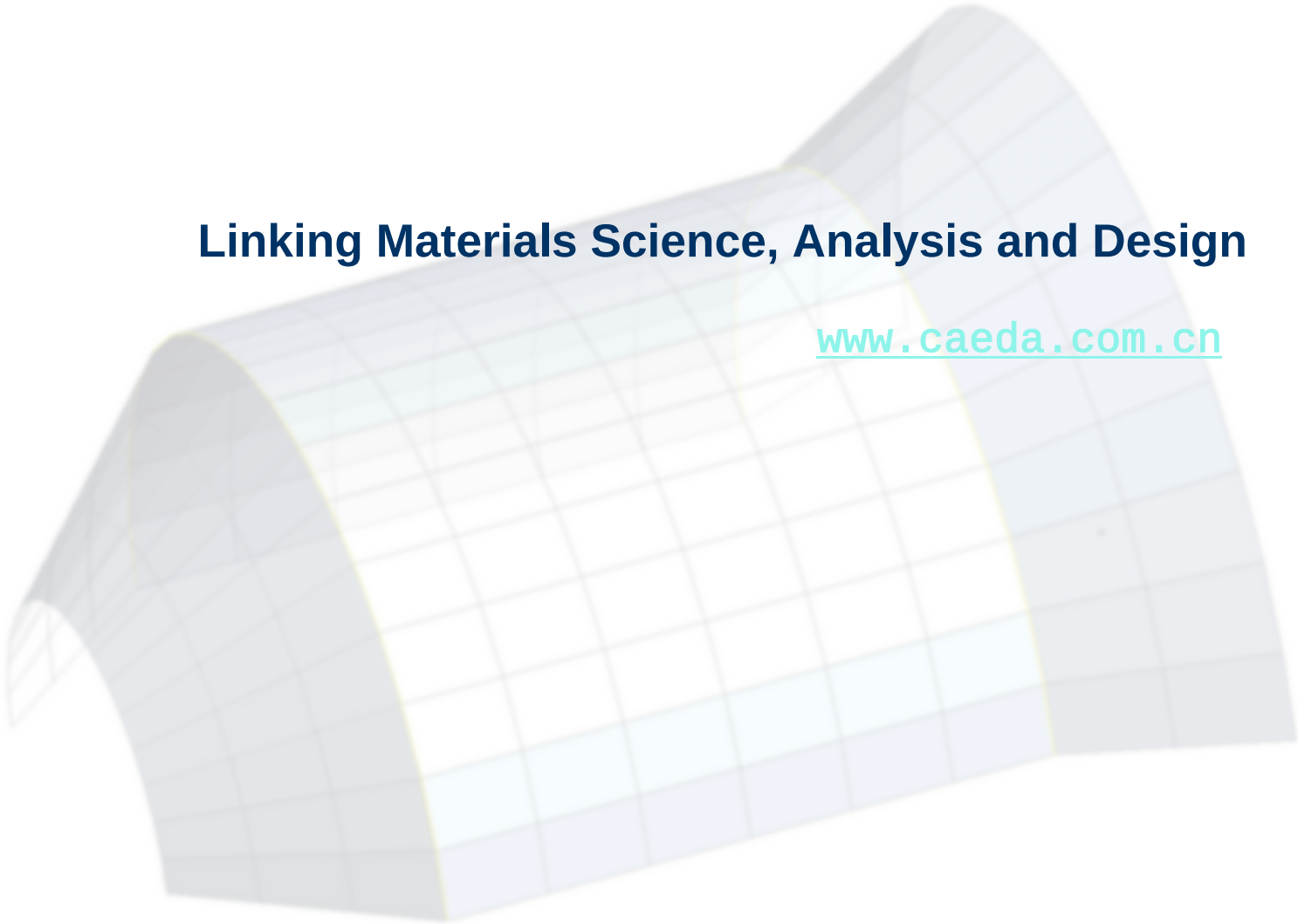
