

SmartDO⁺

A Smart Design Optimization System

Compact. Versatile. Cost-Effective

SmartDO+

A Smart Design Optimization System

Engineering Lifecycle Integration

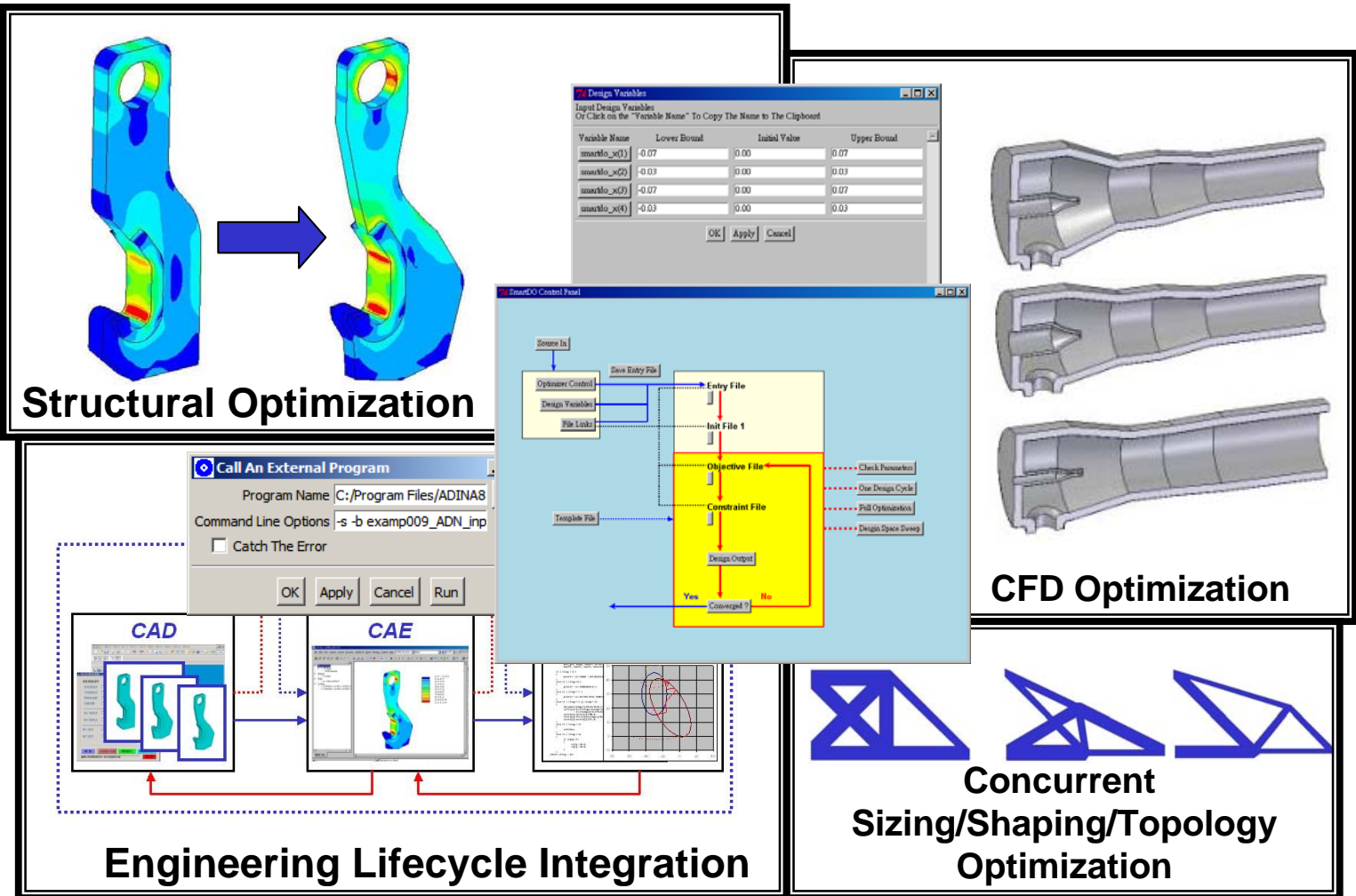
- Integrate your FEA/CAE/CAD/CFD/CAX design evaluation process.
- Parameterize the modeling and the characteristic of product digital contents

