100,064,115	40,742,401	238,932,215
MEDIUM	0.001118	1.15	1,314,055	2,628,110	25,778,271	146,575,107	60,587,854	355,766,178
FINE	0.000972	1.15	1,724,835	3,449,670	38,458,890	220,091,481	91,001,054	535,012,345
X-Fine	0.000845	1.15	2,260,165	4,520,330	60,313,404	347,780,457	138,225,983	813,868,087
U-Fine	0.000735	1.15	2,984,841	5,969,682	89,895,562	520,670,697	208,476,294	1,228,538,520

DPW6 patch layout