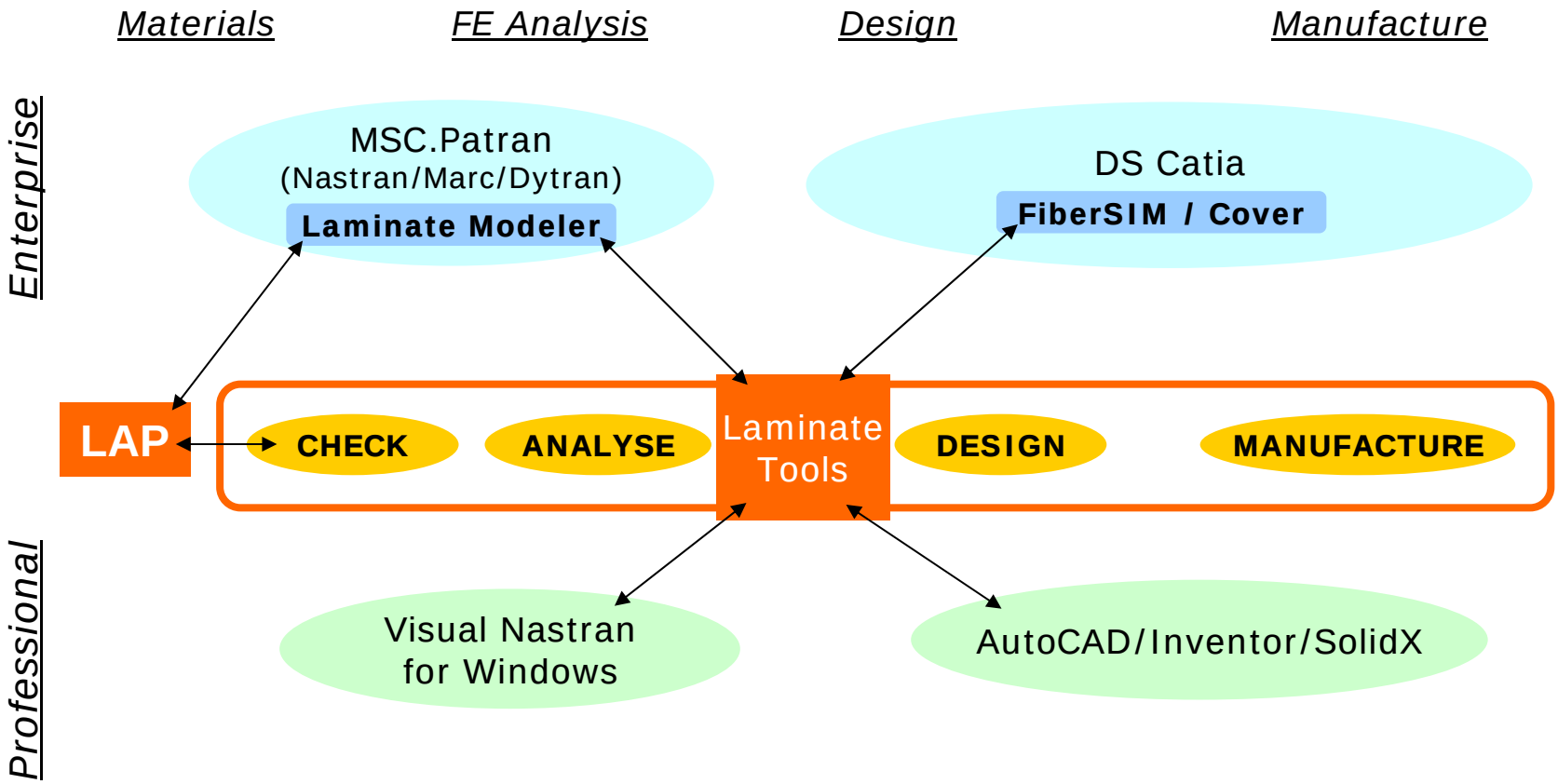
anaglyph