World-Leading Smart Global Optimization Technology

- Capable of performing **Concurrent Sizing, Shaping and Topology Optimization**
- With both Gradient-Based Nonlinear Programming (NLP) for differentiable problems, and Non-gradient-based approach (like Robust Genetic Algorithms, RGA) for non-differentiable problems

Powerful Yet User-Friendly Interface

- Control Panel GUI acts as the wizard/template of design optimization process and setup. Modeling and execution is just few clicks away
- SmartScripting for generating Tcl/Tk scripts through dialog box
- Built-in Tcl/Tk engine for flexible programming and customization



Specialized, Customized, Optimized
CAE Solution Provider

SmartDO⁺

A Smart Design Optimization System

Product Technical Specification

Gradient-Based Nonlinear Programming (NLP)

- Conjugate Feasible Direction Method (CFDM)¹, Recursive Feasible Direction Method (RFDM)¹ and Recursive Conjugate Feasible Direction Method (RCFDM)¹
- World-Leading Response Smoothing Technology¹, detecting noise caused by package integration or uncertainty in discretized numerical method (like FEA or CFD) automatically
- Capable of Global Optimization^{1,2}
- Suitable for differentiable problems. Can handle response with smooth or noisy behavior^{1,2}

Robust Genetic Algorithms (RGA)

- Adaptive Penalty Function¹
- Automatic Schema Representation¹
- Automatic Population and Generation Number Calculation¹
- Adaptive and Automatic Cross-Over Probability Calculation¹
- Absolute Descent¹
- Capable of performing **Concurrent Sizing, Shaping and Topology Optimization**
- Capable of Global Optimization
- Capable of Combinatory Optimization
- Suitable for differentiable and non-differentiable problems
- Support Design Space Sweep

Smart Particle Swarm (SPS)

- Same Sampling Approach as GA/RGA¹
- Semi-Gradient Approach. More efficient than Gradient-Based Approach. More accurate than GA¹
- Automatic Population and Generation Number Calculation¹
- Absolute Descent¹
- Capable of Global Optimization¹
- Suitable for differentiable problems¹
- Support Design Space Sweep

User Interface and Platform

- Control Panel : The wizard/template of design optimization process and setup. Modeling and execution is just few clicks away
- SmartScripting : Generating Tcl/Tk scripts through dialog box
- Main Menu : Integrated interface. Pull-down menu for invoking actions
- Command Console : Interact command and/or batch mode execution
- Editor Canvas : Text editor with functionality specific to SmartDO
- Programming Interface : Built-in Tcl/Tk engine for flexible programming and customization
- Couple with any CAE/CAD/CAX package. No need to modify the source code of the third-party software

