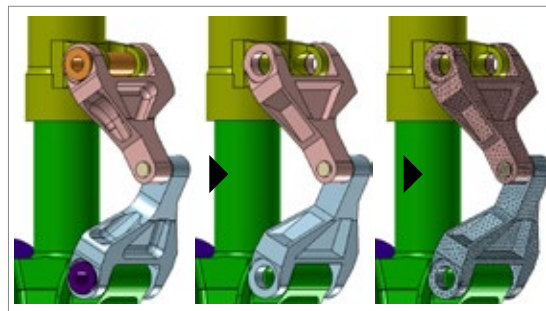## Why use MSC Apex? TIME.

The reason to use MSC Apex is the raw time savings you will achieve over your current preprocessor. MSC Apex gives you powerful tools that are both easy to use and highly intuitive. The result is arriving at a nearly analysis-ready model in far less time. The time saved can be applied towards getting a head-start on the next project. In one example, TLG Aerospace, a services group specializing in certifying aircraft, reduced the time to create the midsurface geometry and mesh of an airframe from 25.2 hours to 6 hours.

Steps to take in MSC Apex

The two most common scenarios for using MSC Apex with Patran Include:

1. **Solid Structures** - Use MSC Apex to:

   - Remove dozens of features unnecessary for stress analysis such as holes, fillets and chamfers

   - Mesh and change dimensions of geometry by interactively pushing and pulling on geometry

   - Repair geometry and ensure a quality mesh may be created

2. **Thin Walled Structures** - Use MSC Apex to:

   - Automatically or semi-automatically extract midsurfaces of uniform or non-uniform cross sections

   - Interactively move vertices and edges, and rapidly close gaps, to generate a clean connected, high quality mesh

   - Automatically generate thickness and offset properties for both uniform and non-uniform sections

Steps to take in Patran

Once the .bdf and geometry are exported from MSC Apex, use Patran to:

- Import and associate the .bdf and/or geometry

- Define loads, supports/constraints, materials, analysis parameters

- Review results of a stress, vibration, fatigue or other supported analysis type

.bdf

Geometry

Modal Neutral File (.mnf)

Solid Structures

Geometry

Thin Walled Structures

.bdf

Geometry
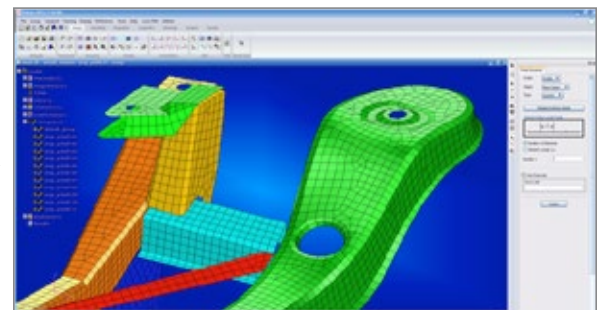
What is the ideal workflow between MSC Apex and Patran?

.bdf

Geometry

MSC Nastran
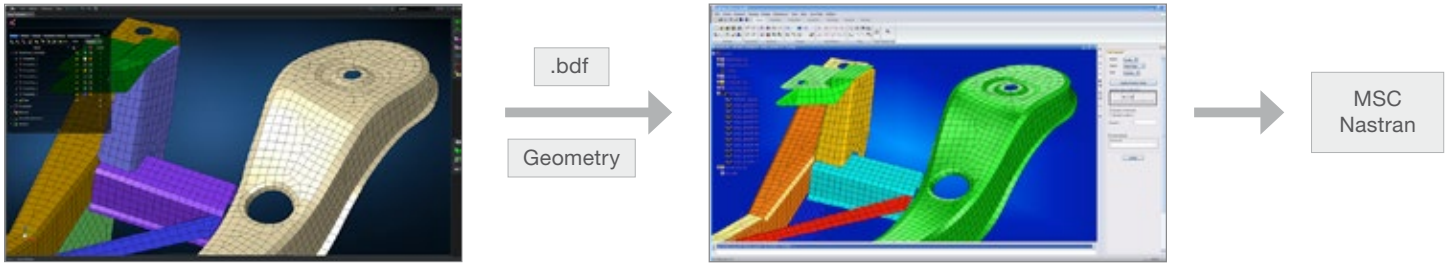
MSC Apex

- Intuitive User Interface & Direct Modeling
- High CAD-To-Mesh Productivity
- Generative Framework
- Units Management
- Run-Ready export of Analysis Scenarios
- Full support of Case Control for all supported simulation types

Patran

- Assign advanced materials or composites
- Apply additional loads/BCs/connections
- Use proprietary PCL and/or processes
- Additional analysis setup

What geometry file types and CAD formats does MSC Apex import?

FILE TYPE	SUPPORTED VERSIONS
ACIS	Up to ACIS R21 (.sat)
CATIA V4	All 4.xx (.model, .exp)
CATIA V5	R10-R26 (.CATPart, .CATProduct)
IGES	3 and 5 (.igs)
Inventor	All through 2016 (.ipt, .iam)
Parasolid XT	Up to version 28 text files (.x_t, *xmt_txt) and binary files (*x_b)
Pro/Engineer/Creo	Pro/Engineer 13 to Creo 3 M040 (.prt, .asm)
SolidWorks	All through 2016 (.sldprt, .sldasm)
STEP	203/214/242 (.stp)
Unigraphics/NX	Unigraphics 11 through NX10 (.prt)

What file types does MSC Apex export?

FILE TYPE	SUPPORTED VERSIONS
Parasolid XT	Version 28 text files (.x_t) and binary files (*x_b)
MSC Nastran input file	.bdf
ACIS Geometry	.sat
Stereolithgraphy	.stl
Modal Neutral File	.mnf

What keywords does MSC Apex write to the .bdf file?

MSC Apex Feature	MSC Nastran Keyword	Exported by MSC Apex? Yes/No	Imported by Patran? Yes/No
Node	GRID	Y	Y
Point Mass	CONM2	Y	Y
	RBE3	Y	Y
Curve Mesh	CBEAM	Y	Y
Surface Mesh	CQUAD4	Y	Y
	CQUAD8	Y	Y
	CTRIA3	Y	Y
	CTRIA6	Y	Y
HEX Mesh	CHEXA	Y	Y
	CPENTA	Y	Y
TET Mesh	CTETRA	Y	Y
Beam Span	PBEAML	Y	Y
Shell Section	PSHELL	Y	Y
Attributes	PSOLID	Y	Y
Material	MAT1	Y	Y

Contact us for complete list.

MSC✕Software®