Linking Materials Science, Analysis and Design

www.caeda.com.cn

Workgroup Domains



Laminate Tools :

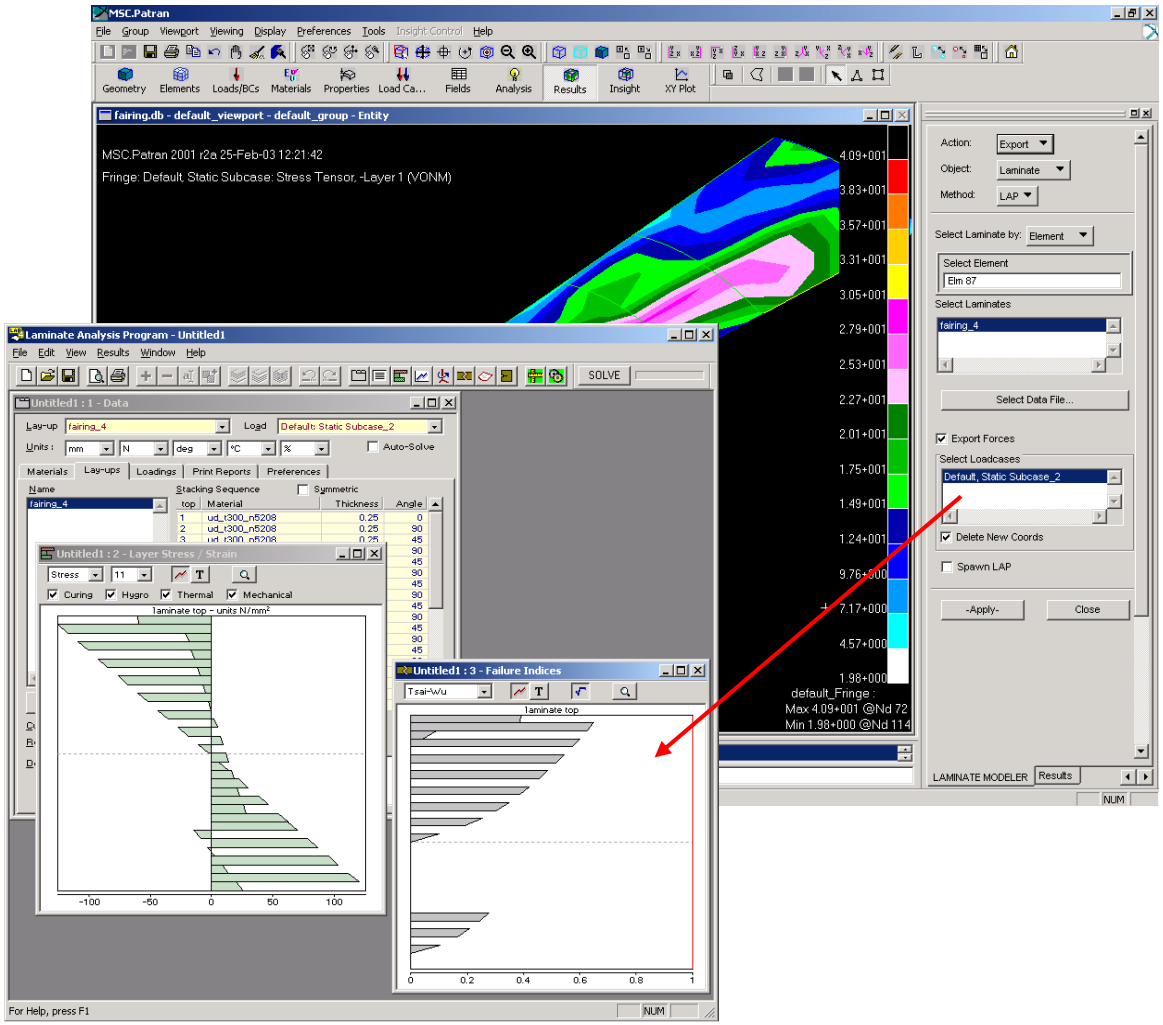
- focused on laminated composites
- bridges Enterprise and Professional domains
- bridges Materials/ Analysis/ Design/ Manufacture
- Windows based, intuitive familiar interface
- excellent value

LAP

- ✓ Understand composite material behaviour
- ✓ Carry out preliminary design dimensioning and material selection
- ✓ Obtain initial lay-up configuration, manually or automatically with the Design module.
- ✓ Examine local loads from FE analysis in detail
- ✓ Modify, iterate and optimise
- ✓ Many features, such as non-linear stiffness properties, custom failure criterion, notched compressive strength, data interfaces

MSC.Patran – LAP interface

- Laminate information flows in either direction
- Initial laminates passed to MSC.Patran for FE Analysis
- FEA results passed to LAP for detailed analysis