NOTE

1. Proprietary algorithms.
2. Dealing with functions with local and minor to medium noise





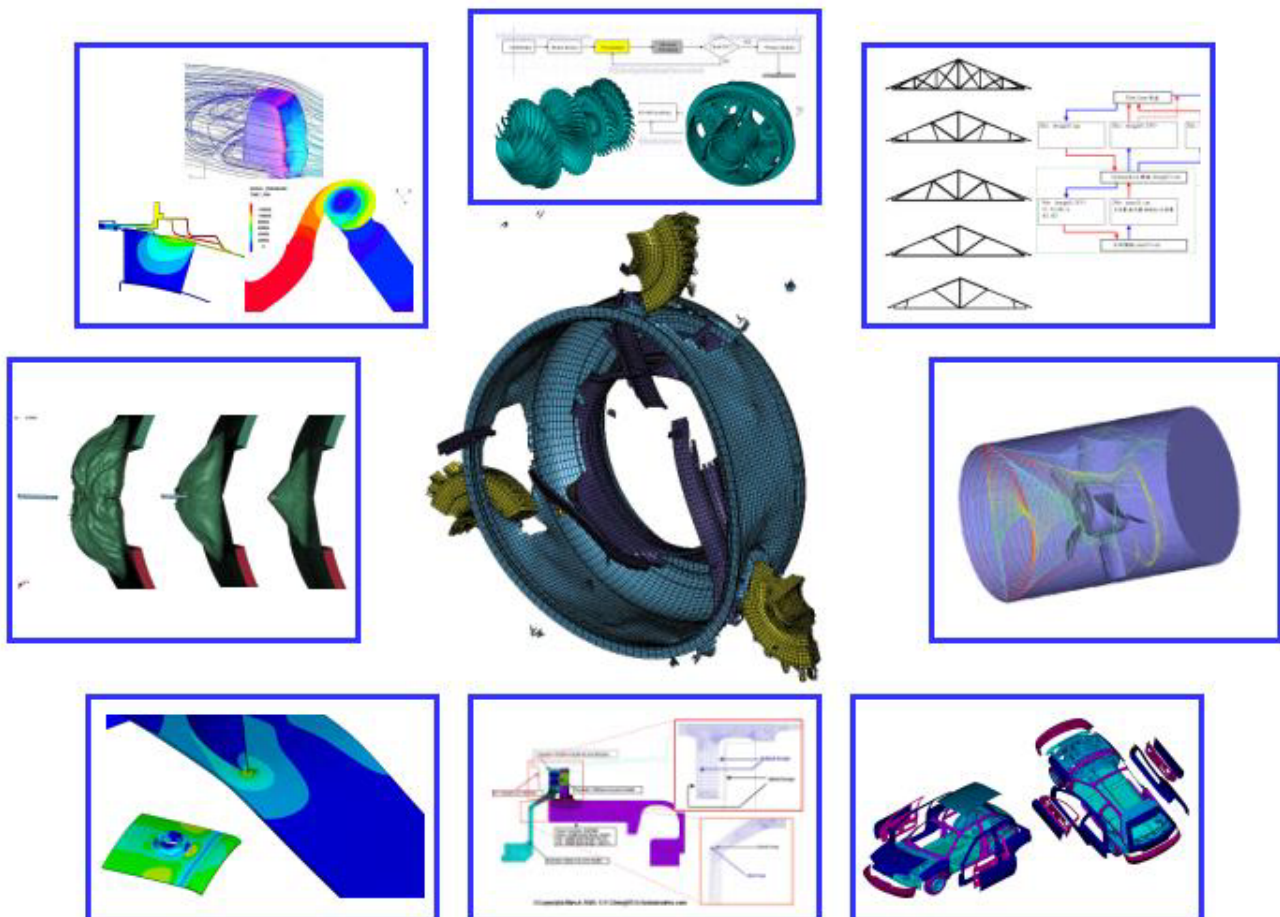
R&D • Consultancy • CAE
研發•顧問•CAE

Software Products and Services

- **SmartDO** : A Smart Design Optimization System and Services
- **System Integration and Design Automation**
- **CAE Analysis Consultancy Services** :
 - Structural reliability : stress, vibration, deformation, buckling, lifing/fatigue, stability, fracture mechanics, creep, plasticity, nonlinear, contact, dynamics, crashworthiness/impact.
 - Structural/heat/CFD/electrical coupled-field analysis
 - CFD/Heat Transfer/Heat Flow/Conjugate Heat Transfer
- **The Virtual Lab Technology**
 - Full Engine Module Fan blade-out and hub-burst simulation
 - Full car crash simulation
 - 3C product drop test
 - Weaponery ballistic and impact analysis

Software Distribution, Support and Services

- **ADINA** : The finite element system for structures, heat transfer and CFD, Taiwan area distributor
- **DyRoBeS** : Rotor dynamics software, Taiwan area distributor



Specialized, Customized, Optimized CAE Solution Provider

No part of this brochure may not be reproduced or transmitted in any form or by any means without prior written permission from FEA-Opt Technology.