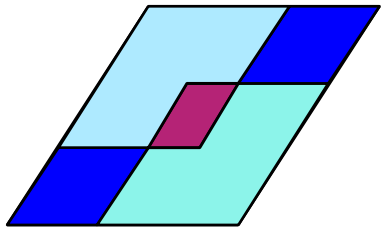


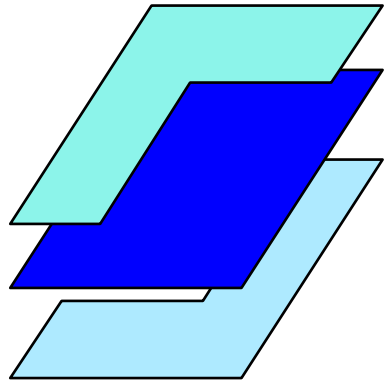
Composite Descriptions

Zones

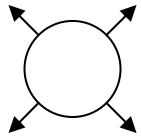
Plies

Geometry

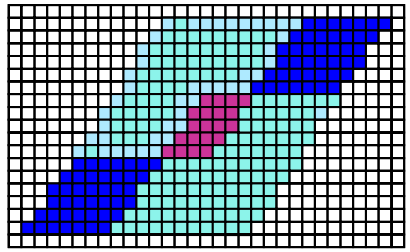


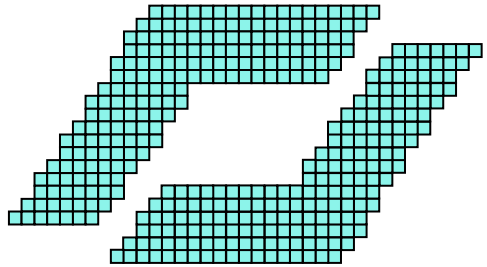


NB: Elements may follow ply boundaries for detailed analysis

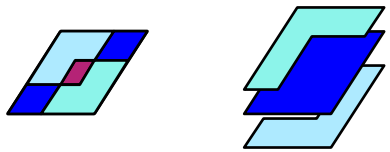


Mesh





Ply and Zone Modeling



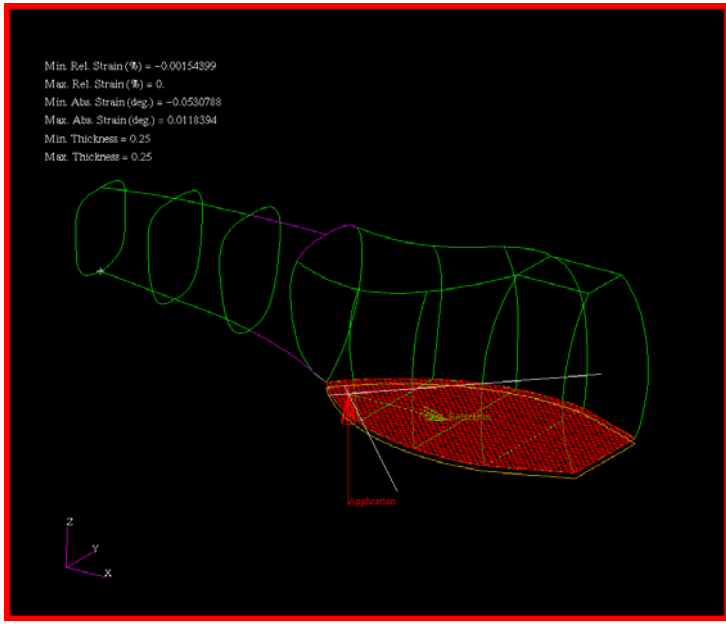
- Create Ply Material
- Create Ply
- Create Layup

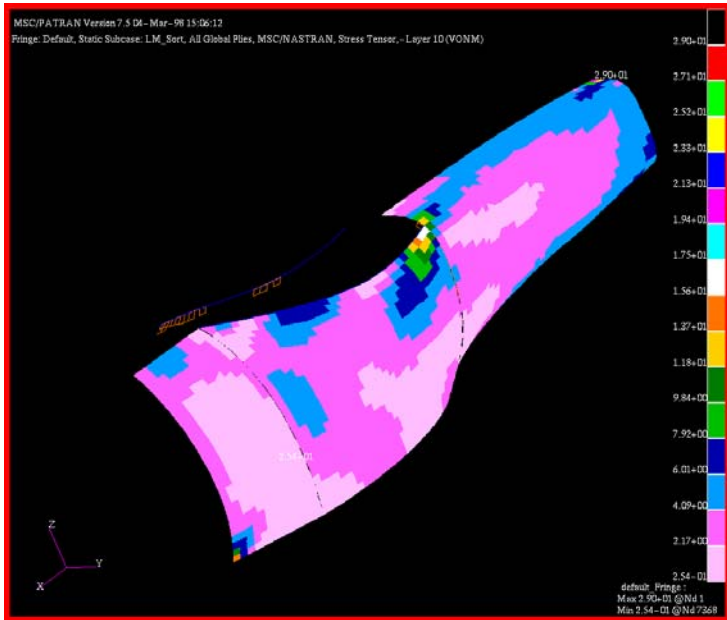
Ply Description

- Laminate Materials
- Analysis
- Results
- Failure Calculation

Zone (Laminate Material) Description

- Results Sort

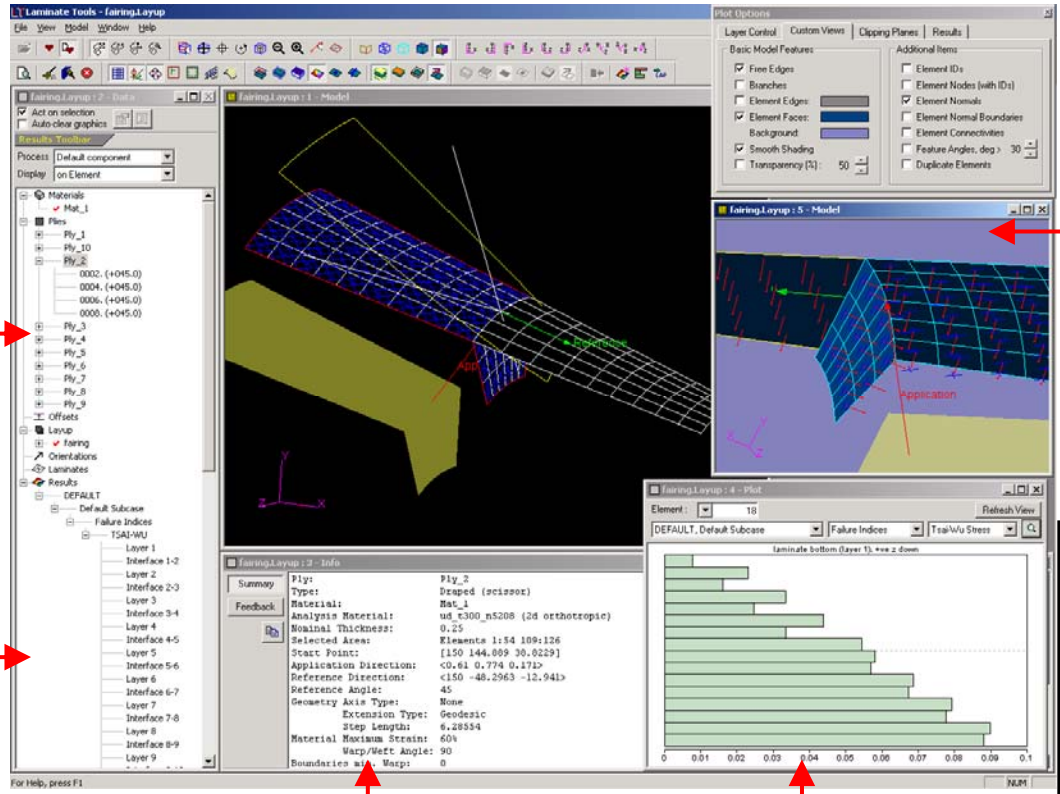




Laminate Tools – overview

Visualisation – Draping simulation – Pattern generation

MSC.Patran
MSC.Laminate Modeler
.Layup file



Tree View
Shows relationships between materials, plies, layup, laminates, layers, etc.

FEA Results
(imported f06 or op2)

Model views
Multiple views with full control over displayed entities. With support for transparency, clipping, picking, printing, etc.

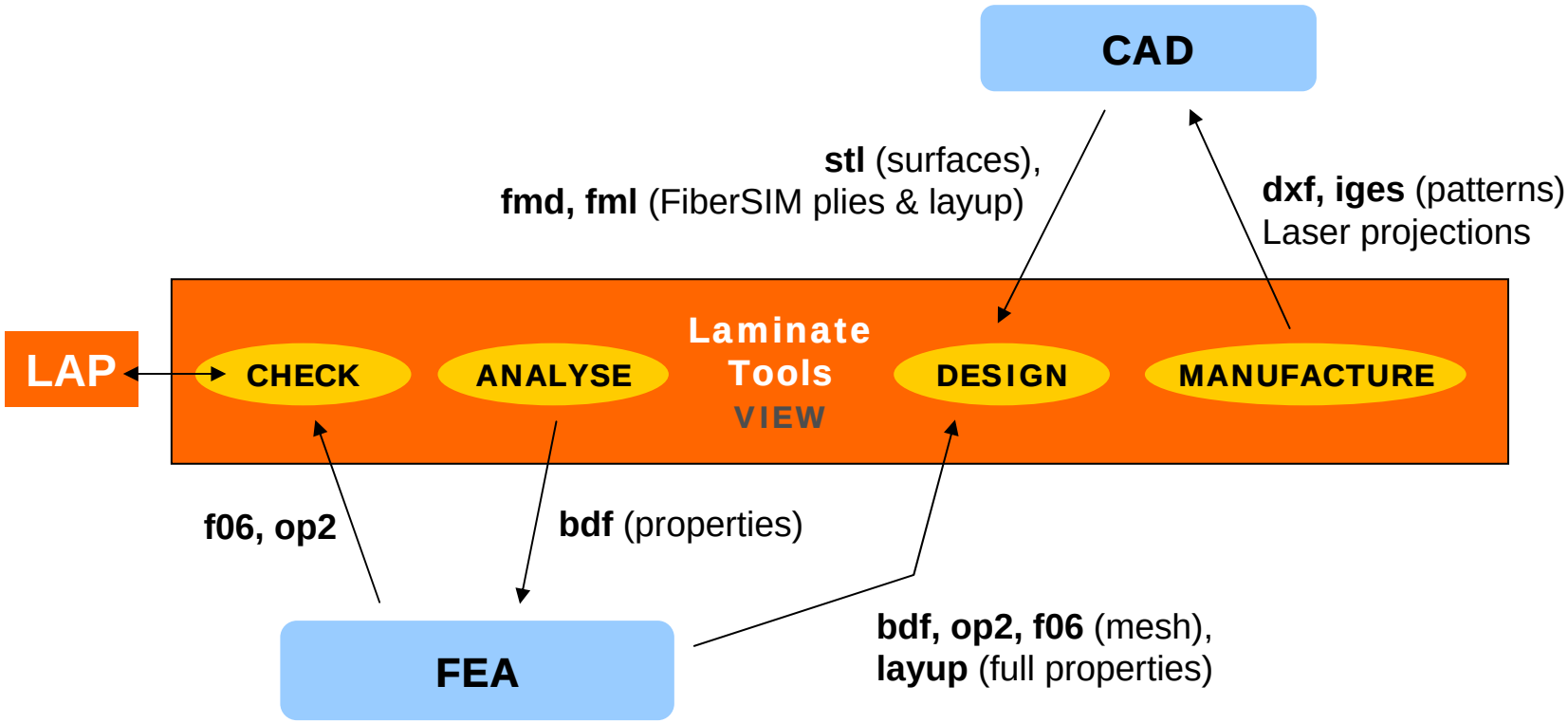
Information window
Gives comprehensive details for the selected entity.

Plot window
Shows layer by layer stress and failure theory results.

Key benefits:

- ✓ Supports industry standards
- ✓ Proven draping simulation
- ✓ Ease of use
- ✓ Allows effective collaboration
- ✓ Environment for composites tools
- ✓ Flexible growth

Laminate Tools – interfaces and modules



Laminate Tools – checking strength

MSC.Nastran
model + results
(bdf, f06, op2)

Laminate Tools
checks

LAP

Key benefits:

- ✓ MSC.Nastran results
- ✓ Additional criteria (incl. custom)
- ✓ Stress or Strain basis
- ✓ Multiple Loadcases (enveloping)
- ✓ FI, MoS, RF views
- ✓ Layer-by-layer details (+plots)
- ✓ LAP interface
- ✓ Instant processing